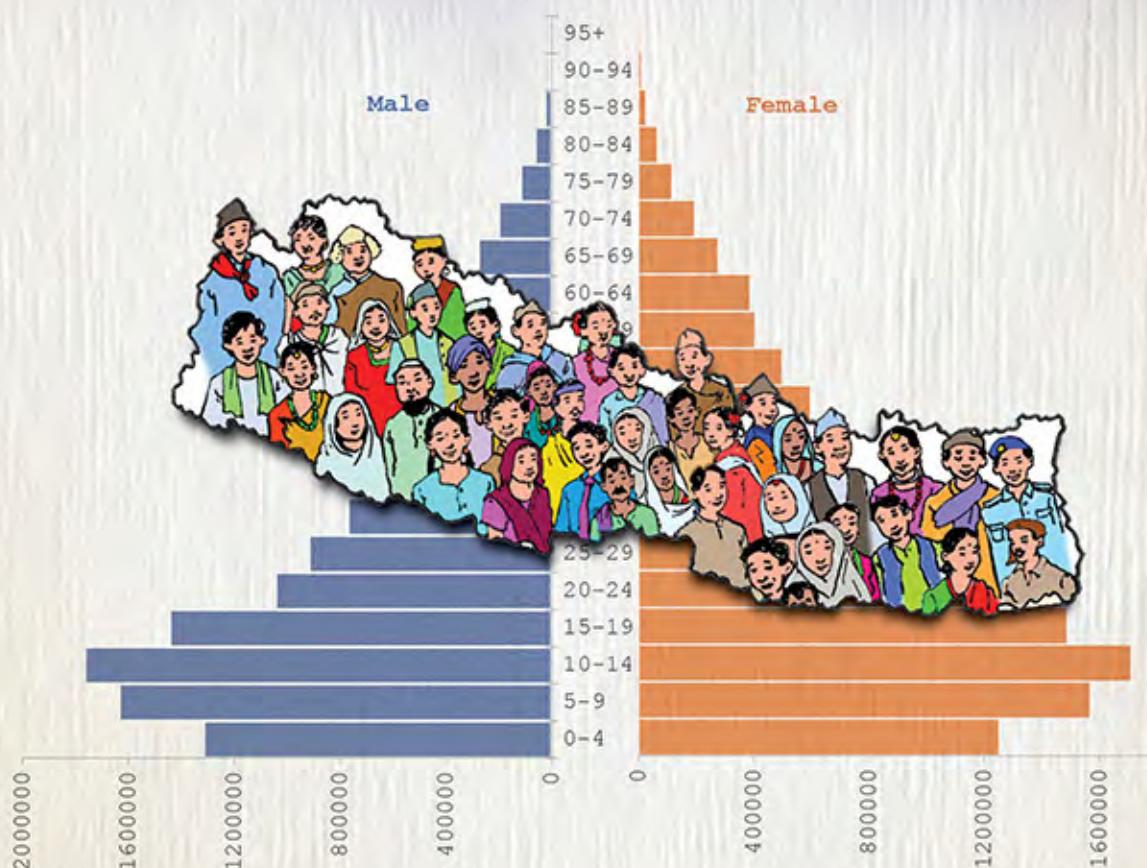




POPULATION MONOGRAPH OF NEPAL

VOLUME I (Population Dynamics)



Government of Nepal
National Planning Commission Secretariat
Central Bureau of Statistics
Ramshah Path, Kathmandu, Nepal

2014



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Prof. Dr. Govind Raj Pokharel
Vice-Chairman

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FOREWORD

The National Population and Housing Census 2011 (NPHC2011) marks hundred years in the history of population censuses in Nepal. Nepal has been conducting population censuses almost decennially and the census 2011 is the eleventh one, which was successfully carried out by the Government of Nepal. The census 2011 has been an historical event in many ways. It has successfully applied an ambitious questionnaire through which numerous demographic, social and economic information has been collected.

The 2014 Population Monograph that is being issued in three volumes, is the result of rigorous analysis of the information collected in the census and provides a comprehensive and in-depth picture of different aspects of the population in Nepal which is extremely important for planners, policy makers, researchers, private sectors and other users.

On behalf of the National Planning Commission, I would like to thank the members of the Population Monograph Management Committee headed by Bikash Bista, Director General, Central Bureau of Statistics. I would also like to thank all agencies and individuals, authors, reviewers and CBS staff who have contributed in bringing the publication in this form.

Any valuable comments from the readers would help in improving the Monograph in the future.

December, 2014

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PREFACE

The National Population Census 2011 has provided a wealth of information that is required to understand various socio-economic and demographic changes that have occurred in the country during the intervening period of the two censuses. The Population Monograph of Nepal 2014, an analytical report of the census 2011 presented in three volumes contains in-depth analysis of different topics related to the population of the country prepared by the eminent professionals dealing with such issues in their professional work. The first volume contains 12 chapters related to the population dynamics of Nepal, such as size and structure of the population, nuptiality, fertility, mortality, migration and population projections. The second volume contains 10 chapters on social demography dealing with caste/ethnicity, language, ageing, socioeconomic characteristics, status of gender, education, adolescents and youth, children and disability. Similarly, the third volume consists 9 chapters which include important interlinkages of population and economic variable such as economic activities, urbanization, economic development, environment, status of agriculture and other poverty indicators. Data has been disaggregated by caste, ethnicity, gender and spatial distribution wherever possible. Each chapter has been further reviewed by experts and edited by a professional editor to ensure consistency in the language and terminology used. On behalf of the Central Bureau of Statistics (CBS) and on my own behalf, I am grateful to all those authors, co-authors and reviewers who have contributed with write-ups and thorough review.

Thanks are due also to CBS staff for their dedication to bring out this publication in time.

Similarly, Giulia Vallese, UNFPA Representative, Bijay Thapa, Assistant Representative, Tirtha Man Tamang, Programme Officer, UNFPA Country Office and Nicholas McTurk, Population and Development Specialist, APRO/UNFPA deserve our special appreciation not only for their active involvement and encouragement in bringing these volumes to light, but also for their contribution in coordinating development partners' contribution in the refinement of the various chapters.

Finally, I would like to thank all respondents who provided invaluable information during the field operation and appreciate all those who had extended hands in this national endeavor and helped to make the census a grand success.

I welcome suggestions from the users of these volumes in order to improve CBS publications in future.

December, 2014
Kathmandu, Nepal.

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Director General

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VOLUMES AND CHAPTERS

Volume I (Demographic Analysis)

Chapter	Chapters
1	Centenary of Population Census of Nepal: A Historical Perspective
2	Population Size, Growth and Distribution
3	Age Sex Composition
4	Nuptiality Trends and Differentials
5	Fertility Levels, Patterns and Trends
6	Mortality Levels, Patterns and Trends
7	Maternal Mortality
8	Life Tables Analysis of Nepal
9	International Migration and Citizenship
10	Internal Migration
11	National Population Census 2011: A Brief Account of Operational Aspects
12	Population Projections for Nepal

Volume II (Social Demography)

Chapter	Chapters
1	Social Composition of Nepalese Population: An Analysis of Castes, Ethnicities and Religions
2	Mother Tongues and Second Languages
3	Ageing of Population
4	Socio-Demographic Characteristics of Major Caste Groups
5	Literacy and Educational Status
6	Changing Gender Status: Achievements and Challenges
7	Adolescents and Youth
8	Status of Children
9	Persons with Disability and Their Characteristics
10	Population Policy in the Context of Changing Demographic Picture of Nepal

Volume III (Economic Demography)

Chapter	Chapters
1	Structure, Patterns and Trends of Economically Active Population
2	Own Account Economic Activities
3	Population and Economic Development
4	Urbanization and Development
5	Population and Environment
6	Population and Status of Agriculture
7	Household Structure
8	Household Facilities and Amenities
9	Housing structures

EXECUTIVE SUMMARY

1. Volume I (Population dynamics)

1.1 Nepal has been conducting population censuses since 1911. The first four censuses were conducted under the Rana Regime and were limited to specific purposes. In 1952/54, the first attempt was made to collect internationally comparable data from the census. Computers were used first in 1971. The census of 1991, the first after the restoration of democracy, collected information on caste and ethnicity. The census of 2001 introduced sampling in the census for the first time. The National Population Census of 2011 is the eleventh census and marks 100 years in the history of census taking in the country.

1.2 The total population of Nepal, as of 22 June 2011, was 26.5 million with a decadal increase of 14.4% from 2001. The population a decade ago, or in 2001, was 23.2 million. The average annual growth rate of the population from 2001 to 2011 was 1.35%, a sharp decline from the 2.25% of the previous decade 1991-2001. The number of households stands at 5.4 million in 2011.

1.3 Households with 1 to 4 members are highest in the census 2011, whereas 5 person households were highest in the 2001 census. Female-headed households have increased by 11 percentage points from 14.87% in 2001 to 25.73% in 2011

1.4 The number of housing units enumerated in 2011 stands at 4,466,931, which has increased by 868,719 units over the last ten years. Most households live in their own house. However, households residing in rented houses have been gradually increasing in urban areas. Ownership of housing in Tarai and eastern development regions was found to be comparatively low. Most of the houses in Nepal were eleven to twenty years old with single floors. The average number of households per house has increased from 1.16 in 2001 to 1.21 in 2011.

1.5 Discrepancies in access to household amenities and facilities (such as radio, television, mobile phone, vehicles etc.) exist in different parts of the country. The coverage of improved source of drinking water has substantially increased. However there was no substantial change in the use of solid fuel (firewood, leaves, cow-dung and agricultural residue) for cooking. On the contrary, the share of kerosene as cooking fuel has drastically decreased and the percentage of LPG users has significantly increased between the two censuses. Similarly, the coverage of kerosene as a source of lighting fuel has sharply declined during the census periods. Electricity is now a major source of lighting fuel and its coverage has significantly increased in 2011 compared to 2001. The coverage of toilet facilities has also increased during the intercensal period, exceeding 90% in urban areas. A higher disparity was observed in the possession of consumer durable goods and services among urban/rural, ecological zones and development regions.

1.6 The decline in population growth rate from 2.25% in 2001 to 1.35% in 2011 was attributed both to a decline in fertility and the emigration of youth. It will take 51 years to double the population of 2011 if the present growth rate prevails. The growth rate varies in urban and rural areas with 3.38 and 0.98 percentages per year respectively. The highest growth rate (4.78%) is observed in Kathmandu. Twenty-seven (27) districts, all from Mountain and Hill, have experienced negative growth over the last decade. It has been observed that the proportion of the population is gradually declining in Mountain and Hill and steadily increasing in Tarai. The urban population (58 municipalities) accounts for 17.1% of the total population compared to 14.2% in 2001. If the recently declared 72 municipalities are included, making 130 municipalities in total, the urban population is 27% of the total population.

1.7 The sex ratio of Nepal is 94 (94 males per 100 females) in 2011, the lowest in the SAARC region. The ratio was higher (104) in urban areas against 92 in rural areas. The ratio, if looked at by age groups, was found to be lowest in age groups 20-24, 25-29 and 30-34. In 2011, 43 districts were observed to have a sex ratio below 94,

against 20 in 2001 and 6 in 1981. The proportion of children age 0-4 was 9.7% of the total population in 2011, a sharp decline from 15.4% in 1981. On the other hand, the older population (population of age 65 +) has increased from 3.3% in 1981 to 5.3% in 2011. The median age has increased from 18.92 in 1991 to 22.26 in 2011, indicating the gradually ageing population of the country.

1.8 Universality of marriage still prevails in Nepal, although the proportion of single persons is growing. The mean age at marriage for both males and females has increased in both urban and rural areas. Child marriage seems to be persistent in the country. Half of the marriages of ever married persons aged 25 years and below took place before the age of 18, which is the minimum age for legal marriage. Singulate mean age at marriage (SMAM) between males and females is positively correlated with level of education. Divorce rates are an increasing trend. Education and employment programmes should be targeted more to the areas (specifically in central Tarai and mid western hill and mountain) where SMAM is relatively low.

1.9 The census of 2011 indicates that fertility has been declining at a faster rate over the last decade. The crude birth rate for the year 2011 is estimated to be around 22 per thousand. Similarly, the total fertility rate (TFR) of a woman throughout her lifetime is expected to be around 2.52 children against 3.25 in 2001. The rate is even lower in urban areas at just 1.54, which is below fertility replacement levels. This means that the number of children born to a mother in urban areas is not sufficient to replace parents. The rate was 3.04 children in rural areas.

1.10 Mortality is also a declining trend. The crude death rate (CDR), which shows the number of deaths per thousand populations, is estimated to be around 7.3 per thousand populations in 2011 against 10.3 in 2001. The rate is found to be lowest in Tarai, which differs from other demographic indicators of this region. CDR is reported to be lowest in Saptari, Sarlahi and Rautahat. This unusually low rate is attributed to gross underreporting of deaths in the census in that region as the infant mortality rate (IMR) was estimated to be 81 in Rautahat, which is the highest in the country. The CDR of Bhaktapur is the lowest in the country. The IMR was 24 and 43 per thousand live births in urban and rural areas respectively. The rate was highest in Mountain followed by Tarai and Hill. The maternal mortality ratio, which is estimated for the first time on the basis of census data, stands at 480 per hundred thousand live births. The ratio seems to be higher compared to the estimates provided by NDHSs and other sources. The MMR estimated on the basis of census data is just a one point in time estimate so no comparison can be made with other sources. However, the rate is thought to be definitely a declining trend although the level can only be confirmed after the estimate is provided by the next census. MMR is highest again in Tarai (634) followed by Mountain (561) and Hill. Mid-West Mountain had 1004, the highest among the ecological development regions.

1.11 Life expectancy at birth (e0) for the census year 2011 is estimated at 66.6 years against 49.6 in 1981. The life expectancy of females has overtaken males in the last 30 years. Life expectancy at birth for females has increased from 48.1 years in 1981 to 67.9 years in 2011. Estimates of life expectancy at birth for urban and rural areas stand at 70.5 and 66.6 years respectively in 2011. Life expectancy is highest in Hill followed by Mountain and Tarai. Life expectancy is estimated for all 75 districts. Bhaktapur, Kaski, Lalitpur, Kathmandu and Parbat have the highest life expectancy where as Dolpa, Humla, Bajura, Kalikot, Mugu of Mid-West mountain have the lowest. Similarly, Dhanusha, Rautahat and Sarlahi also have the lowest life expectancy

1.12 Migration has become a prominent phenomenon in the population dynamics of Nepal. Emigration has been outnumbering immigration, which is thought to have had a substantial effect on the decline in fertility. A large volume of the youth population has been consistently moving abroad to different destinations of the world. The absent population of Nepal has been a major issue in demographic, social and economic aspects of the country. The absent population reported in 2011 was 1,921,494, a big jump from the number of 762,181 of the census of 2001. The emigration rate, the number of emigrants (out movers) per thousand population stands at 10.77, whereas the immigration rate is estimated to be 0.46 per thousand populations. Thus, gross and net migration rate stand at 11.23 and 10.32 per thousand respectively. The proportion of female migrants out of total migrants was 12.4% in 2011.

India is still a destination for 37.5% of emigrants in 2011, but the rate has been declining compared to 1981. In 1981, 93.1% of emigrants were destined for India. Most male migrants (47%) were from the age group 15-34 in 2011. ASEAN and the Middle East were other popular destinations. Western hill districts such as Gulmi, Arghakhanchi and Pyuthan had the highest number of households with absent members. In terms of population, districts of Western Hill and Tarai reported the highest number of absentees.

Approximately 2.8% of the total population were born in countries other than Nepal in 2011, an increase from 1.6% in 1981. Of the total foreign-born population, 28.7% reported that they were born in India in 2011; this figure was 29.4% in 1981. Regarding the length of stay in Nepal, 54% have been living in Nepal for more than 10 years (48% males and 57% females). Fifteen per cent reported that they had been living in Nepal for 6-10 years and 20% for 5 years or less.

1.13 Internal migration is also an important aspect of Nepalese demography. Horizontal (Hill to Hill) and vertical (Mountain and Hill to Tarai) movement of the population has substantially changed the spatial distribution of the population in Nepal. Every political change, be it the victory of King Prithvi Narayan Shaha, or the democratic movement of 1951 or the recent political events of 2005/06 has resulted in a huge tide of population movement in Nepal.

Altogether, 2.6 million inter-district migrants were reported to be lifetime migrants in 2011, an increase from 1.5 million in 1981. The volume of inter-zonal migrants was 2.1 million, out of that about 1.5 million were destined for Tarai. Altogether 56 districts, 49 districts (16 from Mountain, 33 from Hill and 7 from Tarai) experienced net out-migration. Out of the total internal migrants, 84% were literate and 60% were females.

It was reported that 4% of the population cross regional boundaries every year. Districts usually receive populations from adjoining or nearby districts. For example, Kavrepalanchowk, Sindhupalchowk, Dolakha, Ramechhap Dhading, Nuwakot, Makawanpur, Sindhuli, Sarlahi etc. were the source districts for Bhaktapur, Kathmandu, Lalitpur. Similarly, Kathmandu, Udayapur, Morang, Sunsari, Lalitpur, and Jhapa were the destinations for populations from Khotang, Bhojpur and Terhathum.

Volume II (Social Demography)

2.1 Nepal's child population of age 14 and below constitutes 34.9% of the total population. Children age 16 years and below make up 39.8% of the population and 44.4% are below 19 years. Despite various legislative and programmatic measures to ensure the rights of children, they are still facing many problems that lead to uncertainty and vulnerabilities in their lives.

2.2 There were nearly 9 million young people aged 10-24 years in the country in 2011, which is one third of the total population made up of 51.5% females and 48.5% males. Similarly, adolescents, the young population of 10-19 years, make up 24.2% of the population and youth of the age group (15-24) years make up almost 20% of the total population of Nepal. The distribution of young people across the country by region shows that a significant number of youths live in the Central Development Region, about 36% of the total population of young people, and about one tenth (10%) live in Far-Western Development Region. Similarly, the majority of young people (82%) live in rural areas and almost half of the young people of the country live in the Tarai. Approximately, 9% of the youth of 15-19 years and 21% of the group age 20-24 years reported that they were working and 1% of children of age 10-14 are also employed.

2.3 With the improvement in living standards, educational status and health facilities, the life expectancy of the Nepalese population has been increasing. The ageing index, which indicates the number of old people compared to children, has been consistently increasing over decades. The index has increased from 7.78 in 1971 to 15.50 in 2011.

2.4 The analysis of data has indicated remarkable achievements in the status of literacy, educational attainment and/or school attendance rates of both the male and female population over the years. However, disparities continue to exist across sex, rural-urban, districts and regions. Overall literacy rates have increased to 67% in 2011 from 54% in 2001. Female literacy has increased from 43% in 2001 to 58% in 2011, which places Nepal in fourth position among SAARC countries and above Bhutan, Pakistan, Bangladesh, and Afghanistan. About 90% of adolescents can read and write. Similarly, 69% of the population are attending school. Literacy rates of urban and rural areas stand at 82.3% and 62.5% respectively. Kathmandu has the highest literacy rate while Rautahat has the lowest.

2.5 The overall prevalence of disability as of the census of 2011 was 2% in Nepal, with 2.2% prevalence of male disability and 1.7% prevalence for females. The odds ratio of having a disability were 1.3 times more in males compared to females. Physical disability was the most common type of disability, which accounted for more than one third of total disabilities. Physical disability and blindness/low vision combined accounted for more than 50% of total disabilities. Disability in rural residents was more prevalent (2.1%) compared to disability in their urban counterparts (1.2%). The prevalence of disability was considerably higher in Mountain (3.0%) compared to Hill (2.2%) and Tarai (1.6%). More than one third of the disabled are less than 30 years old and only one-fourth of disabled persons are aged 60 years or more. The percentage of persons with a disability in the economically active age group (15 – 59 years) was higher in urban areas (59.5%) than in rural areas (56.1%). The proportion in older ages (60 and above) was higher among women (27.2%) compared to men (24.3%). Disability was significantly higher among illiterates (3.87%).

2.6 Gender equality is a key component of human development, but overall by sector Nepal still has a gender gap. As mentioned above, the female population exceeded the male population in 2011; as a result the sex ratio is low in Nepal mainly due to the huge outflow of youths from Nepal to the Middle East and East Asian countries. Female literacy has remarkably increased in the past decades as indicated above. Similarly, life expectancy of women has increased to 69.6 years, higher than men. There has been a rise in female-headed households in 2011 due to the increase in male migration. Nepal has experienced a decline in maternal mortality in past decades. But, economic empowerment is still a challenge. Only 20.5% of women have assets in 2011, although the proportion has increased from 17.1% in 2001. In addition, women's economic activity is still low in non-agriculture sectors possibly due to a lack of education and a tradition of working in agriculture. Naturally, women engaged in self-employment activities and/or unpaid family labour is very high (64% of females in total). Nevertheless, there has been an increase in female international migration (12.4% in 2011) in recent years. Although the gender gap between males and females in many areas has improved compared to previous censuses, the change is not significant, To overcome the existing gap, allocation and implementation of the gender responsive budget (GRB) has been recommended.

2.7 Identity has been an important issue since the restoration of democracy in 1991. Therefore, a question on caste was included in the censuses conducted in 1991, 2001 as well as in 2011. In fact, data on caste was first included and processed in the census of 1952/54 in Nepal. The total number of castes identified in the census of 2011 was 125, an increase from 100 in 2001 and from 60 in 1991. The increase in the number of castes in the census of 2011 was mainly due to people's awareness of their identity. Chhetri is the largest caste in terms of number (16.6%) as has been the case in all censuses, followed by Hill Brahmin, Magar, Tharu, Tamang, Newar, Kami, Musalman, Yadav and Rai. Substantial population increases in Kami, Patharkata, Hylhmo, Badi and Munda were recorded in 2011. However, the population of these castes is low in number. On the contrary, the population of Kayastha, Raute, Rai, Nurang, Kisan, Sunuwar, Sherpa, Bhote, Lepcha and Chidimar was less in 2011 compared to 2001. Twelve sub groups that were under Rai in the previous census were reported and classified separately in 2011.

Hinduism is reported to be the religion of 81.34% of the population followed by Buddhism (9.04 %), Islam (4.38%), Kirat (3.04 %), Christianity (1.41%), Prakriti and Bon. Christianity has seen a substantial increase in the number of its followers in the last ten years, although the number is still small compared to other religions.

2.8 One hundred and twenty three (123) languages were identified in the census of 2011, an increase from 92 reported in 2001. Nineteen mother tongues were spoken by 96% of the population, while 104 languages were spoken by 4% of the total population. Nepali is spoken by 44.64% of the population in 2011, which was reported to be spoken by 48% in 2001. The majority of the population (59%) were reported to be monolinguals and 41% of the population speak at least one second language.

2.9 Demographic and social indicators of the Nepalese population have been improving on the whole, but, the trend and pattern vary by caste and by region. For example, the population growth rate of different castes varies. Chhetri population is growing annually by 2.%, Brahmin by 1.08%, Magar by 1.52%, Tharu by 1.25%, Tamang by 1.85%, Newar by 0.59%, Kami by 3.46%, Yadav by 1.64% and Rai by 0.24%.

Household size varies by caste. For example, Musalman has a household size of 6.5 persons, Madhesi of 6.0, Newar's of 4.5 and hill Brahmin's of 4.2 persons.

Mean age at marriage is highest for Newar's at 23 years followed by Hill Brahmin's. This age is lowest for Madhesi Dalits and Musalman. Kayastha, Marwadi, Dev, Brahmin, Thakali and Newar were among those who ranked top in literacy. A Musalman woman gives birth to 3.7 children in her lifetime while a Newar woman gives birth to only 1.73 children. However, at the national level, the TFR is declining faster than over the last decade.

Anomalies exist in life expectancy by caste. Estimates of life expectancy seem to be high for Madhesi Dalits, which may be misleading about the socio-economic status of this caste. In fact, illiterate and socially backward castes usually have high mortality, but there is a higher tendency to underreport deaths.

One fourth of hill Dalits do not have access to a supply of safe drinking water. Similarly, only one tenth of Madhesi Dalits had a toilet facility in their housing premises. Eighty three per cent of Hill Brahmin and Newar possess cell (mobile) phones whereas a little over one third of Dalits have one.

In a nutshell, people of Mid-West Mountain and Hill, and Central Tarai are lagging behind in terms of most socio-economic indicators. Eastern, Central, Western hill and Western Tarai are reported to be relatively well-off, although some pockets and selected caste groups of Hill are also reported to be deprived of facilities and amenities. Most Madhesi people are engaged in elementary works whereas Hill people are engaged in professional work.

Volume III (Economic Demography)

3.1 Nepal's urbanisation level is low and much of its urbanisation is induced. Twenty seven per cent of Nepal's population lived in 130 designated urban areas or municipalities in 2014. Today, 62 districts have at least one municipality. Designated municipalities are referred to as urban areas and 7.2 million people live in such municipalities currently. Despite a low level of urbanisation, the annual growth rate of the urban population is 8%, about 6 times higher than the national population. This growth rate is mainly due to the additions in the number of municipalities during the intercensal periods. Regional differences are evident with the central development region and Tarai being more urbanised than mid-west and Mountain. Urban areas of 20,000 to 49,999 people dominate in number and population share. The urban population is relatively mature and literate compared to the rural population. Most of the urban areas, especially those newly declared and those in the Mountain and mid-and far-west, have a rural character in respect to physical facilities, literacy, occupational structure and educational attainment.

3.2 There has been a remarkable shift in the structure of the economically active population in the last 30 years and the changes are also visible over the last 10 years. Census data reveal that economic activity rates have been gradually declining over the intercensal periods. Crude activity rates have declined from 46% of the total

population of 10 years and over in 1981 to 42% in 2011. The trend is similar across regions, ecological belts and by sex. The rate in urban areas is lower than in rural areas, and is lower for females than males. The proportion of the employed population in the primary sector, mainly in agriculture, is gradually declining. But the proportion in the tertiary sector has increased from 6% in 1981 to 24% in 2011. Sixty per cent of the employed population reported agriculture as their main occupation. Among the employed population 27% were employees, 2% were an employer and 66% were own account workers, while 4% of the employed population reported that they had only worked for less than 3 months.

3.3 Households engaged in own account activities in the non-agricultural sector has declined from 20% in 2001 to 14% in 2011. The trend is similar in both rural and urban areas. Of households engaged in own account activities, 40 % are engaged in service activities, 42% in trade and 10% in cottage type industries.

3.4 In the last five decades, while the population has increased by nearly 3 fold, the volume of cultivated land has increased by less than two fold (from 1.6 million hectares to almost 2.5 million hectares). During this period, the average farm size has decreased from 1.1 ha to 0.7 ha per holding. The per capita production of cereals has gone up from 286 to 345 kg from 1971 to 2011. The milk and meat production per capita per year has also been gradually increasing, but the import of food has been increasing during this period indicating external dependence.

3.5 With the change in the population dynamics, social demography and the economic structure of the Nepalese population, the macroeconomic scenario of the country has also been shifting. The contribution of the agriculture sector to the GDP has declined from 61% in 1981 to 31% in 2011, while the contribution of the service sector has increased from 27% to 48% during this period. This structural transformation of the gross domestic product (GDP) from agriculture to service industries has definitely increased real per capita GDP. But, the growth rates of real GDP and GDP per capita are quite slow compared to other developing countries due to a low propensity to save, low labour productivity and low Capital Output Ratio.

3.6 Overall, the census has recorded various socio-economic indicators by spatial area and social groups. It seems that Mid West Mountain and Central Tarai have been lagging behind compared to other parts of the country, although some pockets of other parts of the country are also deprived of basic services. Therefore, in the context of the changing socio-economic and demographic picture of Nepal, a new population policy is imperative to address issues related to women, children, youth, marginalised groups and backward regions with an aim to move the country from least developed to a developing country as envisaged by the Government of Nepal.

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CHAPTER 1

CENTENARY OF THE POPULATION CENSUS OF NEPAL: A HISTORICAL PERSPECTIVE

Bikash Bista

Dipendra Bikram Sijapati

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CHAPTER 1

CENTENARY OF THE POPULATION CENSUS OF NEPAL: A HISTORICAL PERSPECTIVE

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Abstract

The 2011 Census marked 100 years of census taking in Nepal. Despite the challenges of political upheavals, conflicts or disease outbreaks, Nepal has managed to ensure the Census has been conducted at regular scheduled intervals. There are very few countries globally with such a record. There is a need to continue to document the lessons of the past census exercises and to build the capacity of the Central Bureau of Statistics and the new generation of statisticians in data analysis.

1.1 Introduction

Census, in statistical terms refers to the complete enumeration of a unit. The term, in modern days has become synonym of 'population census'. The word census comes from 'Latin' and during the Roman Empire referred to the registration of citizens and their property, for purposes of taxation. In the last few centuries, the use of the word census has been expanded and accordingly, the scope has been broadened. A population census today collects various demographic, social and economic information regarding individual and household in a specified time period. Census data can be used for a variety of purposes: from local planning to national planning, for poverty monitoring to electoral planning. The United Nations defined a 'population census' as a total process of collecting, compiling, evaluating, analyzing, and publishing or otherwise disseminating demographic, economic and social data pertaining, at a specified time, to all persons in a country or in a well delimited part of a country.¹

A person can be enumerated at a place where he or she is traced at the time of the enumeration. This method is termed as a *de facto* method. However, due to the difficulty to undertake such an operation in the context of increasing people's mobility, almost all countries nowadays have been counting persons from their usual place of residence which, in demographic terms is known as *de jure* method. Nepal has been applying a similar method, i.e. counting persons from their usual place of residence except homeless people who are enumerated on the census day. As such, the method is termed as *modified de jure*.

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1 *Principle and Recommendations for Population and Housing Censuses*, Revision 2, Statistical Papers, Series M (United Nations, 2008)

1.2 Historical background

The history of census taking in Nepal dates back to 1911 A.D. when the first census was carried out all over the country with the purpose of collecting data on youth. The head counting covered adult males possibly to estimate the military strength of the nation during the regime of Bhimsen Thapa (1806-1838). In fact, the existence of a Guthi (a cooperative Society) especially among Newars indicated the practice of counting households in Kathmandu Valley even before the period of Bhimsen Thapa. These censuses however, were conducted for limited purposes and were confined to small areas of the country. There were evidences of 'counts' taken during the period 1911-13 A.D. under the then Prime Minister Jung Bahadur Rana which was limited to the Kathmandu Valley and periphery only. The count included information on households as well as inventories of public goods such as stone taps, paati/inn (public resting places) as well as temples. Such lagat (list) has more archeological than statistical value currently. A statistical undertaking can be referred to as a 'census' when it includes basic features of universality, defined periodicity, individual enumeration and simultaneity. Therefore, the count done in 1911 A.D. at the time of Rana Prime Minister Chandra Shamsher is recognized officially as the first census of Nepal. Since then censuses have been conducted almost every ten years under different political regimes.

The census was thought to be an essential source of data for all kinds of governance systems in Nepal. During the Rana regime the monarchy was limited to a *de jure* type and Prime Ministers were designated solely from a particular family, in what was known as an autocratic system. The first four censuses were conducted under such political system. The system was overthrown after the 1951 A.D. democratic movement and the role of the king was supposed to be constitutional. The 1952/54 census - considered to be the first modern census - was conducted in a relatively open environment. The censuses of 1961, 1971 and 1981 were conducted under the Partyless Panchayat System. Similarly, after the restoration of the parliamentary multiparty system in 1991, the censuses of 1991 and 2001 were undertaken with ambitious questionnaires. However, the country underwent a period of instability with the monarchy overthrown after the popular peoples' movement of 2005 A.D. and the commencement of a 'Federal Republic System', which was initiated through the political polity and a constitution to be endorsed by the Constitutional Assembly. The eleventh census was conducted in 2011 with overwhelming aspirations of the people, political parties and social organizations.

Table 1.1: Census undertaken in different regimes

S. No.	Regime	Census years (A. D.)	Census Years in Bikram Sambat (B. S.)
1	Rana regime	1911, 1920, 1930, 1941/42	1968, 1977, 1987, 1998
2	Democratic regime (with monarchy)	1952/54	2009/2011
3	Panchayat regime (with monarchy)	1961, 1971, 1981	2018, 2028, 2038
4	Parliamentary regime (with constitutional monarchy)	1991, 2011	2048, 2058
5	Republic Nepal	2011	2068

1.3 First four censuses (1911, 1920, 1930 and 1941-42)

Every census is unique in its feature and is different in terms of operational procedures or could have been affected by some social or political events. In Nepal, every government appeared to have been enthusiastic to have a census for various reasons. Censuses have always been considered as a trusted source of information and people were familiar with such kind of statistical operations, although most of them were illiterate. The main purpose of the first four censuses was to identify youth fit to be recruited in the army, or to know the number of bonded labourers, slaves, etc. or to find out the number of persons retired but able to work etc. The then Prime Minister Chandra Shamsher had made a decision to abolish the kamara/kamari pratha.

1.3.1 Population Census 1911, the first in the history of census taking

Censuses have become more scientific and wider in coverage and scope over time. The 1911 A.D. population census was the first official national census in Nepali history that was initiated with an *Istihar* or a government notification published in 1910. The government issued an official order to the people through *Istihar* to cooperate with the enumerators who were to visit door to door for census taking. Patwaris, or land tax collectors were engaged in data collection all over the country. It seems that at that time there was limited data processing, although a lot of information was collected in the census schedule. The census had established a milestone in the tradition of census taking in Nepal. According to this census, there were 5,638,749 persons living in Nepal.

1.3.2 Population census 1920, aimed to prepare an inventory of slaves

The second census conducted in 1920 was aimed primarily to prepare an inventory of slaves by sex (Servant, Bandha and Kariya, Kamara-Kamari). Another purpose was to count the number of taxable people as well as young people available to be recruited in the security forces (military, and civil police) under the Gurkha Army (British Army) and Indian Army. The census notification had indicated one month for the enumeration (from 16th July to 15th August, 1920) with the enumeration date set on the 16th of July. Revenue collecting functionaries were instructed to send the completed data to the concerned district officers by the 15th of December and district officers were instructed to transmit them to the central office by the end of December 1920. Failure on their part to meet these deadlines was liable of punishment. The *Istihar* also referred to penalties in case census takers were found guilty of harassing the people or if they were involved in extortion from the general public.

1.3.3 Population census of 1930, conducted amid fears of the Nepal Tibet war

The third census was conducted in 1930 under Prime Minister Bhim Shamsher Jung Bahadur Rana, during a time of war rhetoric and preparation between Nepal and Tibet. The population count was therefore thought to be grossly undercounted because of the fear of compulsory recruitment in the army. The census was virtually only a 'listing'.

1.3.4 Census 1941-42, the first to be conducted by a permanent statistical office in Nepal

The fourth census was undertaken by a permanent statistical office named "Janasankhya Goswara", or the Department of Population under the rule of Prime Minister Juddha Shamsher Jung Bahadur Rana. The department had attempted to improve census coverage by improving the schedule, by recruiting more enumerators and also by reducing the census areas. For the first time temporary staffs were hired for 11 months to help and supervise revenue collecting agents involved in census taking. The census used three types of schedules, namely: household level, mauza/thum/praganna totals and district totals³.

1.3.5 Census items of the first four censuses

Among the first four censuses, the first one was regarded as the most reliable. It had used a short schedule with a limited number of questions. A broad age group was used for each person, which was then transcribed in an aggregate sheet. Furthermore, it included one essential feature which lacked in the following censuses. Other censuses used a relatively longer schedule consisting of information on the name of the head of the household, the age of individuals by sex, occupation, ability to work, and the number of livestock and means of transportation. However, the final results were presented in aggregates on a head count basis.

3 ONE HUNDRED YEARS OF CENSUS TAKING , THE POPULATION CENSUSES OF NEPAL, 2014, page 9, by
Tunga Shiromani Bastola

Table 1.2: Census items of the first four censuses

S. No.	Census items	1911	1920	1930	1941-42
1.	Identification as Mauza (number, village)	Yes	Yes	Yes	Yes
2.	Type of house (pukki, kachi, phus ko)	Yes	Yes	Yes	Yes
3.	Caste	Yes	Yes	Yes	Yes
4.	Within country and outside country	No	Yes	Yes	Yes
5.	Number by broad age group and by sex				
5.1	Below 16 years (male, female)	Yes	Yes	Yes	Yes
5.2	Up to 30 years	No	No	No	Yes
5.3	16-50 years (male, female)	Yes	Yes	Yes	Yes
5.4	50 + years (male, female)	Yes	Yes	Yes	Yes
6.	Within country and outside country by literacy and with or without pension	No.	Yes	Yes	Yes
7.	Literacy Phant				
7.1	Able to read (male, female)	Yes	Yes	Yes	Yes
7.2	Unable to read (Male, Female)	Yes	Yes	Yes	Yes
8.	Within country and outside country				
9.	Elam (employment/occupation)	No	Yes	Yes	Yes
9.1	Agriculture	Yes	Yes	Yes	Yes
9.2	Sales/trade	Yes	Yes	Yes	Yes
9.3	Service (army, civil)	Yes	Yes	Yes	Yes
9.4	Student	Yes	Yes	Yes	Yes
10.	Unemployed	Yes	Yes	Yes	Yes
11.	Retired from service				
11.1	Within country /able/unable to work	No	No	Yes	Yes
11.2	Outside country with pension and able to work	No	No	Yes	Yes
11.3	Without pension able/unable to work	No	No	Yes	Yes
12.	Livestock by type (elephant, horse, cow, ox buffalo, ass, mule sheep, goat, chauri, lulu shumo)	Yes	Yes	Yes	Yes
13.	Possession of Cart, Doli (palanquiun) etc.	Yes	Yes	Yes	Yes
14.	Servant and bandha, bonded labor,(male, female)	Yes	Yes	Yes	Yes
15.	Kariya /slave (kamara, kamari)	No	Yes	Yes	Yes
16.	Remarks	Yes	Yes	Yes	Yes

1.4 Population census of 1952/54, the first modern census

The 1952-54 census was the first modern one conducted after the advent of the democracy in Nepal. It was conducted by the then Department of Statistics that had been - established in the early 1950s with a core of five officers brought from the Department of Industrial and Commercial Intelligence. Those five officers had received training on census methods at the International Training Center on Censuses and Statistics sponsored by the United Nations and the Government of India, in New Delhi in 1949. The government had allocated Rs. 3 million for the census in the first public budget in the history of Nepal.

The United Nations was asked to provide technical support in organizing a permanent statistical office, developing suitable statistical programmes and in training personnel. Mr. Howard J. Kumin, a U.N. statistical expert arrived in Kathmandu in July 1957 in response to such request. Kulanath Lohani was appointed as Census Commissioner. Thir Bahadur Raimajhi, Chief census superintendent, together with the other four census superintendents, Shri Narakanta Adhikari, Shri Kaiser Bahadur Acharya, Shri Satya Mohan Joshi and Shri Hridayanath Sharma had prepared the census plan in 1950 and were in charge of the entire operation in 1952.

The plan for the census was drawn up after taking into consideration the concepts recommended by the U.N. for the world census of 1950 and the experience gained in a trial census held in the town of Banepa. The Census was carried out in two stages: the Eastern part of the country was enumerated in 1952 and the Western one in 1954. The census day for the East was Jestha 15, 2009 B.S. (28th May 1954 A.D.) and Jestha 15, 2011 B.S. (28th May, 1954 A.D.) for the West. In each case the actual enumeration lasted about 3 weeks. Mahottari, a district located in the East was enumerated in 1954 during the census of the West.

In preparation for the census, 200 supervisors were trained in the central office in Kathmandu and sent to the field. The number of centers located all over the country was 1,657. Those centres had selected, trained and supervised 17,000 enumerators. Most of them were the local state rent collectors. The enumeration involved transportation from and to Kathmandu of about 19 tonnes of census schedule forms and publicity materials. Practically all of this material was carried by porters over difficult mountain trails where a single one way journey could take up to four weeks. After the enumeration phase was completed, the Department of Statistics was required to do the necessary sorting and tabulation of the 8.5 million individual data slips manually as it did not have any type of office equipment. This operation alone lasted over two years and was carried out by the census supervisors when they returned from the field.

Preliminary results were published in March 1955 and detailed tables in Nepali were submitted to the Government in April 1957. In addition to the geographic areas shown in this report, the Department of Statistics had produced similar data for the 'thums' or 'progannas' and districts. Also, a complete list of villages showing the population by sex, number of houses, and number of families was also prepared. The Patwaris and the Mukhiyas all over the country acted as enumerators and rendered a valuable service. Table 1.3 provides a summary of the population count by region.

Table 1.3: Population census 1952-54

Regions*	Population present (at home)	Area in square miles	Persons per square mile	Density per square mile
Nepal	8,256,625	100.0	54,362	152
Hill Regions	5,867,208	71.1	45,097	130
Eastern Hills	1,708,816	20.7	10,114	169
Western Hills	3,229,177	39.1	29,777	108
Kathmandu Valley	410,995	5	218	1,885
East Inner Terai	189,228	2.3	1,829	103
Center Inner Terai	239,677	2.9	2,445	98
West Inner Terai	89,315	1.1	714	125
Terai Regions	2,389,417	28.9	9,265	258
Eastern Terai	1,806,049	21.9	5,115	253
Mid Western Terai	348,179	4.2	1,307	266
Far Western Terai	235,189	2.8	2,843	83

* The regions in the table do not match with the regions applied in later censuses.

1.5 Censuses under Panchayat regime

1.5.1 Population census of 1961, the first census of the Central Bureau of Statistics

The 1961 population census was conducted during the transitional period, just after the parliament was dismissed. By that time the Central Bureau of Statistics (CBS) had already been established under the Statistical Act of 1958. The census was more organized than previous ones as it followed international standards and census procedures. Village chiefs and land revenue collectors/agents were again involved in the task of census taking. Village chiefs and revenue agents acted as enumerators in some areas, and assisted in the task of field supervisors in others. The supervisors were recruited from local communities in each district and were given a census sub-zone as responsibility. The supervisors' tasks were closely scrutinized by a section officer deputed to each census zone. There were 300 supervisors and 15,933 enumerators involved in the census taking in 1961. The 55 administrative districts of that time were divided into 18 census zones and 102 sub-zones consisting of 456 census areas and 28,400 villages. Villages were the smallest unit in each district from where data was collected.

1.5.2 Population census of 1971, marked with the first use of computers

The 1971 population census was the seventh in the history of census taking in Nepal and used computer for data processing. By that time, the country was administratively restructured with the country divided into 14 zones and 75 districts. Some 28,400 villages were regrouped into nearly 4,000 village Panchayats. For the purpose of the census 17 zones were created and one zonal census officer was appointed for each zone to supervise and administer the census operations. The zonal officer was assisted by one non-gazette first class officer and other subordinates. Seventeen training centers were established to train supervisors and enumerators. Zonal officers and their assistants were recruited and trained supervisors and enumerators. The zonal officers and their assistants were recruited and trained at the center. There were about 12,000 enumerators and 500 supervisors who were directly involved in the actual enumeration. Enumerators were paid 5 paisa for each person enumerated. The census applied international comparable concepts, definitions and classifications. The census schedules were pre-tested in two village Panchayats and one urban area. The 1971 census provided data at the ward level. Data capturing and tabulation was done using a main frame computer, namely IBM 1401. Thorough population count by sex at the ward level was published in separate booklets. Census volumes containing standard tables on various socio-economic and demographic characteristics of the population were made available only at district levels. Table 1.4 provides the population counts of seven censuses by Hill, Tarai and Kathmandu valley.

Table 1.4: Enumerated population and intercensal change by physiographic regions of Nepal

Year	Hill	Terai	Kathmandu valley	Nepal
1911	3,292,911	2,054,959	290,879	5,638,749
1920	3,144,843	2,122,036	306,909	5,573,788
1930	3,139,854	2,130,487	262,233	5,532,574
1942	3,819,931	2,138,579	325,139	6,283,649
1952/54	4,979,713	2,865,917	410,995	8,256,625
1961	5,531,307	3,421,699	459,990	9,412,996
1971	6,167,309	4,769,763	618,911	11,555,983
Intercensal Change				
1911- 1920	(-148,068)	67,077	16,030	(-64,961)
1920- 1930	(-4,989)	8,451	(-44,676)	(41,214)
1930-1942	680,077	8,092	62,906	751,075
1942- 52/54	1,159,782	727,338	85,856	1,972,976

Year	Hill	Terai	Kathmandu valley	Nepal
1952/54 -61	551,594	555,782	48,995	1,156,371
1961-1971	636,002	1,348,064	158,921	2,142,987
Intercensal annual growth rate (exponential) in %				
1911-1920	(0.51)	0.36	0.60	(-0.13)
1920-1930	(-0.02)	0.04	(-1.57)	(-0.07)
1930-1942	1.78	0.03	1.95	1.16
1942-52/54	2.21	2.44	1.95	2.28
1952/54-61	1.31	2.22	1.41	1.64
1961-1971	1.09	3.32	2.97	2.05

Source: Analysis of Population Statistics of Nepal, 1977, CBS,

1.5.3 Population census of 1981, initiation of census mapping

By 1981, CBS had improved its capacity to undertake censuses and surveys in terms of human resources and physical infrastructure. CBS had a modern building and benefitted from international trainings. UNFPA, the United Nations Population Fund became a partner of CBS in carrying out large statistical endeavors since then. Attempts were made to enhance the quality of field work by increasing the ratio of supervisor to enumerators and by developing census maps. The number of supervisors and assistant supervisors and enumerators were 150, 1,500 and 15,000 respectively. The minimum educational qualification for the enumerators was just literacy but most of them who were locally employed had completed 8 or more years of school education. The enumerators were trained in the District Census Office (DCO) under the direction of DCO who was assisted by his two senior assistants in the task of training. In few districts some supervisors were also involved in the training programme. The ratio was about 3 times higher than in past censuses. However, the volume of work of a supervisor had also increased with the increase of the population from 11.56 million in 1971 to 15.02 million in 1981. Each assistant supervisor was in charge of approximately two Panchayats and each, on average, supervised the work of 10 enumerators. Each enumerator covered not more than three wards depending on the size of the population and the area of the ward. Seventy five District Census Officers were appointed. The district officer was assisted by one supervisor and they were rigorously trained for about two months in various aspects of census taking at headquarters. Enumerators were paid 20 paisa per person enumerated.

Table 1.5: Operation field staff by Census years 1952/54-1981

Census year	Population (in millions)	Supervisors	Enumerators	Population/ enumerator ratio	Enumerator/ supervisor ratio
1952/54	8.26	200	17,000	486	85
1961	9.41	300	15,933	591	53
1971	11.56	500	12,000	963	24
1981	15.02	1,500	15,000	1,001	10

In 1981 the census operation was carried out in two stages. In the first stage, supervisors were engaged in preparing a household listing as accurately as possible. In the second stage, the listing was followed by the enumerators for the actual enumeration. During the 1981 census, the household list was used as a guide by the enumerators. The household schedule collected information such as the serial number of the household, the name of the head of the household, the number of household members by sex and the name of the village. The fieldwork was conducted for 18 days while the 1971 census took only 15 days. The field supervisors checked each enumerator's work in the field for major inconsistencies. The completed schedules returned to the census head office from the field were carefully edited and coded.

Table 1.6: Items asked in household schedules in 1961, 1971 and 1981 censuses

S. N.	Topics	1961	1971	1981
	Identification /Geographic location: Zone/Dist/Town/Village panchayat/Ward	x	x	X
1	Serial no and number of housing units	X	X	X
2	Serial no and number of households	X	X	X
3	Name and caste of head of household	X	x	X
4	Number of family members by sex (any member away from home for more than 6 months was excluded)	X	x	X
5	Number of absentee members of the family	X	x	X
6	Sex of absentees	X	X	X
7	Age of absentees	X	X	X
8	Destination of absentee members	-	x	X
9	Reason for leaving home	-	-	X
10	Number of deaths in the family during last 12 months/age/sex	X	x	X
11	Births	X	X	X
12	Sex of the deceased	X	X	X
13	Age of deceased	X	X	X
14	Treatment received or not	-	x	-
15	Number of disabled persons in the family		x	X
16	Sex of disabled person		X	X
17	Age of disabled person		x	X
18	Male marriages during last year		x	-
19	Male divorces during last years		X	-
20	Number of transistor radios owned by family		-	X
21	Occupation (Agriculture, cottage industry, etc.) of family			X
22	Agricultural holding operated by the household	X		
23	Household with land operated	X	X	
24	Household with livestock	-	X	
25	Household with fishery	-	X	
26	Household durables (Number of Radio)			
26	Remarks	X	-	-

* Adopted from *population Monograph of Nepal, 1987, CBS*
X included in the census.

Various efforts were made to improve data collection procedures for the 1981 census undertaking. For the rural areas 2,912 village Panchayat level cartographic maps were prepared. These maps were extensively used by the enumerators to locate scattered pockets of villages in the rural areas and blocks of households in urban dwellings. The completed schedules returned to the headquarters from the field, were carefully edited and coded. Twenty supervisors and 200 coders were employed for the coding. The work was completed in less than 9 months. The main frame computer, ICL was used for data capturing and tabulation. Table 1.6 provides household census items as well as individual information of three censuses.

Table 1.7: List of personal topics asked in 1961, 1971 and 1981 census of Nepal*

S. N.	Topic	1961	1971	1981	S. N.	Topic	1961	1971	1981
	Personal Characteristics					Personal Characteristics (Contd..)			
1	Name and caste of head of household	X	X	X	13	Children ever born alive	X	X	X
2	Relationship to head	X	X	X	14	Children born in last 12 months	X	X	X
3	Identification number of mother	-	-	X	15	Place of birth	X	X	X
4	Sex	X	X	X	16	Duration of stay in the current place (for those born outside the current district)	-	-	X
5	Age	X	X	X	17	Reason for residence in the current district (for those born outside the current district)	-	-	X
6	Citizenship	X	X	X		Gainfully employed/not employed in the last 7 days	X	-	X
7	Language/Mother tongue	X	X	X	18	If unemployed, was the person looking/not looking for employment		-	X
8	Religion	X	X	X	19	Gainfully employed/not employed for at least 8 months during the last 12 months	X	X	X
9	Literacy	X	X	X	20	Not working (because of being a student, disabled, etc.)	X	X	X
10	Education completed/ School enrolment	X	X	-	21	Main occupation and main industry	X	X	X
11	Specialised subjects (for those above S.L.C)	-	-	X	22	Employer/employee/self-employed/partially employed	X	X	X
12	Marital status	X	X	X					

* Adopted from *population Monograph of Nepal, 1987, CBS*
X included in the census.

1.6 Censuses after restoration of the parliamentary democracy

1.6.1 Population census of 1991 with social inclusion perspective

After the restoration of democracy in 1990, people from all sectors and parts of the country had overwhelming aspirations. One of the most pressing demands was to collect data based on caste/ethnicity and by locality. The census was also made mandatory in the constitution and the questionnaire included questions on caste and ethnicity. A Technical Committee was formed well in advance and met regularly to improve the census questionnaire and related activities. This was the fifth scientifically conducted census of the country.

The field work in 1991 took place in the month of June (from 5 to 22) as in all other previous censuses. The enumeration was completed in approximately 18 days. Each administrative district was also a census district and was divided into two or three census areas depending on the size of the population. Manang district, however, was treated as one area due to its small population size. The mode of payment for the field workers was different in 1991 as compared to 1981. In the 1981 census each enumerators was paid Rs. 0.20 per record completed and there was no other monetary reward, whereas in 1991 enumerators were given a fixed sum of money for the work.

1.6.2 Population census of 2001

The 2001 national population census was the tenth in the series of census taking in Nepal. It was the largest statistical operation in the country undertaken at the beginning of the 21st century. It was carried out at a juncture which marked the transition from one century and millennium to the next. There were notable differences in the questionnaire as well as methodology of data collection. The main objectives of the 2001 census were as follows:

- To provide gender disaggregated data on the state of the population, housing and household facilities in Nepal to be used as benchmarks for development purposes;
- To provide disaggregated data for small administrative units on population, housing and household facilities; and
- To provide a frame for other sample survey.

Mainstreaming and sensitization of gender issues

The 2001 census addressed for the first time gender issues by introducing questions on women empowerment in terms of ownership of household assets. The census recruited at least 20 percent of female interviewers. Similarly, census publicity emphasized the need to capture female economic activities and household chores, following the 1993 System of National Accounts recommendations regarding extended economic activities.

Sampling in the Census

The census introduced sampling in the census for the first time. The concept of short and long forms was introduced, with the long form consisting of an extended questionnaire to be administered in every eighth household.

Wider census scope

The census attempted to collect poverty related indicators at the household level by asking detail information on household facilities and amenities. The census also included a question on caste/ethnicity. Standard classifications of industry and occupation-based ISIC and ISOC respectively were prepared for Nepal.

Despite the good census preparation, the fieldwork was affected by the conflict and census staff could not access many parts of the country. As many as 83 VDCs in 12 districts were completely affected, and did not even have a population count as part of the census results. As such, 957 wards, approximately 79,000 households and a little over 400,000 individuals were missed in the census.

1.7 Population census of 2011 marks 100 years of census taking in Nepal

The 2011 national Population and Housing Census, the eleventh, was a historical statistical operation for Nepal as it marked hundred years of census taking in Nepal. The country was passing through a process of social, economic, demographic, and political changes. The census collected extensive data on housing and household facilities of Nepalese households. Therefore, it was virtually a housing census too. Its coverage was comprehensive and continued to include features related to gender and social inclusion. The census was successful in covering all villages, cities and parts of the country.

The census had prepared detailed EA maps for all municipalities and maps for all Village Development Committees. This was the most inclusive census ever in terms of participation of female enumerators and representation of different castes and ethnicities. Over 40 percent engaged in the field work were female enumerators. New features also included extensive publicity, independent observation by civil society and maximum use of domestic resources. Details about the management aspect of the census can be found in a separate chapter of this volume.

Table 1.8: Processing time, methods, hardware and software used in different censuses

Census year	No. of years taken for processing	Type of processing	Hardware	Software used
1952/54	2	Manual	-	-
1961	4.5	Manual	-	-
1971	1.5	Computer	IBM/Main Frame	
1981	3.5*	Computer	ICL/Main Frame	IMPS/SPSS
1991	2	Computer	Desktop	IMPS/SPSS
2001	1.5	Computer	Desktop	IMPS/SPSS/ EXCEL
2011	1.5	Computer	Laptop	CSPPro/SPSS/ EXCEL

1.8 One hundred years of population changes (1911 -2011)

Through the 2011 census it is possible to observe the changes that have taken place in the last 100 years in the country. From 1911 to 2011, the count increased from 5.6 million to 26.5 million, or an increase of 21.5 million in 100 years. The country has gone through ups and downs throughout last century. The second third and fourth censuses were affected by the First and Second World Wars, as well as different epidemics. However, the population continued to grow except for the second and the third censuses. The annual growth rate of the population was phenomenal after the fourth census. The growth rate reached the highest (2.62 percent per annum) during the decade 1971 -1981. The rate has been fluctuating after 1981 and slowed down to 1.35 percent per annum during 2001-2011 (Table 1.9). While it took about 50 years to double from 5.6 million to 11.2 million (1911-1971), it took only 30 years to double from 11.6 million to 23.2 million (1971-2001). At the present rate of growth (2011 census), the population is expected to double again in another 51 years.

Table 1.9: One hundred years of population changes (1911-2011)

Census year	Total Population	Number	Decadal change (%)	Sex ratio	Growth over 1911 (percent)	Annual growth rate	Pop. density per sq. km.
1911	5,638,749	-	-	100.1	-	-	38.3
1920	5,573,788	-64961	-1.15	100.9	-1.15	-0.13	37.9
1930	5,532,574	-41,214	-0.74	n a	-1.88	-0.07	37.6
1941	6,283,649	751,075	13.58	104.3	11.44	1.16	42.7
1952/54	8,256,625	1,972,976	31.40	96.8	46.43	2.30	56.1
1961	9,412,996	1,156,371	14.01	97.0	66.93	1.65	64.0
1971	11,555,983	2,142,987	22.77	101.4	104.94	2.07	79.0
1981	15,022,839	3,466,856	30.00	105.0	166.42	2.62	102.1
1991	18,491,097	3,468,258	23.09	99.5	227.93	2.10	125.6
2001	23,151,423	4,660,326	25.20	99.8	310.58	2.24	157.3
2011	26,494,504	3,343,081	14.44	94.2	369.86	1.35	180

Source: Population monographs of Nepal 2003, Vol I & II, CBS

1.9 Conclusion

The census undertaking is not a recent endeavour in the administrative process of Nepal. Though the country has gained experience in establishing a census tradition and while the first scientific census was carried out only in 1952/54 and in subsequent censuses, the first population count did in fact, take place in 1911. Afterwards, censuses were taken approximately every ten years. Most probably, following the footsteps of the British Administration in India, Nepal did witness four population counts under the Rana administration (1846-1950). However, there is evidence that these types of censuses had taken place even before the takeover of Jung Bahadur Rana, the first Rana Prime Minister (1846-1877). These kinds of censuses if they really did exist would certainly have been no more than head counts, used in the past for taxation and other administrative purposes.

While the population counts that were conducted before 1941 under the Rana regime used a sort of census schedule with items such as the name of the head of the household, the age of persons by sex, occupation, ability to work, number of live stock and means of transportation, the final results were merely aggregates, and consisted in head counts only. Four censuses between 1911 and 1941 were carried out through the landlord system (Jamindari). The schedules were distributed to the Jimmawals and Patwaris (the landlord agents responsible for collecting the land revenue), who were asked to carry out this task with everyone in their jurisdiction, using their own resources. However, none of these censuses can be considered as complete or accurate due to the apparent weakness in the system and supervision.

The period covering 1911 to 1954 consisted of the introduction of a scientific approach regarding the need and importance of population statistics for economic, social and educational planning. During this period, the country invested in modern techniques for data collection using internationally accepted definitions, concepts and worldwide comparable classifications. In fact, through the enactment of the Statistics Act in 1958, the statistical institution was given considerable importance and means to operate by the different governments, second only to the military.

The period from the 1950s to the 1990s saw profound changes aimed at modernizing the country through acceleration of economic growth. The demand for more comprehensive data on population, agriculture and industries for nation-wide economic development plan became compelling. The application of modern statistical techniques in collecting and tabulating population data became an urgent necessity. The installation of modern computers enabled tabulation of information collected through the census schedule in more detail and over a shorter period of time.

The cumulative country experience of past censuses can be of great support in the preparation of a new census. Every census should provide additional experience which can be used for formulating and improving methods and techniques to be used in the undertaking of subsequent censuses, with the aim of obtaining more comprehensive and accurate data. The population and housing censuses are usually taken every ten years. Within such a period, there are likely to be changes in management and qualified statisticians who participated in the census operation. Therefore, a post-enumeration report describing the methodology, difficulties encountered in the field and ways in which omissions and vague entries were addressed are of fundamental importance not only for the individual census analysis, but also as a guideline for future censuses. Complete records of field reports, training courses, instructions for the enumeration, editing, verification, coding and processing should be kept at the census office and arranged in such a manner that information on any aspect of the census operation can be easily retrieved for future use.

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CHAPTER 2

POPULATION SIZE, GROWTH AND DISTRIBUTION

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Abstract

The objective of this chapter is to examine trends in population size, growth and distribution in Nepal. The method of percentage distribution and population composition of the geographical areas is used to study the population distribution. Changes in the population growth and patterns of population distribution are described and analysed against census data over time. As per the 2011 census, Nepal's population stood at 26.4 million, which is an increase of 3.3 million when compared to the 23.1 million population recorded in the 2001 census. The population has increased by 14.4% during the past decade, with an average annual growth rate of 1.35%, lower than the 2.25% growth rate reported in the 2001 census. The low growth rate may be attributed to the large number of absentee population recorded at 1.92 million in 2011. By ecological zones, Tarai accounts for 50% of the total population, while the total population of Hill and Mountain is approximately 43% and 7% respectively. Although the movement of people from Mountain and Hill to Tarai has slowed down in the latter period, agricultural land and employment opportunities are still the primary two factors that explain this trend. The fastest decadal population growth rate is found in Kathmandu district (4.78%) while the least is in Manang (-3.83%). Twenty-seven hilly and mountainous districts, including Manang, Khotang, Mustang, Terhathum, and Bhojpur recorded a negative population growth rate during the last decade due to internal migration and the outflow of migrant workers abroad. Overall, the current dramatic decline in the population growth rate may be attributed to the heavy outflow of migrant workers from the country along with decreasing fertility and mortality. It seems that unmanaged migration (internal and international) has been the prominent factor influencing the spatial distribution, density and growth rate of the population. It is therefore recommended that the management of migration through the migration influencing policies and programmes should be more closely monitored.

2.1 Introduction

The census is the major source for comprehensive population data for policy formulation and implementation. Census data are important to each and every community because they provide information about the population at every level, across a range of different criteria i.e. size, growth, spatial distribution, age-sex composition, marriage rate, fertility, mortality, migration, social composition, education, employment, language spoken etc. This data about the composition and characteristics of the population can be used at national, regional and community levels to identify the needs and requirements of each group in planning for the provision of services.

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The first population census in Nepal was conducted in 1911; the census of 2011 was the 11th in 100 years. The second census was conducted in 1920. The third and fourth censuses were carried out in 1930 and 1941/42 respectively. The fifth census was undertaken over two years in 1952 and 1954. The eastern part of the country, excluding Mahottari, was enumerated in 1952 while the remainder of the country was enumerated in 1954. The sixth census was held in 1961. Periodic censuses have been undertaken at roughly ten yearly intervals up to 1961 and thereafter every ten years. The censuses conducted up to 1941/42 did not explain the census methodology. The information collected in these earlier censuses is limited to head counts, despite the fact that the questionnaire covered other socio-economic and demographic characteristics. In 1952/54, the census was conducted using internationally acceptable definitions and concepts, but due to the time reference factor, the 1961 census is generally accepted as the first scientific census in terms of international standards and comparisons. The subsequent censuses were all conducted at one point of time and adhere to international standards.

The establishment of a vital registration system in the country began as early as 1971, however, its coverage was not satisfactory. In addition, there are no other nationally representative regular population surveys and population registers that maintain demographic information, such as current size, growth and spatial distribution of the population. In this regard, the decennial population censuses are the only sources of comprehensive population data.

The demographic outcomes of size, structure and spatial distribution of the population are determined by the demographic processes of fertility, mortality and migration. The demographic outcomes in turn affect the operation of socio-economic processes – savings/investment, land and labour utilisation, consumption of goods and services (e.g. food, housing, health and educational services), public expenditure, international trade and finance. These socio-economic processes help to determine the socio-economic outcomes - level of income, employment, educational status, health/nutrition status, housing/sanitation and environmental quality. Population data on spatial distribution are important for several purposes. They generally form the basis for determining the electoral constituencies. They are useful in relation to socio-economic and administrative planning and provide basic data for making population projections.

A government usually tries to obtain information on size, growth and spatial distribution of the population for development planning. Population data are often needed for geographic divisions and subdivisions of a country. For adequate planning at the national and regional levels, a country requires detailed information about the characteristics of its society and the specific goals of government programmes to improve the living conditions of the people. In this context, this chapter “Population Size, Growth, and Distribution” is invaluable for national development planning purposes.

2.2 Population size and growth

Population growth refers to the change in the number of persons residing in an area during a specified period of time. The change may be either positive or negative. The demographic structure of a country can be understood by the analysis of its population growth. Population growth serves as one of the indices of a region’s development in relation to its resources.

Table 2.1 shows the total population enumerated at various censuses (1911-2011), along with corresponding annual growth rates and the timeline over which the population doubled. The first Population Census in Nepal, conducted in the year 1911, showed a population of 5.6 million. A century after, the eleventh Population Census in Nepal, conducted in the year 2011, showed a population of 26.4 million. This shows an annual growth rate of 1.35% during the intercensal period.

Table 2.1: Population size, growth rate and doubling time, Nepal, 1911 – 2011

Census year	Total population	Population change	Annual growth rate (exponential)	Doubling time
1911	5,638,749		-	-
1920	5,573,788	- 64,961	-0.13	-
1930	5,532,574	41,214	-0.07	-
1941-42	6,283,649	7,51,075	1.16	60
1952-54	8,256,625	19,72,976	2.27	31
1961	9,412,996	11,56,371	1.64	42
1971	11,555,983	21,42,987	2.05	34
1981	15,022,839	34,66,856	2.62	26
1991	18,491,097	34,68,258	2.08	33
2001	23,151,423	46,60,326	2.25	31
2011	26,494,504	3,343,081	1.35	51

Source: CBS, 1995 Chapter I Table 1; 2003 Table 2.1; 2012 National Report, Vol. I Table 12

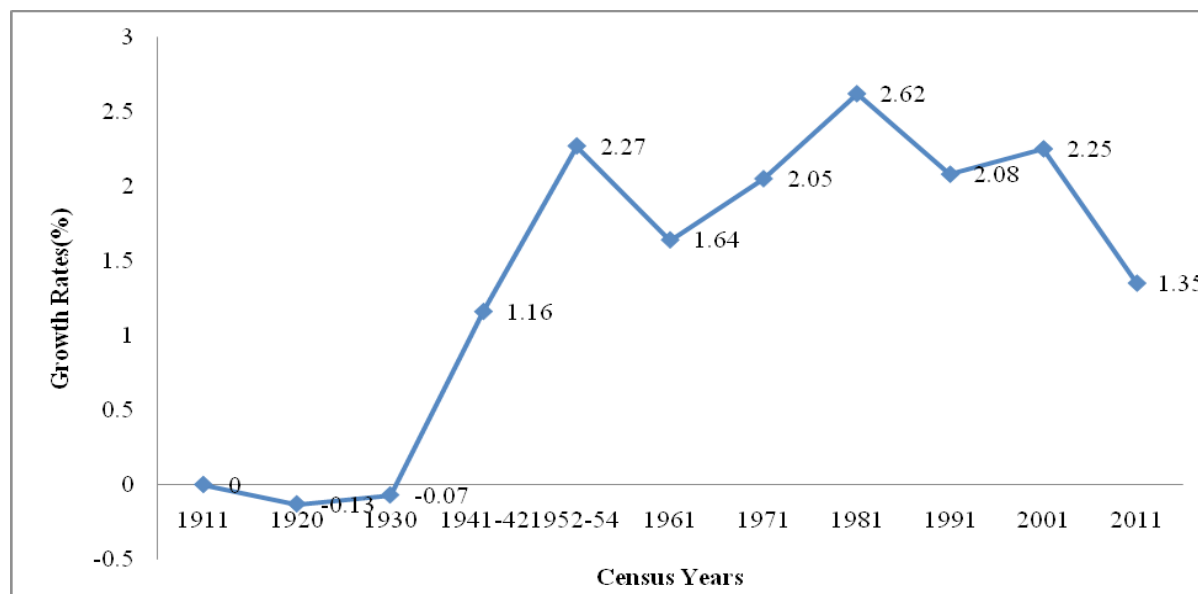
Table 2.1 illustrates that the population of Nepal declined up to 1930, and after this period started to increase. However, the population of the country did not increase at a uniform rate. At the time of the latest census 2011, the population of Nepal stood at 26,494,504, an increase of 3,343,081(14%) from 2001. In 1911, Nepal's total population was recorded at 5.6 million. The main reasons for population decline during the period 1911 to 1930 are not known but may be attributed to the effects of the worldwide influenza epidemic and the heavy casualties suffered by the Nepalese army in the First World War (CBS, 1987; CBS, 1995; CBS, 2003). It is argued that there may also have been issues of undercounting of the population in these censuses. The censuses of 1920, 1930 and 1941/42 were conducted in a typical periods. For example, the census of 1920 was conducted immediately after the First World War, and the 1941/42 census was implemented during the mid-period of the Second World War in which approximately 1,80,000 to 2,00,000 Nepalese soldiers participated respectively on the Allied side (Singh, 1983). In addition, the census of 1930 was taken at a time when Nepal was preparing for war with Tibet (now China). Although the population, which suffered heavy casualties in the war, were mostly males, the sex ratio was high (Singh, 1983; CBS, 2003) i.e. there were more males than females. Particularly in pre-modern times, the emphasis in census taking was upon fiscal and military potentials. Hence, women, children, aliens, slaves or aborigines were usually undercounted or omitted altogether. It is therefore natural to expect that the censuses in Nepal up to 1941/42 did not count the country's population in its totality.

The population growth rate during the period 1941/42 to 1952/54 was surprisingly high when compared to the earlier period. Prior to the 1952/54 censuses, the overall census coverage was poor, which may have impacted on the high growth rate of the population reported in 1952/54. Another contributing factor could be that Nepal became a democratic country in 1951, and after this change an attempt was made to improve census taking. Census questionnaires were designed in accordance to international convention, and people understood the purpose and usefulness of censuses. Also census officers were sent abroad for training (CBS, 2003). This may have led to an overall improvement in the census coverage. The other explanation is that the census was taken at two different points in time that could have resulted in the over counting of populations in certain areas between the two enumerations.

Although the population growth rate of Nepal was 1.64% per annum from 1952/54 to 1961, it was lower than the period from 1941/42 to 1952/54, which was 2.27% per annum. However, population growth rates have increased by more than 2% per annum from the 1971 to 2001 censuses, even though growth rates do not follow a particular trend. The population growth rate observed during the period 1971 to 1981 is high compared to the period from 1981 to 1991. This may be attributed to the rapid decline in mortality without any corresponding fall in fertility.

The population growth rate during the period 1981 to 1991 shows some decline, while the population growth rate from 1991 to 2001 was again higher than the previous decade. The annual growth rate of the population relates to the quality of data obtained in the censuses, notably coverage and undercount and possibly over-counts in certain censuses. In 1981, over-enumeration was likely due to the high monetary incentive given to field workers when compared to all other censuses (Karki, 1992).

Figure 2.1: Average annual exponential growth rate, Nepal, 1911–2011



Source: Table 2.1

Nepal's population has risen to 26.4 million during the last 10 years, which is 3.3 million more than the 23.1 million recorded in 2001. The population has increased by 14.44% during the past decade, with an average annual growth rate of 1.35%, far lower than the 2.25% growth rate recorded in the 2001 census. The growth rate is low largely due to the outflow of migrant workers. It has to be noted that over 1.92 million of the population is absent (CBS, 2012 Table 11). The absent population has more than doubled in the past decade from 762,181 to 1,921,494. A fluctuation in the annual growth rate (Figure 2.1) is also reflected in the doubling time of Nepal's populations (Table 2.1).

The Post Enumeration Survey (PES), designed to evaluate the 1991 and 2001 census data quality with respect to completeness of coverage, was delayed by four months, while in 1991 it was delayed by six months. Although in the 1991 census an undercount of 11% was estimated, the results of the Post Enumeration Survey (PES) were not accepted for a number of reasons, including the timing of the PES (CBS, 1995). However the net omission is estimated to be 5.3% for 2001 and 3.6% for 2011.

2.3 Spatial distribution of the population

The spatial distribution of the population of a country is influenced by environmental, historical, socio-cultural, demographic, economic, political and development factors. Environmental geographical factors, such as climate, natural resources, terrain, soils, etc. will account for economic activities in various regions of the country and can, therefore, indirectly affect the spatial distribution of the population. The population distribution in the country has been traditionally determined by the availability of land for cultivation, quality of soil, availability of water resources, favourable climatic conditions, topography and availability of transportation facilities. The main concentration of the population is in the plain region.

Of the several methods of accounting for the spatial distribution of the population, the simplest way is the percentage distribution of the population over geographical areas. In this chapter, the method of percentage distribution and population composition of geographical areas is used to study the population distribution. Spatial distribution of the population of Nepal in this chapter is considered by: i) Ecological zones, ii) Development regions, iii) Districts, iv) Village Development Committees (VDCs)/Municipalities and v) Rural/Urban areas.

2.3.1 Population distribution by ecological zones

Topographically, Nepal is divided into three ecological zones: a) Mountain, (b) Hill and (c) Tarai. These zones are quite different in terms of climate, physical features, landscape and altitude. The land area of the Mountain Region lies at an altitude of 4,877 metres to 8,848 metres above sea level. This zone makes up 35% of the total land area of Nepal. It includes the rocky areas of the Himalayan range that are not appropriate for human settlements. Hill zone lies at an altitude of 610 to 4,877 metres above sea level. This zone covers 42% of the land area of Nepal. There are many valleys and river basins located in this region that are suitable for human settlement, for example Kathmandu and Pokhara. Tarai zone is situated at an altitude less than or equal to 610 metres above sea level. It is the most fertile and low-lying region of Nepal and constitutes 23% of the total land area of Nepal.

The population distribution of Nepal by ecological zones for the census year 1952/54 to 2011 is presented in Table 2.2.

Table 2.2: Distribution of population by ecological zones, Nepal, 1952/54-2011

Census years	Mountain	Hill	Mountain & Hill	Tarai	Total
1952/54	-	-	5,349,988	2,906,637	8,256,625
	-	-	(64.8)	(35.2)	
1961	-	-	5,991,297	3,421,699	9,412,996
	-	-	(63.6)	(36.4)	
1971	1,138,610	6,071,407	7,210,017	4,345,966	11,555,983
	(9.9)	(52.5)	(62.4)	(37.6)	
1981	1,302,896	7,163,115	8,466,011	6,556,828	15,022,839
	(8.7)	(47.7)	(56.4)	(43.6)	
1991	1,443,130	8,419,889	9,863,019	8,628,078	18,491,097
	(7.8)	(45.5)	(53.3)	(46.7)	
2001	1,687,859	10,251,111	11,938,970	11,212,453	23,151,423
	(7.3)	(44.3)	(51.6)	(48.4)	
2011	1,781,792	11,394,007	13,175,799	13,318,705	26,494,504
	(6.7)	(43.0)	(49.7)	(50.3)	

Source: CBS, 1995 Chapter II Table 1; 2003 Table 2.2; 2012 National Report, Vol. I Table 12

Note: Figures in the parenthesis indicate percentage of the total population.

Table 2.2 indicates that the population of the Tarai has been increasing rapidly. In 1952/54, Tarai accounted for 35% of the total population. This increased to 48% in the 2001 census and 50.3% in the 2011 census. There has been a marked decrease in the populations of Mountain and Hill from 65% in 1952/54 to 50% in 2011. The declining trend is observed in both the Mountain and the Hill Regions.

Until 1951, Tarai Region was covered with dense forest and highly infested with malaria and other communicable diseases. The diseases were controlled, and deforestation increased which has resulted in an increase in human

settlement and a change in the pattern of population distribution by Ecological Zone (CBS, 1995). According to latest census 2011, Tarai Region alone accounted for 50% of the total population, whereas Hill and Mountain accounted for approximately 43% and 7% of the total population respectively.

2.3.2 Population distribution by development regions

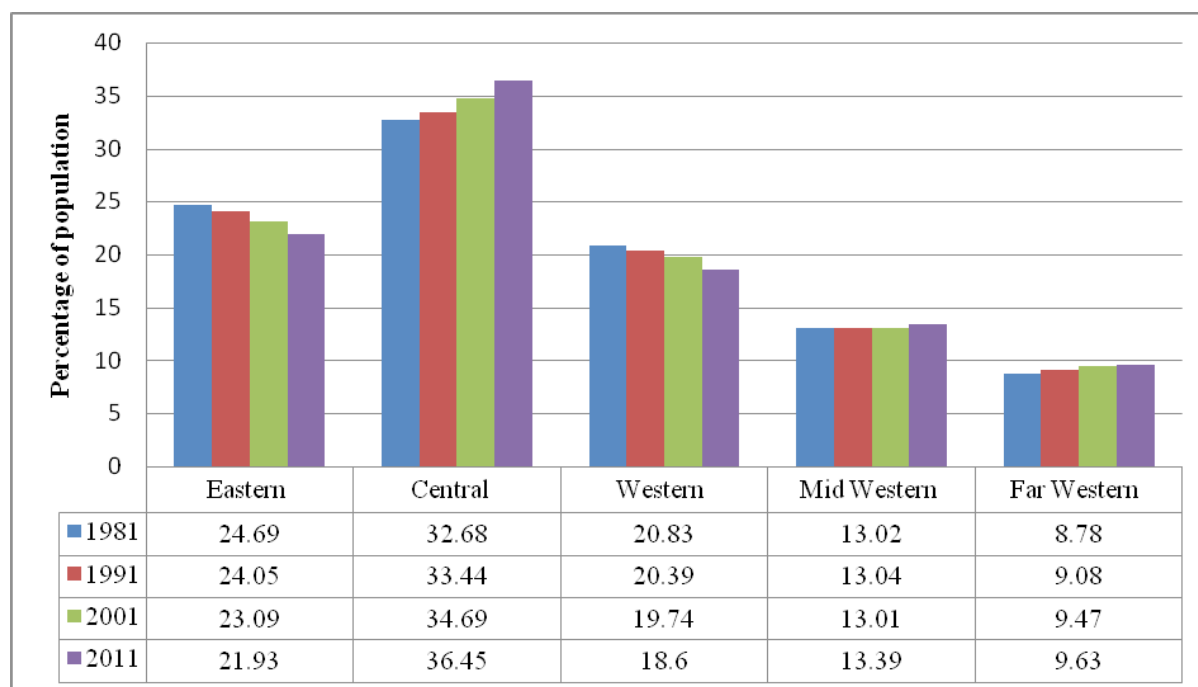
The population distribution by development regions in Nepal is shown in Table 2.3. The Central and Far Western Development Regions have observed slightly increasing trends in their population distribution. The Central and Far Western Development Regions accounted for approximately 33% and 9% of the total population in 1981, and these respective figures have increased to 36.4% and approximately 10% in 2011. However, slightly decreasing trends are observed in the Eastern and Western Development Regions. Approximately 25% and 21% of the total population were counted in Eastern and Western Development Regions in 1981, whereas the respective percentages have decreased to 22% and 18.6% in 2011.

Table 2.3: Population distribution by development regions, Nepal, 1981-2011

Development Region	Population				Percentage			
	1981	1991	2001	2011	1981	1991	2001	2011
Eastern	3,708,923	4,446,749	5,344,476	5,811,555	24.69	24.05	23.09	21.93
Central	4,909,357	6,183,955	8,031,629	9,656,985	32.68	33.44	34.69	36.45
Western	3,128,859	3,770,678	4,571,013	4,926,765	20.83	20.39	19.74	18.60
Mid Western	1,955,611	2,410,414	3,012,975	3,546,682	13.02	13.04	13.01	13.39
Far Western	1,320,089	1,679,301	2,191,330	2,552,517	8.78	9.08	9.47	9.63
Total	15,022,839	18,491,097	23,151,423	26,494,504	100	100	100	100

Source: CBS, 1995 Chapter II Table 2; 2003 Table 2.3; 2012 National Report, Vol. I Table 12

The size of the population has been steadily increasing in the Mid Western Development Region (Figure 2.2). According to the latest census of 2011, more than one-third of Nepal's population (36.45%) live in the Central Development Region and less than 10% in the Far Western Development Region. Eastern and Western Regions share about one-fifth (21.9%) and 18.6% of the total population respectively. Mid Western Region's share is only 13.39% of the total population.

Figure 2.2: Percentage distribution of population by development regions, Nepal, 1981-2011

Source: Table 2.3

2.3.3 Population distribution by eco-development regions

The percentage distribution of population by eco-development Regions for 1981 to 2011 is presented in Table 2.4. The table reveals that the percentage share of Mountain Region of the total population has decreased over the years from 8.7% in 1981 to 6.7% in 2011. However the share of the total population varied in different sub regions. In Mountain, the percentage varied from a maximum of 1.9% in Central Mountain to a minimum of 0.1 % in Western Mountain for the census year 2011.

The Hill shows a marked change in the pattern of population distribution. The share of the total population has decreased from 48% in 1981 to 43% in 2011, while the Central Hill has shown a slightly increasing trend in the share of population distribution from 14% in 1981 to 17% in 2011. This may be partly due to the inclusion of Kathmandu District in this sub region, which is the capital city of the Kingdom and experiences continuous growth of its population from one census to the next.

The share of the total population has increased in all the Tarai sub regions when compared with previous censuses, and considerable variation is also observed among the sub regions. In the Eastern Tarai, a small fluctuation is observed in the share of total population. Central Tarai has experienced a slight increase in the share of total population from approximately 16% in 1981 to 18% in 2011, followed by Western and Mid Western Tarai. Compared with other sub regions of Tarai, the variation in the share of total population is highest in the Far Western Tarai increasing from 2.8% in 1981 to 4.6% in 2011.

Table 2.4: Percentage distribution of total population in different eco-development regions of Nepal, 1981-2011

Eco-development regions	Percentage distribution of population			
	1981	1991	2001	2011
Mountain	8.7	7.8	7.3	6.7
Eastern	2.3	1.9	1.7	1.5
Central	2.8	2.5	2.4	1.9
Western	0.1	0.1	0.1	0.1
Mid Western	1.6	1.4	1.3	1.5
Far Western	1.9	1.8	1.7	1.7
Hill	47.7	45.5	44.3	43.0
Eastern	8.4	7.7	7.1	6.4
Central	14.0	14.5	15.3	16.7
Western	14.3	13.1	12.1	10.6
Mid Western	6.9	6.6	6.4	6.4
Far Western	4.0	3.6	3.5	3.3
Tarai	43.6	46.7	48.4	50.3
Eastern	14.1	14.4	14.2	14.4
Central	15.9	16.4	17.0	17.8
Western	6.4	7.2	7.6	7.9
Mid Western	4.4	5.0	5.3	5.6
Far Western	2.8	3.7	4.3	4.6

Source: CBS, 1995 Chapter II Table 3; 2003 Table 2.3; 2012 National Report, Vol. I Table 12

2.3.4 Population distribution by districts

VDC/municipality is the lowest administrative unit in Nepal. However, the district functions as a coordinating administrative unit to formulate, execute and evaluate periodic plans as well as for administrative work. It is therefore appropriate to examine the population distribution by district and also the distribution of districts according to population size. The number of districts has remained constant at 75 since the 1971 census. However there have been significant changes in the area of districts between 1971 and 1981, and boundary changes took place for some districts in 1982. Therefore population distribution by districts was not strictly comparable until 1991 (CBS, 2003). The share of population distribution by districts and region are shown in Table 2.5 from the census year 1991 to 2011. The table also shows the average annual growth rates for the intercensal periods 1991 to 2001 and 2001 to 2011.

In 1991, the ten districts with the highest population size (in order) were Kathmandu (675,341), Morang (674,823), Jhapa (593,737), Dhanusa (543,672), Rupandehi (522,150), Sarlahi (492,798), Saptari (465,668), Sunsari (463,481), Siraha (460,746) and Mahottari (440,146). In the 2001 and 2011 censuses, most of the districts above have retained their positions as districts with the largest population size with a slight change in order. In 2001, Mahottari disappeared from the top ten ranks and was replaced by Kailali. In 2011 Bara and Rautahat replaced Siraha and Saptari in the top ten rank. Among the ten districts with the highest population size in 2011, three districts Jhapa, Morang, and Sunsari are within the Eastern Tarai Region; four districts Dhanusa, Sarlahi, Rautahat, and Bara are within Central Tarai; one district, Kathmandu, is within Central Hill; one district Rupandehi is within Western Tarai, and one district Kailali is within the Far Western Tarai Region (Table 2.5). Interestingly, all of the most populated districts except Kathmandu are within the Tarai Region.

Manang (5,363), Mustang (14,292), Dolpa (25,013), Humla (34,383) and Mugu (36,364) were the five least populated districts in 1991. In 2001, all of these districts were the least populated districts with the same rank as 1991, although by 2001 Manang's population had almost doubled. Between 2001 and 2011, Manang and Mustang population's had decreased by 3,049 and 1,529 respectively. Table 2.5 also illustrates that although there is a reduction in the share of the total population in 27 districts, slight growth in the population is observed in all other districts.

Table 2.5: Distribution of population by districts and population growth rates, 1991-2011

Area	Population 1991		Population 2001		Population 2011		Average annual growth rates 1991-2001 (%)	Average annual growth rates 2001-2011 (%)
	Number	Percent	Number	Percent	Number	Percent		
Nepal	18,491,097	100	23,151,423	100	26,494,504	100	2.25	1.35
Eastern Dev. Reg.	4,446,749	24.05	5,344,476	23.09	5,811,555	21.93	1.84	0.84
Eastern Mountain	359,156	1.94	401,587	1.73	392,089	1.48	1.12	- 0.24
Taplejung	120,053	0.65	134,698	0.58	127,461	0.48	1.15	- 0.55
Sankhuwasabha	141,903	0.77	159,203	0.69	158,742	0.60	1.15	- 0.03
Solukhumbu	97,200	0.53	107,686	0.47	105,886	0.40	1.02	- 0.17
Eastern Hill	1,429,138	7.73	1,643,246	7.10	1,601,347	6.04	1.40	- 0.26
Panchthar	175,206	0.95	202,056	0.87	191,817	0.72	1.43	- 0.52
Ilam	229,214	1.24	282,806	1.22	290,254	1.10	2.10	0.26
Dhankuta	146,386	0.79	166,479	0.72	163,412	0.62	1.29	-0.19
Terhathum	102,870	0.56	113,111	0.49	101,577	0.38	0.95	-1.08
Bhojpur	198,784	1.08	203,018	0.88	182,459	0.69	0.21	-1.07
Okhaldhunga	139,457	0.75	156,702	0.68	147,984	0.56	1.17	-0.57
Khotang	215,965	1.17	231,385	1.00	206,312	0.78	0.69	-1.15
Udayapur	221,256	1.20	287,689	1.24	317,532	1.20	2.63	0.99
Eastern Tarai	2,658,455	14.38	3,299,643	14.25	3,818,119	14.41	2.16	1.46
Jhapa *	593,737	3.21	688,109	2.97	812,650	3.07	1.48	1.66
Morang	674,823	3.65	843,220	3.64	965,370	3.64	2.23	1.35
Sunsari	463,481	2.51	625,633	2.70	763,487	2.88	3.00	1.99
Saptari	465,668	2.52	570,282	2.46	639,284	2.41	2.03	1.14
Siraha	460,746	2.49	572,399	2.47	637,328	2.41	2.17	1.07
Central Dev.Reg.	6,183,955	33.44	8,031,629	34.69	9,656,985	36.45	2.61	1.84
Central Mountain	471,005	2.55	554,817	2.40	517,655	1.95	1.64	-0.69
Dolakha	173,236	0.94	204,229	0.88	186,557	0.70	1.65	-0.91
Sindhupalchok*	261,025	1.41	305,857	1.32	287,798	1.09	1.59	-0.61
Rasuwa	36,744	0.20	44,731	0.19	43,300	0.16	1.97	-0.33
Central Hill	2,679,599	14.49	3,542,732	15.30	4,431,813	16.73	2.79	2.24
Kavrepalanchok	324,329	1.75	385,672	1.67	381,937	1.44	1.73	-0.61
Lalitpur	257,086	1.39	337,785	1.46	468,132	1.77	2.73	3.26
Bhaktapur	172,952	0.94	225,461	0.97	304,651	1.15	2.65	3.01
Kathmandu	675,341	3.65	1,081,845	4.67	1,744,240	6.58	4.71	4.78
Nuwakot	245,260	1.33	288,478	1.25	277,471	1.05	1.62	-0.39
Sindhuli*	223,900	1.21	279,821	1.21	296,192	1.12	2.23	0.57
Ramechhap	188,064	1.02	212,408	0.92	202,646	0.76	1.22	-0.47
Dhading	278,068	1.50	338,658	1.46	336,067	1.27	1.97	-0.08

Area	Population 1991		Population 2001		Population 2011		Average annual growth rates 1991-2001 (%)	Average annual growth rates 2001-2011 (%)
	Number	Percent	Number	Percent	Number	Percent		
Makwanpur	314,599	1.70	392,604	1.70	420,477	1.59	2.22	0.69
Central Tarai	3,033,351	16.40	3,934,080	16.99	4,707,517	17.77	2.60	1.79
Dhanusa	543,672	2.94	671,364	2.90	754,777	2.85	2.11	1.17
Mahottari	440,146	2.38	553,481	2.39	627,580	2.37	2.29	1.26
Sarlahi	492,798	2.67	635,701	2.75	769,729	2.91	2.55	1.91
Rautahat	414,005	2.24	545,132	2.35	686,722	2.59	2.75	2.31
Bara	415,718	2.25	559,135	2.42	687,708	2.60	2.96	2.07
Parsa	372,524	2.01	497,219	2.15	601,017	2.27	2.89	1.90
Chitawan	354,488	1.92	472,048	2.04	579,984	2.19	2.86	2.06
Western Dev.Reg.	3,770,678	20.39	4,571,013	19.74	4,926,765	18.60	1.92	0.75
Western Mountain	19,655	0.11	24,568	0.11	19,990	0.08	2.23	-2.06
Manang	5,363	0.03	9,587	0.04	6,538	0.02	5.81	-3.83
Mustang	14,292	0.08	14,981	0.06	13,452	0.05	0.47	-1.08
Western Hill	2,420,878	13.09	2,793,180	12.06	2,811,135	10.61	1.43	0.06
Gorkha	252,524	1.37	288,134	1.24	271,061	1.02	1.32	-0.61
Lamjung	153,697	0.83	177,149	0.77	167,724	0.63	1.42	-0.55
Tanahu	268,073	1.45	315,237	1.36	323,288	1.22	1.62	0.25
Syangja	293,526	1.59	317,320	1.37	289,148	1.09	0.78	-0.93
Kaski	292,945	1.58	380,527	1.64	492,098	1.86	2.62	2.57
Myagdi	100,552	0.54	114,447	0.49	113,641	0.43	1.29	-0.07
Parbat	143,547	0.78	157,826	0.68	146,590	0.55	0.95	-0.74
Baglung	232,486	1.26	268,937	1.16	268,613	1.01	1.46	-0.01
Gulmi	266,331	1.44	296,654	1.28	280,160	1.06	1.08	-0.57
Palpa	236,313	1.28	268,558	1.16	261,180	0.99	1.28	-0.28
Arghakhanchi	180,884	0.98	208,391	0.90	197,632	0.75	1.42	-0.53
Western Tarai	1,330,145	7.19	1,753,265	7.57	2,095,640	7.91	2.76	1.78
Nawalparasi	436,217	2.36	562,870	2.43	643,508	2.43	2.55	1.34
Rupandehi	522,150	2.82	708,419	3.06	880,196	3.32	3.05	2.17
Kapilbastu	371,778	2.01	481,976	2.08	571,936	2.16	2.60	1.71
Mid West.Dev.Reg.	2,410,414	13.04	3,012,975	13.01	3,546,682	13.39	2.26	1.63
Mid-Western Mountain	260,529	1.41	309,084	1.34	388,713	1.47	1.71	2.29
Dolpa*	25,013	0.14	29,545	0.13	36,700	0.14	1.67	2.17
Jumla*	75,964	0.41	89,427	0.39	108,921	0.41	1.63	1.97
Kalikot*	88,805	0.48	105,580	0.46	136,948	0.52	1.73	2.60
Mugu*	36,364	0.20	43,937	0.19	55,286	0.21	1.89	2.30
Humla	34,383	0.19	40,595	0.18	50,858	0.19	1.66	2.25
Mid Western Hill	1,219,555	6.60	1,473,022	6.36	1,687,497	6.37	1.89	1.36
Pyuthan	175,469	0.95	212,484	0.92	228,102	0.86	1.91	0.71
Rolpa	179,621	0.97	210,004	0.91	224,506	0.85	1.56	0.67
Rukum	155,554	0.84	188,438	0.81	208,567	0.79	1.92	1.01
Salyan *	181,785	0.98	213,500	0.92	242,444	0.92	1.61	1.27
Surkhet *	225,768	1.22	288,527	1.25	350,804	1.32	2.45	1.95
Dailekh	187,400	1.01	225,201	0.97	261,770	0.99	1.84	1.50

Area	Population 1991		Population 2001		Population 2011		Average annual growth rates 1991-2001 (%)	Average annual growth rates 2001-2011 (%)
	Number	Percent	Number	Percent	Number	Percent		
Jajarkot	113,958	0.62	134,868	0.58	171,304	0.65	1.68	2.39
Mid Western Tarai	930,330	5.03	1,230,869	5.32	1,470,472	5.55	2.80	1.78
Dang	354,413	1.92	462,380	2.00	552,583	2.09	2.66	1.78
Banke	285,604	1.54	385,840	1.67	491,313	1.85	3.01	2.42
Bardiya	290,313	1.57	382,649	1.65	426,576	1.61	2.76	1.09
Far West. Dev.Reg.	1,679,301	9.08	2,191,330	9.47	2,552,517	9.63	2.26	1.53
Far Western Mountain	332,785	1.80	397,803	1.72	463,345	1.75	1.78	1.53
Bajura	92,010	0.50	10,8781	0.47	134,912	0.51	1.67	2.15
Bajhang	139,092	0.75	167,026	0.72	195,159	0.74	1.83	1.56
Darchula	101,683	0.55	121,996	0.53	133,274	0.50	1.82	0.88
Far Western Hill	670,719	3.63	798,931	3.45	862,215	3.25	1.75	0.76
Achham	198,188	1.07	231,285	1.00	257,477	0.97	1.54	1.07
Doti	167,168	0.90	207,066	0.89	211,746	0.80	2.14	0.22
Dadeldhura	104,647	0.57	126,162	0.54	142,094	0.54	1.87	1.19
Baitadi	200,716	1.09	234,418	1.01	250,898	0.95	1.55	0.68
Far Western Tarai	675,797	3.65	994,596	4.30	1,226,957	4.63	3.86	2.10
Kailali	417,891	2.26	616,697	2.66	775,709	2.93	3.89	2.29
Kanchanpur	257,906	1.39	377,899	1.63	451,248	1.70	3.82	1.77

Source: CBS, 1995 Chapter II Table 4; 2003 Table 2.5; 2012 National Report, Vol. I Table 12

Note: * Indicates the affected districts in 2001 Population Census.

2.3.5 Distribution of districts by size of population

The distribution of districts by size of population is presented in Table 2.6. It may be noted from the table that districts are shifting to higher population size groups. For example, in 1981, there was only one district with a population of 500,000 or more, by 2001 the number of districts with the same population had reached 14, increasing to 18 by 2011. Similarly, the number of districts with a population between 400,000-499,999 was 3 in 1981 increasing to 9 in 1991, and then decreasing to 6 in 2011.

2.3.6 Distribution of VDCs/municipalities by size of population

The distribution of VDCs/municipalities (settlements) according to the size of its population is shown in Table 2.7 and Figure 2.3. There has been a continuous change in the number of VDCs/ municipalities due to either VDC's dividing or merging. In 1971, the highest share of the population was in the 2,000 to 2,999 population size group (33.98%). In 2001 it was highest in the 5,000 to 5,999 population size group (31.44%). In general, the table shows that there is an increase in the share of population in the high size groups and a decrease in the proportion of the population residing in small settlements. During the last four decades (1971-2011), there has been a marked decrease in the population size group of less than 4,000 people, which are the settlements of "C" categories according to the Local Governance Act 2056. High groups of settlements mainly include municipalities and less populated settlements are VDCs located in the mountains.

Table 2.6: Distribution of districts by size of population, Nepal, 1971-2011

Size of population	Number of districts										Population					Percentage				
	1971		1981		1991		2001		2011		1971	1981	1991	2001	2011	1971	1981	1991	2001	2011
5,00,000 or more	--	1	5	14	18	--	534,692	3,009,723	9,234,287	13,693,808	--	3.56	16.28	18.20	51.69	--	3.56	16.28	18.20	51.69
400,000-499,999	--	3	9	4	6	--	1,334,549	4,006,670	1,913,623	2,749,844	--	8.88	21.67	7.10	10.38	--	8.88	21.67	7.10	10.38
300,000-399,999	7	10	6	11	6	2,245,707	3,505,384	2,092,131	3,920,048	2,014,279	19.43	23.33	11.31	18.40	7.60	19.43	23.33	11.31	18.40	7.60
200,000-299,999	12	18	20	23	19	2,752,028	4,293,871	5,034,279	5,570,510	4,816,345	23.82	28.58	27.23	33.95	18.18	23.82	28.58	27.23	33.95	18.18
100,000-199,999	41	28	25	16	20	5,802,698	4,433,030	3,842,156	2,240,152	3,014,094	50.22	29.51	20.78	14.09	11.38	50.22	29.51	20.78	14.09	11.38
90,000-99,999	2	4	2	--	--	190,986	378,888	189,210	--	--	1.65	2.52	1.02	--	--	1.65	2.52	1.02	--	--
80,000-89,999	2	3	--	1	--	171,279	262,736	88,805	89,427	--	1.48	1.75	0.48	0.53	--	1.48	1.75	0.48	0.53	--
70,000-79,999	--	1	1	--	--	--	74,649	75,964	--	--	--	0.50	0.41	--	--	--	0.50	0.41	--	--
60,000-69,999	3	1	1	--	--	199,073	68,797	--	--	--	1.72	0.46	--	--	1.72	0.46	--	--	--	--
50,000-59,999	1	--	--	--	2	57,946	--	--	--	106,144	0.50	--	--	0.40	0.50	--	--	--	--	0.40
40,000-49,999	--	1	--	3	1	--	43,705	--	129,263	43,300	--	0.29	--	2.43	0.16	--	0.29	--	2.43	0.16
30,000-39,999	--	1	3	--	1	--	30,241	107,491	--	36,700	--	0.20	0.58	--	0.14	--	0.20	0.58	--	0.14
20,000-29,999	3	2	1	1	--	82,186	42,346	25,013	29,545	--	0.71	0.28	0.14	--	--	0.71	0.28	0.14	1.01	--
10,000-19,999	3	1	1	1	1	45,644	12,930	14,292	14,981	13,452	0.40	0.09	0.08	2.66	0.05	0.40	0.09	0.08	2.66	0.05
Below 10,000	1	1	1	1	1	7,436	7,021	5,363	9,587	6,538	0.06	0.05	0.03	1.63	0.02	0.06	0.05	0.03	1.63	0.02
Total	75	75	75	75	75	11,554,983	15,022,839	18,491,097	23,151,423	26,494,504	100	100	100	100	100	100	100	100	100	100

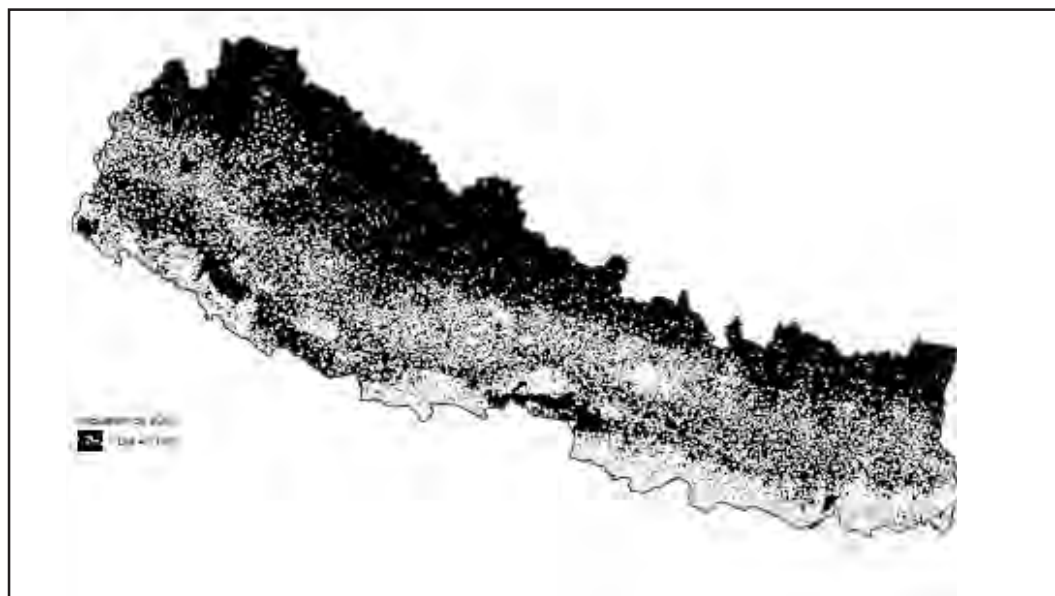
Source: CBS, 1995 Chapter II Table 5; 2003 Table 2.6; 2012 National Report, Vol. I Table 12

Table 2.7: Distribution of VDCs/municipalities by size of population, Nepal, 1971-2011

Size of Population	Number of localities				Population						Percentage				
	1971	1981	1991	2001*	2011	1971	1981	1991	2001	2011	1971	1981	1991	2001	2011
1,00,000 and more	1	1	3	5	10	150,402	235,160	666,511	1,270,307	2,373,797	1.30	1.57	3.60	5.59	9.04
50,000-99,999	1	2	8	11	18	59,049	173,419	517,419	788,937	1,250,099	0.51	1.15	2.80	3.47	4.76
20,000-49,999	5	22	16	55	97	149,849	666,439	479,590	1,532,143	2,594,456	1.30	4.44	2.59	6.74	9.88
10,000-19,999	17	101	165	285	361	223,136	1,250,428	2,115,401	3,868,363	4,873,327	1.93	8.32	11.44	17.01	18.56
5,000-9,999	229	1,016	761	1,067	1,160	1,387,840	6,604,790	5,070,998	7,147,792	7,764,717	12.01	43.96	27.42	31.44	29.58
4,000-4,999	327	569	661	701	626	1,442,740	2,540,533	2,943,691	3,130,844	2,806,984	12.48	16.91	15.92	13.77	10.69
3,000-3,999	790	634	1,033	802	697	2,701,908	2,231,148	3,594,054	2,822,915	2,447,276	23.38	14.85	19.43	12.42	9.32
2,000-2,999	1,584	432	964	662	653	3,926,758	1,119,768	2,455,590	1,676,754	1,641,692	33.98	7.45	13.28	7.37	6.25
1,000-1,999	974	105	365	231	285	1,437,103	162,808	602,845	371,769	459,176	12.44	1.08	3.26	1.64	1.75
500-999	91	44	56	59	46	72,263	34,773	44,318	123,133	35,603	0.63	0.23	0.24	0.54	0.14
Less than 500	12	9	16	11	20	4,935	3,573	5,680	3,977	6,701	0.04	0.02	0.03	0.02	0.03
Total	4,031	2,935	4,048	3,889	3,973	11,555,983	15,022,839	18,496,097	22,736,934	26,253,828	100	100	100	100	100.00

Source: CBS, 1995 Chapter II Table 5; 2003 Vol. I Table 2.7; 2012 National Report, Vol. I Table 12

Note: * Affected 58 VDCs are excluded from the total.

Figure 2.3: Distribution of population by VDCs, 2011

Source: National Population Census, 2011, CBS

2.3.7 Population distribution by rural/urban residence

The census is the major source of information for population distribution by rural/urban residence. As the two differ substantially in terms of their economy, type of living and social attitudes, it is essential to differentiate between them. An urban settlement is characterised by distinct demographic features as well as availability of infrastructural facilities. The urban population has been growing more rapidly than the rural population across the country. Urban centres once established, tend to influence the socio-economic conditions of the region and ultimately become highly attractive to the population.

Table 2.8: Population distribution by rural/urban residence, Nepal, 1961-2011

Census year	Urban centres	Urban population		Rural population		Total population
		Number	Per cent	Number	Per cent	
1961	16	336,222	3.6	9,076,774	96.4	9,412,996
1971	16	461,938	4.0	11,094,054	96.0	11,555,983
1981	23	956,721	6.4	14,066,118	93.6	15,022,839
1991	33	1,701,181	9.2	16,795,378	90.8	18,491,097
2001	58	3,227,897	13.9	19,923,544	86.1	23,151,423
2011	58	4,523,820	17.1	21,970,684	82.9	26,494,504

Source: CBS, 1995 Chapter II Table 7; 2003 Table 10.5; 2012 National Report, Vol. I Table 12

Table 2.8 provides a list of urban areas/centres and includes the percentage of population distribution recorded in censuses since 1961. As is evident in the table, the number of designated urban areas has risen from 16 in 1961 to 58 in 2011. In the five decades since the 1960s, the urban population has increased from 0.336 million to 4.52 million in 2011. In 1961, the urban population stood at 336,222, increasing to 461,938 in 1971. This population trend continued after 1981. The urban population in the country has grown from 3.6% in 1961 to 17.1% in 2011. It may be noted that average annual changes in the percentage of the urban population has been steadily increasing since the seventies.

2.4 Population growth variations

Population growth rates vary across countries. In the context of the SAARC region, the population growth rate is highest in Afghanistan (2.03%), followed by Pakistan (2%), India and Bhutan (1.8% respectively), the Republic of the Maldives (1.69%), Bangladesh (1.36%), Nepal (1.35%) and Sri Lanka (0.9%) (SAARC, 2014). In this section, national population growth variation is observed by ecological zones, eco-development regions, districts and rural/urban residence.

2.4.1 Population growth by ecological zones

The inter censal population growth rates by Ecological Zones from the census years 1961-2011 are presented in Table 2.9. The table indicates that the population of Tarai is growing at a rapid rate. The table also shows that the population growth rate for the Mountain and Hill Regions was decreasing until 1991 and then increased between 1991-2001, before decreasing again between 2001-2011. However, the fluctuations are minimal.

Table 2.9: Population growth rates by ecological zones, Nepal, 1961-2011

Period	Average annual growth rate of population 1961- 2011				
	Mountain	Hill	Mountain & Hill	Tarai	Total
1961-1971	-	-	1.85	2.39	2.05
1971-1981	1.35	1.65	1.61	4.11	2.62
1981-1991	1.02	1.61	1.52	2.75	2.08
1991-2001	1.57	1.97	1.91	2.62	2.25
2001-2011	0.54	1.06	0.99	1.72	1.35

Source: CBS, 1995 Chapter II Table 9; 2003 Table 2.8; 2012 National Report, Vol. I Table 12

The population growth rate for the Tarai Region increased dramatically from 2.39% per annum in 1961-71 to 4.11% per annum in 1971-1981. However a marked decrease is observed for the period 1981-91, 2.75% per annum, and further decreases of 2.62% per annum are observed for the period 1991-2001 and 1.72% per annum from 2001-2011. This indicates that the flow of people from Mountain and Hill to Tarai has slowed down in the latter period. Two pull factors, agricultural land and employment opportunities, are still the primary reasons behind the outflow of people from Mountain and Hill to Tarai.

2.4.2 Population growth by development regions

The population growth rates by Development Regions for the period 1991-2001 and 2001-2011 are shown in Table 2.10. The population growth rate per annum is lowest in the Western Development Region (0.75%) for the period 2001-2011 and highest in the Central Development Region (1.84%) over the same period.

Table 2.10: Population growth rates by development regions, Nepal, 1991-2001 and 2001-2011

Development regions	Average annual growth rate of population	
	1991-2001	2001-2011
Eastern	1.84	0.84
Central	2.61	1.84
Western	1.92	0.75
Mid-western	2.26	1.63
Far western	2.26	1.53

Source: CBS, 1995 Chapter II Table 8; 2003 I Table 2.9; 2012 National Report, Vol. I Table 12

2.4.3 Population growth by eco-development regions

The population growth rates by eco-development Regions for the period 1991-2001 and 2001-2011 are shown in Table 2.11. The table shows that three eco-development regions in the Mountains have negative population growth rates. Western Mountain reported a 2.23% growth rate per annum for the period 1991-2001, whereas it was negative (-2.06) for the period 2001-2011. The population growth rate may have been affected by Manang District, where the population nearly doubled between the 1991 and 2001 censuses and then decreased in 2011. For Hill, all the eco-development Regions have positive population growth rates, with the exception of the Eastern Hill. Central Hill has the highest population growth rates, which includes Kathmandu District, and has the highest population growth rates among the districts. All the eco-development Regions in Tarai have reported less than 2% population growth rates except in the Far Western Development Region; the highest is in the Far Western Tarai (2.10%).

Table 2.11: Population growth rates by eco-development regions, Nepal, 1991-2001 and 2001-2011

Development regions	Average annual growth rate of population							
	Mountain		Hill		Tarai		Total	
	1991-2001	2001-2011	1991-2001	2001-2011	1991-2001	2001-2011	1991-2001	2001-2011
Eastern	1.12	-0.24	1.40	-0.26	2.16	1.46	1.84	0.84
Central	1.64	-0.69	2.79	2.24	2.60	1.79	2.61	1.84
Western	2.23	-2.06	1.43	0.06	2.76	1.78	1.92	0.75
Mid Western	1.71	2.29	1.89	1.36	2.80	1.78	2.26	1.63
Far Western	1.78	1.53	1.75	0.76	3.86	2.10	2.26	1.53

Source: CBS, 1995 Chapter II Table 8; 2003 Table 2.9; 2012 National Report, Vol. I Table 12

2.4.4 Population growth by districts

Population growth rates by districts have already been detailed in Table 2.5 (Section 2.3.4 Population Distribution by Districts) for the period 1991-2001 and 2001-2011. From the table it can be noted that human settlements are spread all over the districts, however a wide variation in the population growth rates among the districts can be observed. The population growth rate is highest in Kathmandu (4.78% per annum) followed by Lalitpur (3.26% per annum) while the highest negative population growth rates are found in Manang (-3.83% per annum) followed by Khotang (-1.15% per annum). Manang was the highest (5.81 % per annum) in the rank of population growth for the period 1991-2001, but lowest in the rank of population growth for the period 1981-1991.

From Table 2.12, it can be observed that 27 districts have negative growth rates. This means that the population has decreased in 27 districts in the period from 2001 to 2011. Interestingly, none of the Tarai districts fall within this category.

Table 2.12: Ranking of district population growth rates by ecological zones, 2011

Growth rate (% per annum)	Mountains	Hill	Tarai	Total
Negative Growth	8	19	-	27
Less than 1.00	1	7	-	8
1.00 -1.99	2	6	14	22
2.00 - 2.99	5	4	6	15
3.00 - 3.99	-	2	-	2
4.00 - 4.78	-	1	-	1
Total districts	16	39	20	75

Source: Table 2.5

Table 2.13 shows the ranking of district population growth rates by development regions for the period 2001-2011. The table shows that most of the negative growth districts (11 districts) are concentrated in the Western Development Region. None of the districts from Mid Western and Far Western Development Regions have shown negative growth rates.

Table 2.13: Ranking of district population growth rates by development regions, 2011

Growth rate (% per annum)	EDR	CDR	WDR	MWDR	FWDR	Total
Negative Growth	9	8	11	-	-	27
Less than 1.00	2	2	1	2	3	8
1.00 - 1.99	5	4	2	7	4	22
2.00 - 2.99	-	3	2	6	2	15
3.00 - 3.99	-	3	-	-	-	2
4.00 - 4.78	--	1	--	--	--	1
Total Districts	16	19	16	15	9	75

Source: Table 2.5

2.4.5 Population growth by rural/urban residence

During the past five decades, the highest growth rate recorded by the urban population was 7.28% per annum in 1981. An increase in the number of urban centres was a main factor, amongst others. During the period 1981-1991, the growth rate decreased to 5.76% per annum even though ten more localities were added to urban centres (Table 2.14). Although the number of urban centres was the same in 2001 as in 2011, the population growth rate declined to 3.03% during this decade. The migration of rural populations to urban centres is the main factor for high growth rates observed in urban areas of Nepal.

Table 2.14: Population growth rates by rural/urban residence, Nepal, 1961-2011

Census year	Urban centres	Average annual intercensal growth rates (exponential)	
		Urban	Rural
1961	16	-	-
1971	16	3.18	2.01
1981	23	7.28	2.37
1991	33	5.76	1.77
2001	58	6.41	1.71
2011	58	3.38	0.98

Source: CBS, 1995 Chapter II Table 7; 2003 Table 10.5; 2012 National Report, Vol. I Table 12

2.5 Population density

Population density is measured by the number of persons per square kilometre of land area, excluding area occupied by water. It is an effective index to measure the pressure of population on land. While land areas remain constant, the population density has increased with the growth of the population. The population density by Ecological Zones, Development Regions and Districts are presented in this section.

Different scholars have devised different types of densities for utilisation in different situations with the aim to arrive at a better indicator for the population–resource relationship. These ratios are known as arithmetic density, physiological or nutritional density, agricultural density, economic density etc. In this chapter, the analysis of population density is confined to the ratio of population of a given geographical or administrative unit to the area occupied by that unit.

2.5.1 Population density by ecological zones

Data obtained from different censuses indicate that the density of the population is increasing in all the Ecological Zones, particular in Tarai. Population density in Tarai has increased by 103% during the last 30 years from 1981 to 2011. As indicated above, this is mainly due to the migration of people from Mountain and Hill to Tarai. The population density is very high in Tarai, followed by Hill and Mountain Ecological Zones. (Table 2.15).

Table 2.15: Population density by ecological zones, 1981-2011

Ecological Zone	Area (sq. km.)	Population density (Person per sq.km.)			
		1981	1991	2001	2011
Mountain	51,817	25.14	27.85	32.57	34
Hill	61,345	116.76	137.25	167.11	186
Tarai	34,024	192.71	253.58	329.59	392
Total	147,181	102.01	125.63	157.30	180

Source: CBS, 1995 Chapter II Table 15; 2003 Table 2.12; 2012 National Report, Vol. I Table 12

2.5.2 Population density by development regions

Table 2.16 indicates that the population density was highest in the Central Development Region and lowest in the Mid Western Development Region during the intercensal period, 1981-2011. The increasing rate of population density is also high in the Central Development Region (97%) followed by Far Western Development Region (94%). The lowest increasing population density rate is observed in Eastern Development Region (57%) followed by Western Development Region (58%). However, the national increment rate is 76 percent (102.01% in 1981 and 180% in 2011) during the same 30 year period.

Table 2.16: Population density by development region, 1981-2011

Development Region	Area (sq. km.)	Population density Person (per sq. km.)			
		1981	1991	2001	2011
Eastern	28,456	130.32	156.25	187.82	204
Central	27,410	179.10	225.61	293.02	352
Western	29,398	106.43	128.26	155.49	168
Mid Western	42,378	46.14	56.87	71.10	84
Far Western	19,539	67.56	85.95	112.15	131
Total	147,181	102.01	125.63	157.30	180

Source: CBS, 1995 Chapter II Table 15; 2003 Table 2.12; 2012 National Report, Vol. I Table 12

2.5.3 Population density by eco-development regions

The population density of each region in Tarai is higher than that of the each Region of Hill and Mountain in all census years from 1981 to 2011. Interestingly, the population density of the Far Western Region in the Tarai (88.23%) was slightly lower than the density of Hill areas of the corresponding Region (89.37%) in 1981 (Table 2.17). This table also reveals that, in terms of population density, Western Mountain was the least populated region of Nepal followed by Mid Western Mountain. The highest population density is observed in Eastern Tarai followed by Central Tarai. Western Mountain has seen a slight decline in population density from 3.43 in 1981 to 3.37 in 1991. Eastern, Central and Western from Mountain Region and Central Hill Region also reported a decline in population density in 2011. During the last 30 years, the incremental rate in population density is highest in Far Western Tarai (187%), with no growth in Western Mountain. Only a 17% growth rate is observed in Eastern Mountain Region.

Table 2.17: Population density by eco-development regions, Nepal, 1981-2011

Zones/regions		Eastern	Central	Western	Mid Western	Far Western
Mountain	Area (sq.km.)	10,438	6,277	5,819	21,351	7,932
Population density (Person per sq.km.)	1981	32.41	65.82	3.43	11.35	36.42
	1991	34.40	75.03	3.37	12.20	41.95
	2001	38.47	88.39	4.22	14.48	50.15
	2011	38.00	82.00	3.00	18.00	58.00
Hill	Area (sq.km.)	10,749	11,805	18,319	13,710	6,762
Population density (Person per sq.km.)	1981	116.94	178.60	117.41	76.03	89.37
	1991	132.95	226.98	132.15	88.95	99.18
	2001	152.87	300.10	152.47	107.44	118.15
	2011	149.00	375.00	153.00	123.00	128.00
Tarai	Area (sq.km.)	7,269	9,328	5,260	7,317	4,845
Population density (Person per sq.km.)	1981	290.70	255.97	182.11	91.67	88.23
	1991	365.72	325.18	252.87	127.14	139.62
	2001	453.93	421.75	333.32	168.22	205.28
	2011	525.00	505.00	398.00	201.00	253.00

Source: CBS, 1995 Chapter II Table 15; 2003 Table 2.12; 2012 National Report, Vol. I Table 12

2.5.4 Population density by districts

Population densities in districts for the census years 1981, 1991, 2001 and 2011 are presented in Table 2.18. The districts with the highest population densities in 2011 are Kathmandu (4,416), Bhaktapur (2,560), Lalitpur (1,216), Rupandehi (647) and Dhanusa (640). Kathmandu was the most densely populated district followed by Bhaktapur and Lalitpur in 1991, 2001 and 2011; Kathmandu was the second most densely populated district in 1981. Dhanusa and Mahottari were the fourth and fifth most densely populated districts in 1981, 1991 and 2001. The five districts with the lowest population density are Manang, Mustang, Dolpa, Humla and Mugu. However, slight changes in the ranks are observed over the 30 year period. Compared to 1981, Manang reported a slightly decreased population density in 1991; however it increased again in 2001 before decreasing in 2011. Only one district, namely Mustang has reported almost the same population density during the 30 year period from 1981 to 2011.(Table 2.18).

Table 2.18: Population densities by districts, Nepal, 1981-2011

Districts	Area (sq. km.)	Population density (Person/sq.km.)			
		1981	1991	2001	2011
Eastern Mountain	10,438	32	34	38	38
Taplejung	3,646	33	33	37	35
Sankhuwasabha	3,480	37	41	46	46
Solukhumbu	3,312	27	29	33	32
Eastern Hill	10,749	117	133	153	149
Panchthar	1,241	126	141	163	155
Ilam	1,703	105	135	166	170
Dhankuta	891	146	164	187	183

Districts	Area (sq. km.)	Population density (Person/sq.km.)			
		1981	1991	2001	2011
Terhathum	679	136	152	167	150
Bhojpur	1,507	128	132	135	121
Okhaldhunga	1,074	128	130	146	138
Khotang	1,591	134	136	145	130
Udayapur	2,063	77	107	139	154
Eastern Tarai	7,269	291	366	454	525
Jhapa*	1,606	299	370	428	506
Morang	1,855	288	364	455	520
Sunsari	1,257	274	369	498	607
Saptari	1,363	278	342	418	469
Siraha*	1,188	316	388	482	536
Central Mountain	6,277	66	75	88	82
Dolakha*	2,191	69	79	93	85
Sindhupalchok	2,542	91	103	120	113
Rasuwa	1,544	20	24	29	28
Central Hill	11,805	179	227	300	375
Sindhuli*	2,491	74	90	112	119
Ramechhap	1,546	104	122	137	131
Kavrepalanchok	1,396	220	232	276	274
Lalitpur	385	479	670	877	1,216
Bhaktapur	119	1,343	1,453	1,895	2,560
Kathmandu	395	1,069	1,710	2,739	4,416
Nuwakot	1,121	181	219	257	248
Dhading	1,926	126	144	176	174
Makwanpur	2,426	100	130	162	173
Central Tarai	9,328	256	325	422	505
Dhanusa	1,180	367	461	569	640
Mahottari	1,002	360	439	552	626
Sarlahi	1,259	317	291	505	611
Rautahat	1,126	295	368	484	610
Bara	1,190	268	349	470	578
Parsa	1,353	210	275	367	444
Chitawan	2,218	117	160	213	261
Western Mountain	5,819	3	3	4	3
Manang	2,246	3	2	4	3
Mustang	3,573	4	4	4	4
Western Hill	18,319	117	132	152	153
Gorkha	3,610	64	70	80	75
Lamjung	1,692	90	91	105	99
Tanahu	1,546	145	173	204	209
Syangja	1,164	234	252	273	248
Kaski	2,017	110	145	189	244

Districts	Area (sq. km.)	Population density (Person/sq.km.)			
		1981	1991	2001	2011
Myagdi	2,297	42	44	50	49
Parbat	494	260	291	319	297
Baglung	1,784	121	130	151	151
Gulmi	1,149	207	232	258	244
Palpa	1,373	156	172	196	190
Arghakhanchi	1,193	132	152	175	166
Western Tarai					
Nawalparasi	2,162	143	282	260	298
Rupandehi	1,360	279	284	521	647
Kapilbastu	1,738	155	214	277	329
Mid Western Mountain	21,351	11	12	14	18
Dolpa*	7,889	3	3	4	5
Jumla*	2,531	27	30	35	43
Kalikot*	1,741	50	51	61	79
Mugu*	3,535	12	10	12	16
Humla	5,655	4	6	7	9
Mid Western Hill	13,710	76	89	107	123
Pyuthan	1,309	120	134	162	174
Rolpa	1,879	89	96	112	119
Rukum	2,877	46	54	65	72
Salyan*	1,462	104	124	146	166
Surkhet*	2,451	68	92	118	143
Dailekh	1,502	111	125	150	174
Jajarkot	2,230	45	57	60	77
Mid Western Tarai	7,317	92	127	168	201
Dang	2,955	68	120	156	187
Banke	2,337	88	122	165	210
Bardiya	2,025	98	143	189	211
Far Western Mountain	7,932	36	42	50	58
Bajura*	2,188	34	42	50	62
Bajhang	3,422	36	41	49	57
Darchula	2,322	39	44	53	57
Far Western Hill	6,762	89	99	118	128
Achham	1,680	110	118	138	57
Doti	2,025	76	83	102	105
Dadeldhura	1,538	56	68	82	92
Baitadi	1,519	118	132	154	165
Far Western Tarai	4,845	88	140	205	253
Kailali	3,235	80	129	191	240
Kanchanpur	1,610	105	160	235	280

Source: CBS, 1995 Chapter II Table 16; 2003 Table 2.13; 2012 National Report, Vol. I Table 12

Note: * Indicates the affected districts in 2001 Population Census.

2.6 Conclusions and recommendations

The population of Nepal as per the 2011 census stands at 26,494,504. The increase in the population during the last decade (2001-2011) is recorded at 3,343,081 with an annual average growth rate of 1.35%. The population has increased by 14.4% in the past decade, with an average annual growth rate of 1.35%, which is lower than the 2.25% growth rate recorded in the 2001 census. The outflow of migrant workers/absentee population recorded at 1.92 million in 2011 is a primary factor for the low growth rate.

Tarai makes up 50.3% (13,318,705) of the total population, while Hill and Mountain account for 43% (11,394,007) and 6.7% (1,781,792) respectively. Although the flow of people from Mountain and Hill to Tarai has slowed down in the latter period, agricultural land and employment opportunities are still the main reasons for the outflow of people from Mountain and Hill to Tarai.

Among the five development regions, Central Development Region has the highest proportion of population (36.45%) and Far Western Region records the lowest (9.63%). One of the reasons that Central Development Region has the highest share of the total population may be due to the inclusion of Kathmandu Valley in this region, which is experiencing continuous growth of its population from one census to another.

The fastest decadal population growth rate is found in Kathmandu district (4.78%) and the lowest in Manang (-3.83%). Twenty-seven hilly and mountainous districts, including Manang, Khotang, Mustang, Terhathum, Bhojpur, have recorded negative population growth rates during the last decade due to internal migration and the out flow of migrant workers abroad.

Population density (the average number of the population per square kilometer) at the national level is 180 compared to 157 in 2001. The highest population density is found in Kathmandu district (4,416 persons per square km) and the lowest in Manang district (3 persons per square km).

Overall, the growth rate of population in Nepal has declined in the intercensal period (2001-2011) illustrating the impact of factors for population change, namely fertility, mortality and migration. In the context of Nepal, it can be concluded that the current dramatic decline in the population growth rate can be attributed to decreasing fertility and mortality, along with an increasing outflow of migrant workers from the country. However, unmanaged migration (internal and international) has been the prominent factor influencing the spatial distribution, density and growth rates of the population. It is therefore recommended that a special focus should be placed on the management of migration through migration influencing policies and programmes, internally (in and out) and international migration (immigration and emigration). It is expected that explicit migration management policies will be detailed in the Internal and International Migration Chapters.

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CHAPTER 3

AGE SEX COMPOSITION

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Abstract

This chapter analyses the age and sex composition of Nepal's population using the data collected by decennial National Population Censuses. A society's age and sex structure has important implications for socio-economic and demographic development, as well as for labour force participation and gender relations. The sex ratio (male per hundred female) is used to analyse the sex composition. Population pyramids are also included to provide a visual overview of the age sex structure of Nepal's population. Age distribution and certain summary indexes are used to analyse the age structure of the population. In regard to the sex ratio, there are more females than males, especially in rural and hilly areas, with the exception of Kathmandu, the capital city, where there are more males mainly due to migration for employment and better education. Reporting data on age is still far from satisfactory; however the trend is improving. There are more adults than children (0-14 years). The dependency ratio is also calculated, which indicates that the dependency load (ratio of non workers to workers) is high in Nepal and the dependency of elderly persons (60 years and over) is in increasing trend. The median age of the population and ageing index show that the population of Nepal is getting older.

3.1 Introduction

Populations differ by sex, age, race/ethnicity, marital status, and a host of other characteristics. Sex and age are the most important factors for demography and are essential for analysing the demographic processes of fertility, mortality and migration (Hawley, 1959; Namboodiri, 1991). The demographic processes are all affected directly by sex and age, and these influences occur via biological, psychological, cultural, and social variables (Palmore, 1978; Halli and Rao, 1992).

The age sex structure is the product of past trends of population components i.e. fertility, mortality and migration. The age sex composition of a population has significant implications for the reproductive potential, human-resources supply, school attendance, household formation, child-mother health care and family planning service delivery, and ageing. Age sex composition directly affects the fertility, mortality and other socio- demographic characteristics, for example marriage and births. The age sex composition of a population is the distribution by age and sex of the population and the primary focus of this chapter is to analyse the various aspects of the age and sex composition of the population at national and sub national levels based on decennial population census data.

3.2 Sex composition

One of the most common variables that demographers study is the sex, whether a person is male or female, of an individual within a given area. Many types of planning, such as construction and services, particularly health services, require separate population data for males and females. The ratio of sexes affects social and economic

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relationships within a community. There are three main measures of sex structure, and they are inter related with one another. They are 1) the masculinity proportion, 2) the ratio of the excess or deficit of males to the total population, and 3) the sex ratio.

The masculinity proportion is commonly used in nontechnical discussions of sex composition (Henry, Shryock, and Associates), and is calculated by dividing the number of males in the population by the number of males and females, and multiplying the result by 100. Fifty is the point of balance; a figure higher than 50 represents an excess of males, while one lower represents an excess of females.

The ratio of the excess, or deficit, of males to the total population is obtained by subtracting the number of females from the number of males, dividing by the total number of the population, and multiplying by 100.

The sex ratio is the most popular index of sex composition in demography and sex ratio is taken into consideration in this analysis. The sex ratio can be expressed as the number of females per 100 males; however, in this analysis sex ratio is defined as male per hundred female.

3.2.1 Sex ratio at national level

The sex ratio and masculinity proportion for the various censuses is presented in Table 3.1

Table 3.1: Sex ratio of total population in censuses, Nepal, 1952/54-2011.

Year	Sex ratio [(M/F)*100]	Masculinity proportion [(M/F)*100]
1952/54	96.8	49.19
1961	97.3	49.25
1971	101.4	50.34
1981	105.0	51.22
1991	99.5	49.87
2001	99.8	49.95
2011	94.2	48.49

Source: *Population Census 1952/54, Table 6*
Population Census 1961, Vol. 2, Table 1
Population Census 1971, General Tables, Table 6
Population Census 1981, Vol. I Part I, Table 4
Population Census 1991, Vol. IV, Table 4
Population Census 2001, Vol. I, National Report, Table 9
Population Census 2011, National Report 1, Table 15

Table 3.1 shows that male to female sex ratios are low in all censuses except in the censuses of 1971 and 1981. This indicates that, apart from the censuses of 1971 and 1981, there are more females than males in Nepal. A high sex ratio was reported in 1981 while a low sex ratio of 94 was recorded in 2011. This low sex ratio could be attributed to male migration for employment while females remain at home. The latest census of 2011 revealed that more than nineteen hundred thousand males were absentees in their households, a trend that has increased overtime. However, overall masculinity proportion remains stable, apart from the census of 2011, when there were more females and that of 1981 when there were more males.

Table 3.2: Sex ratios for the SAARC countries

S.N.	Country	Year	Sex ratio (males per 100 females)
1	Afghanistan	2010	107
2	Bangladesh	2010	103
3	Bhutan	2010	112
4	India	2010	107
5	Maldives	2010	102
6	Nepal*	2011	94
7	Pakistan	2010	103
8	Sri Lanka	2010	98

Source: *Ibid, Table 3.1
Statistical Year Book for the Asia and Pacific, 2011

The sex ratio (male per hundred female) for SAARC countries is presented in table 3.2, and reveals that the lowest sex ratio is observed in Nepal compared to other SAARC countries, followed by Sri Lanka. The low sex ratio in Nepal could also be the result of increased life expectancy for women, as the life expectancy at birth for females is higher than that for men in Nepal from 2000 onwards.

3.2.2 Sex ratio by age

Sex ratio by age groups in various censuses is presented in Table 3.3.

Table 3.3: Sex ratios by five year age groups, Nepal, 1952/54 – 2011.

Age groups	Census years						
	1952/54	1961	1971	1981	1991	2001	2011
0-4	98	98	94	106	103	103	105
5-9	103	103	103	104	104	103	104
10-14	114	114	118	117	108	106	103
15-19	102	102	110	110	96	99	97
20-24	88	86	93	91	85	88	79
25-29	89	90	96	96	89	91	79
30-34	89	91	91	92	92	95	80
35-39	100	104	108	107	101	99	86
40-44	89	89	98	100	95	99	91
45-49	102	101	114	114	104	104	96
50-54	92	92	104	115	106	105	101
55-59	102	100	107	119	116	112	102
60+	76	80	89	109	100	101	98

Source: Ibid, Table 3.1

The male to female sex ratio at birth is approximately 105. Generally male infant mortality rates are higher than female infant mortality rates. Since mortality is usually higher for males than females, all populations have more male than female births, so the sex ratio at birth is calculated to be slightly over 100 (Arriaga, 1994). Table 3.3 shows that the sex ratio in the age group 0-4 was less than hundred until the 1971 census. This could be due to higher female mortality compared to male mortality in previous years in childhood. The sex ratio is greater than 100 in the age group 0-4 after the 1971 census. This would seem to indicate that there were more male births than female due to a male preference for male births. It should be noted that Nepal is a patriarchal society and male births are more valued than female births.

Sex ratio in the 10-14 age group is consistently high in all the censuses of Nepal except that of 2011. Since 1991, the sex ratio for the 10–14 age group has been decreasing and by 2011 it was reported at 103. The sex ratio for the population between the ages of 20 to 34 is low, and ranges from 79 to 96 for all censuses. This is consistent with the prevalence of male migration in these age groups. From 1991, the sex ratio was low for the age group 15-19 and remained low until the age group 40-44, as reported in the 2001 census. In 2011 the low sex ratio moved to the age group 45-49. It may be that male migration started earlier (15-19 age group) than previous years (20-24 age group) and males remain away from home longer, which would explain the low ration in the age group 45-49. The higher sex ratios after the age of 49 may reflect male migrants returning home to join their families during retired life. However this trend is found to reverse after the age of 60. This indicates a lower mortality in the female population in this age group, as the life expectancy of females is higher than males in Nepal.

3.2.3 Sex ratio at regional level

3.2.3.1 Sex ration by rural/urban residence

Table 3.4 shows that sex ratios are more than 100 in urban areas and are highest in the 1971 census (approximately 117), followed by the 1981 census. In rural areas the sex ratio is lower than 100 except in the 1971 and 1981 censuses. However, in these two censuses (1971 and 1981) there were more males than females in both urban and rural areas. The sex ratio for urban centres (58 Municipalities) is presented in Annex 3.2. Annex 3.2 indicates that the highest sex ratio is observed in Kirtipur municipality (125), followed by Birgunj Sub Metropolitan city. The lowest sex ratio is observed in Putalibazar municipality (79) followed by Waling municipality (80).

Table 3.4: Trend of sex ratio of by urban/rural residence, Nepal, 1952/54-2011.

Residence	Census years						
	1952/54	1961	1971	1981	1991	2001	2011
Urban	104.1	112.4	116.6	115.2	108.3	106.4	104.0
Rural	96.6	96.5	100.8	104.4	98.6	98.8	92.3

Source: CBS, 2003

CBS, Population Census 2011, National Report, Vol.I, Table 15.

Note * For 1952/54 urban sex ratios are based on three towns of Kathmandu valley only.

3.2.3.2 Sex ratios of population by ecological zone

Sex ratios by ecological zones are presented in Table 3.5 for the period 1952/54-2011. There are some variations in the sex ratios by ecological zone in Nepal. In 1981, sex ratios were high (more than 100) in all three ecological zones, indicating a male dominance in the population. Tarai has reported male dominance in all censuses apart from the 2011 census. Table 3.5 shows higher sex ratios were recorded until 1981 for Tarai. This trend slowed down in later years and there were more females than males, a sex ratio of 97, in 2011. Mountain and Hill also reported increasing male dominance until 1981. Female dominance in sex ratios was reported in 1991, 2001 and 2011 with slightly more female dominance in Hill. One of the reasons for this is there is more male than female migration from Hill and Mountains, with more male than female net migrants in Hill.

Table 3.5: Sex ratios of population by ecological zones, 1952/54-2011

Zone\Year	1952/54	1961	1971	1981	1991	2001	2011
Mountain	-	-	100.79	104.71	98.43	98.39	93.84
Hill	95.95	94.26	98.02	102.14	95.34	95.84	91.37
Tarai	100.1	102.14	106.39	108.33	103.85	103.77	96.66
Nepal	96.8	97.05	101.37	105.02	99.47	99.80	94.16

Source: *Ibid*, Table 3.1

3.2.3.3 Sex ratios of population by eco-development regions

Sex ratios by eco-development Regions are presented in Table 3.6 for the period 1981-2011. The figures show the dramatic changes in sex ratios by Development Regions in the Census years. In 1981, all the Development Regions reported male dominance, whereas in 1991 and 2001, Western, Mid-Eastern and Far Western Development Regions observed female dominance with more females in Western Development Region. In 2011 only Central Development Region reported male dominance, while all other Development Regions have more females than males.

Table 3.6 also shows that all eco-development Regions in the Tarai had more males than females, except in 2011. In 2011, only Central Tarai has observed male dominance. In 1981, either male dominance or a sex balance was observed, except in Far Western Hill where female dominance was reported, although this was not the case in Central Hill in 1991, 2001, and 2011. This may be due to the inclusion of Kathmandu in Central Hill, where more males than females were counted. In Western Hill, female dominance in sex ratios is observed. In Mountain, the entire eco development region reported male dominance in 1981; interestingly the situation changed in 1991, 2001 and 2011. Male dominance was observed in Western and Mid Western Mountains in 1991, 2001 and 2011, with a high male dominance in Western Mountain.

Table 3.6: Sex ratio of population by ecological & development regions, Nepal, 1981-2011.

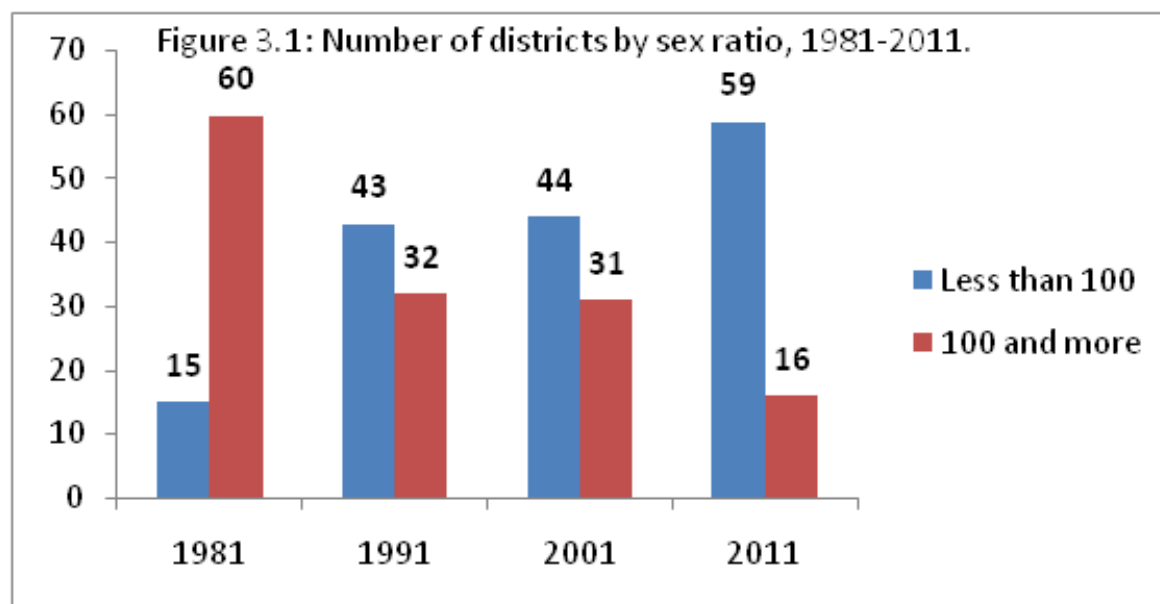
Ecological zones	Year	Development regions					
		Eastern	Central	Western	Mid Western	Far-western	Total
Mountain	1981	102	107	108	107	102	105
	1991	96	100	109	103	94	98
	2001	97	99	116	103	96	98
	2011	91	91	116	102	92	94

Hill	1981	101	106	100	100	92	102
	1991	97	102	88	96	92	95
	2001	97	103	87	97	94	96
	2011	90	101	81	90	87	91
Tarai	1981	108	107	109	107	116	108
	1991	103	106	103	102	101	104
	2001	102	107	102	101	103	104
	2011	94	102	95	94	94	97
Nepal	1981	105	107	103	103	105	105
	1991	100	104	93	99	96	99
	2001	100	105	93	99	98	100
	2011	92	101	87	93	91	94

Source: *Ibid*, Table 3.1

3.2.3.4 Sex ratios of population by district

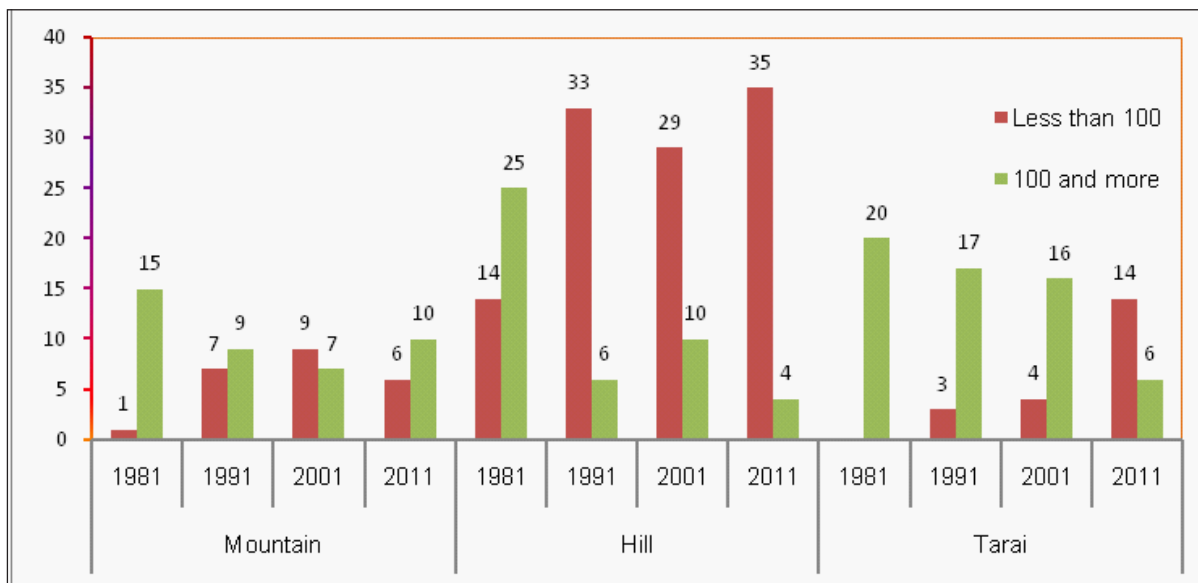
The sex ratios of population by District from 1981 to 2011 are detailed in Annex1. This table shows that sex ratios by district vary according to census years. In 1981, the sex ratio of the population was lowest in Lamjung (90) followed by Syangja (91) and Ramechhap (93), whereas it was highest in Kanchanpur (123) followed by Arghakhanchi (122). Similarly in 1991, sex ratios were lowest in Gulmi (83) followed by Syangja (90). This could be attributed to the higher male migration from districts to other urban centres (see Annex 1 for absentee population and its sex ratio). The sex ration was highest in Mustang (109), followed by Manang (108), Parsa (108), and Kathmandu (108). In 2001, the lowest sex ratio was reported in Gulmi (82) followed by Kaski (83) and was highest in Mustang (120), followed by Kathmandu (114). In 2011, the lowest sex ratio was reported in Gulmi (76), followed by Syangja (77), while the highest was in Manang(127) followed by Kathmandu (110).



Source: *Ibid*, Annex 3.1

Almost all Districts in the Tarai have more males than females. (Figure 3.1). A low sex ratio is seen only in a few Districts in 2011 (approximately 16 districts), with a rapid increase in these Districts in 2011 compared to 2001. Interestingly in the Hill, there are more females than males in a large number of Districts except Kathmandu, Lalitpur, Bhaktapur, and Jajarkot in 2011. In 2011 the number of Districts with more females than males has increased in Hill and in Tarai compared to previous censuses, whereas a reverse trend is found in Mountain (See Figure 3.2). Table 3.7 ranks sex ratio by district for various censuses from 1981 to 2011. The table indicates that the sex ratio of males to females in the Districts is a decreasing trend except in a few Districts.

Figure 3.2: Ranking of sex ratios by ecological zones and number of districts, 1981-2011



Source: *Ibid*, Annex 3.1

Table 3.7: Ranking of district by sex ratio, 1981-2011.

Census year	Ranking of district by sex ratio		
	Less than 94	95-105	106 and above
1981	Lamjung , Syangja, Ramechhap, Parbat, Gulmi, Achham	Okhaldhunga, Pyuthan, Rolpa, Doti, Terhathum, Gorkha, Panchthar, Dolakha, Baglung, Salyan, Dailekh, Taplejung, Khotang, Surkhet, Bajhang, Sankhuwasabha, Solukhumbu, Bhojpur, Manang, Kaski, Bajura, Kavrepalanchowk, Sindhuli, Tanahu, Palpa, Rukum, Baitadi, Dhankuta, Dang, Udayapur, Saptari, Bhaktapur, Dhading, Darchula	Nuwakot, Makwanpur, Parsa, Chitawan, Nawalparasi, Kalikot, Dadeldhura, Ilam, Sunsari, Mahottari, Sarlahi, Bara, Morang, Siraha, Rasuwa, Dhanusa, Rautahat, Rupandehi, Dolpa, Mugu, Jumla, Humla, Jajarkot, Banke, Bardiya, Jhapa, Sindhupalchowk, Mustang, Kailali, Lalitpur, Kapilbastu, Myagdi, Kathmandu, Arghakhanchi, Kanchanpur

1991	Gulmi, Syangja, Parbat, Pyuthan, Baglung, Palpa, Arghakhanchi, Achham, Lamjung, Tanahu, Myagdi, Rolpa, Gorkha, Bajhang, Baitadi, Ramechhap, Doti, Bhojpur, Kaski, Dadeldhura, Khotang	Okhaldhunga, Terhathum, Taplejung, Dolakha, Sankhuwasabha, Bajura, Panchthar, Solukhumbu, Kavrepalanchowk, Dhankuta, Darchula, Salyan, Surkhet, Rukum, Dang, Udayapur, Dhading, Chitawan, Dailekh, Sindhuli, Nuwakot, Nawalparasi, Bhaktapur, Kalikot, Ilam, Jajarkot, Sindhupalchowk, Kailali, Sunsari, Bardiya, Jhapa, Kanchanpur, Saptari, Makwanpur, Morang, Rupandehi, Dolpa, Jumla, Lalitpur, Mugu, Siraha	Humla, Kapilbastu, Mahottari, Sarlahi, Bara, Rasuwa, Dhanusa, Rautahat, Banke, Manang, Parsa, Kathmandu, Mustang
2001	Gulmi, Syangja, Baglung, Parbat, Pyuthan, Arghakhanchi, Palpa, Tanahu, Myagdi, Gorkha, Achham, Lamjung, Ramechhap, Bajhang, Bhojpur, Okhaldhunga, Rolpa, Baitadi, Dadeldhura, Terhathum,	Kaski, Khotang, Dolakha, Sankhuwasabha, Panchthar, Kavrepalanchowk, Darchula, Dhading, Dailekh, Taplejung, Dhankuta, Bajura, Solukhumbu, Surkhet, Dang, Nuwakot, Nawalparasi, Chitawan, Sindhuli, Sindhupalchowk, Jhapa, Dolpa, Doti, Salyan, Udayapur, Ilam, Bardiya, Morang, Kalikot, Sunsari, Rukum, Jajarkot, Kailali, Kanchanpur, Makwanpur, Mugu, Bhaktapur, Saptari, Rupandehi, Lalitpur, Jumla	Siraha, Kapilbastu, Banke, Humla, Sarlahi, Bara, Rautahat, Mahottari, Rasuwa, Dhanusa, Parsa, Manang, Kathmandu, Mustang
2011	Gulmi, Arghakhanchi, Syangja, Baglung, Pyuthan, Parbat, Palpa, Tanahu, Gorkha, Myagdi, Lamjung, Rolpa, Doti, Ramechhap, Achham, Okhaldhunga, Terhathum, Dolakha, Baitadi, Dadeldhura, Dhankuta, Bhojpur, Khotang, Panchthar, Dhading, Nawalparasi, Udayapur, Sankhuwasabha, Dang, Jhapa, Bajhang, Darchula, Taplejung, Rukum, Kaski, Kavrepalanchowk, Nuwakot, Sindhuli, Salyan, Kanchanpur, Surkhet, Chitawan, Sindhupalchowk	Bajura, Ilam, Sunsari, Kailali, Siraha, Saptari, Makwanpur, Rupandehi, Mahottari, Rasuwa, Dolpa, Banke, Jajarkot, Kapilbastu, Kalikot, Dhanusa, Jumla, Mugu, Bhaktapur, Humla, Sarlahi, Lalitpur, Bara, Rautahat, Bardiya, Dailekh, Solukhumbu, Morang	Parsa, Kathmandu, Mustang, Manang

Source: Annex 3.1

3.3 Age composition

The age structure or composition of a population is the distribution of population by age, which facilitates planners and policy makers in formulating effective plans targeting populations of different age groups. Similarly age is an important variable in measuring the potential school age population, voting population and labour force manpower. It is also the most important variable in the study of mortality, fertility, marriage, and certain other areas of demographic analysis. The importance of census data on age in studies of population growth is even greater when adequate vital statistics from a registration system are not available (Henry S. Shryock, Associates, 1971).

3.3.1 Age composition at national level

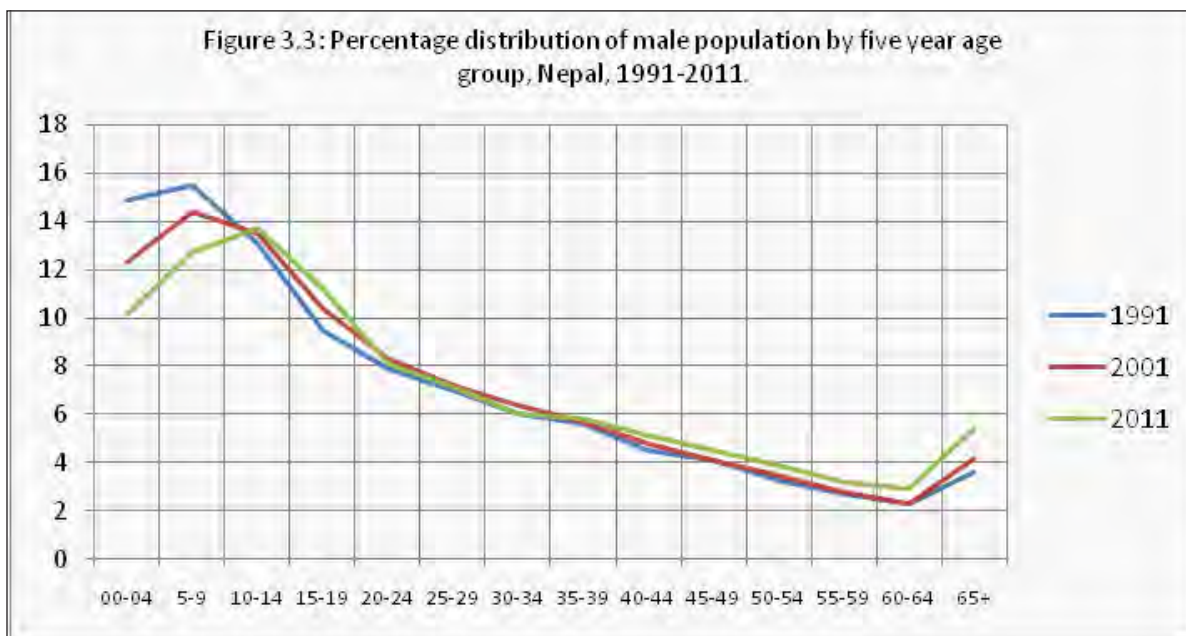
The percentage distribution by age and sex for five age groups for the various censuses from 1971 to 2011 censuses of Nepal is presented in Table 3.8.

Table 3.8: Percentage distribution of population by five year age groups, Nepal, 1971-2011.

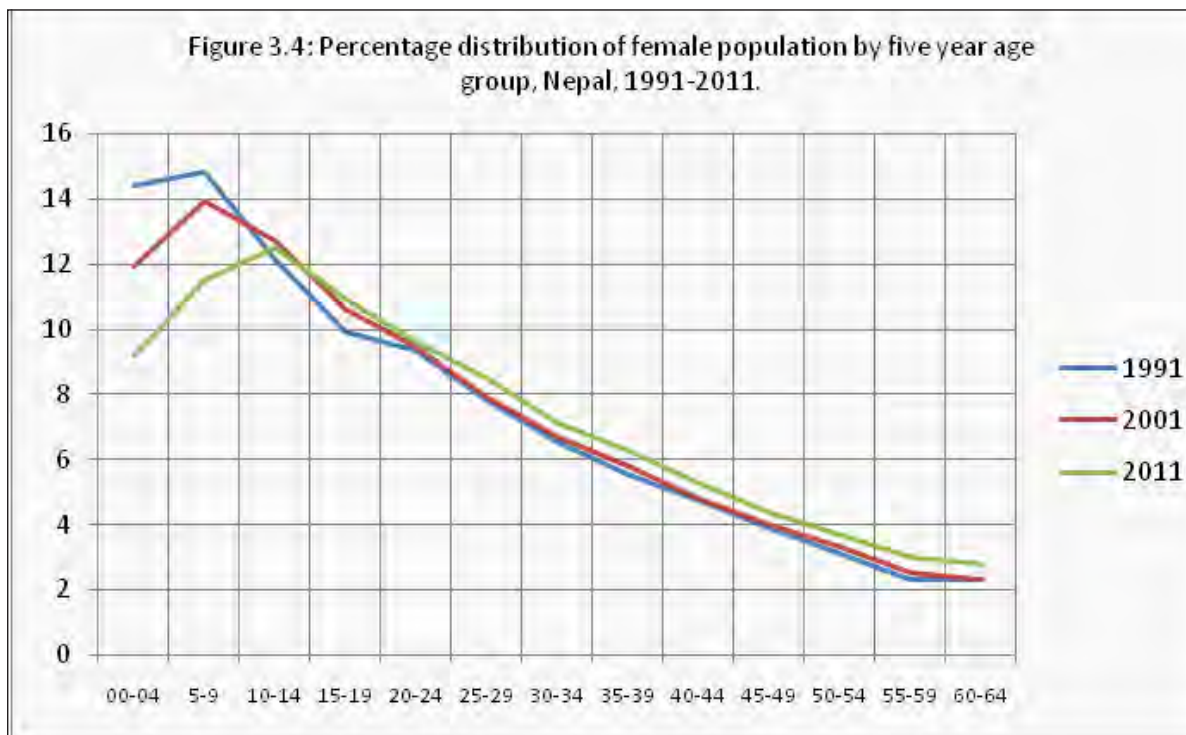
Age group	1971		1981		1991		2001		2011	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
00-04	13.6	14.7	15.5	15.3	14.9	14.4	12.3	11.9	10.2	9.2
05-09	15.2	14.9	14.5	14.6	15.5	14.8	14.4	13.9	12.7	11.5
09-14	12.1	10.4	11.9	10.8	13.1	12.1	13.5	12.7	13.7	12.5
15-19	9.4	8.7	9.0	8.6	9.5	9.9	10.4	10.6	11.2	10.9
20-24	8.0	8.8	8.3	9.5	7.9	9.3	8.3	9.4	8.1	9.6
25-29	7.8	8.3	7.4	8.1	7.0	7.8	7.2	7.9	7.1	8.5
30-34	6.6	7.4	6.1	6.9	6.0	6.5	6.4	6.7	6.0	7.1
35-39	6.6	6.2	6.0	5.9	5.6	5.5	5.7	5.8	5.8	6.3
40-44	5.2	5.4	4.9	5.1	4.5	4.7	4.8	4.8	5.1	5.3
45-49	4.2	3.8	4.3	3.9	4.1	3.9	4.1	4.0	4.5	4.4
50-54	3.5	3.4	3.8	3.4	3.3	3.1	3.5	3.3	3.9	3.7
55-59	2.3	2.2	2.4	2.2	2.7	2.3	2.8	2.5	3.2	3.0
60-64	2.4	2.7	2.5	2.4	2.3	2.3	2.3	2.3	2.9	2.8
65+	3.0	3.2	3.4	3.1	3.6	3.4	4.2	4.2	5.4	5.1
All ages	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100
Total No.	5,817,203	5,738,780	7,695,336	7,327,503	9,220,974	9,270,123	11,359,378	11,377,556	12,849,041	13,645,463

Source: *Ibid* Table 3.1

Table 3.8 shows that in most censuses, except in 1981, the proportion of the population in the age group 0-4 years is lower than that of the age group 5-9 years. In general, in a normal population, age distribution tends to be even, in that the proportion of persons in each successive age group is less than the preceding one. This might be due to the decrease in fertility and mortality rates. For examples see figure 3.3 and 3.4.



Source: *Ibid* Table 3.1

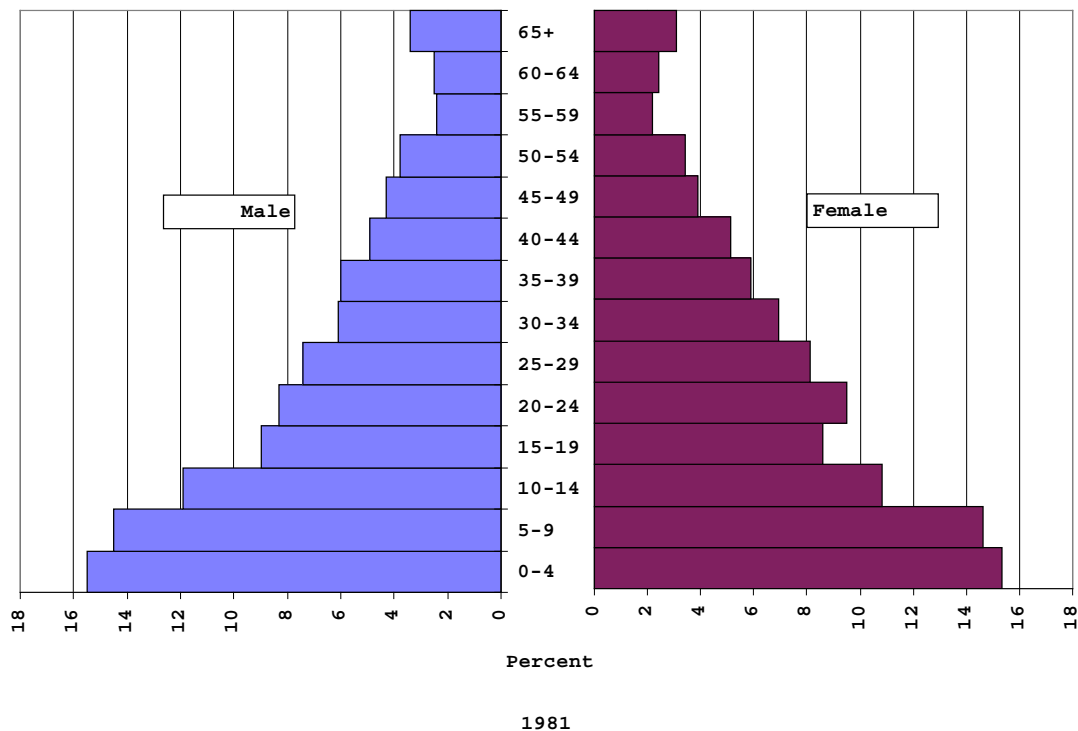


Source: *Ibid* Table 3.1

For the purpose of easy comparison and understanding of the age sex composition, population pyramids have been constructed for the 1981 to 2011 censuses. The population pyramid is one of the most common visual representations of a location's age and sex structure. The figure consists of two sets of horizontal bars for each age cohort, one for males and one for females. These bars are then layered on top of each other. The resulting shape can tell a person what is happening in the population. It shows for a specific point in time, the different surviving cohorts of persons of each sex. A population pyramid is one of the most useful ways of visually presenting sex and age distribution data.

Figure 3.5 shows that the proportion of the population of the age group 0-4 is relatively high when compared to the subsequent age groups in the population census of 1981. A similar pattern is followed for all age groups except females in the age group 20-24. In this group there are more females than preceding or subsequent age groups. This type of pyramid shows the rapid growth of the population. In 1981, the annual growth rate of the population was calculated at 2.62 per annum.

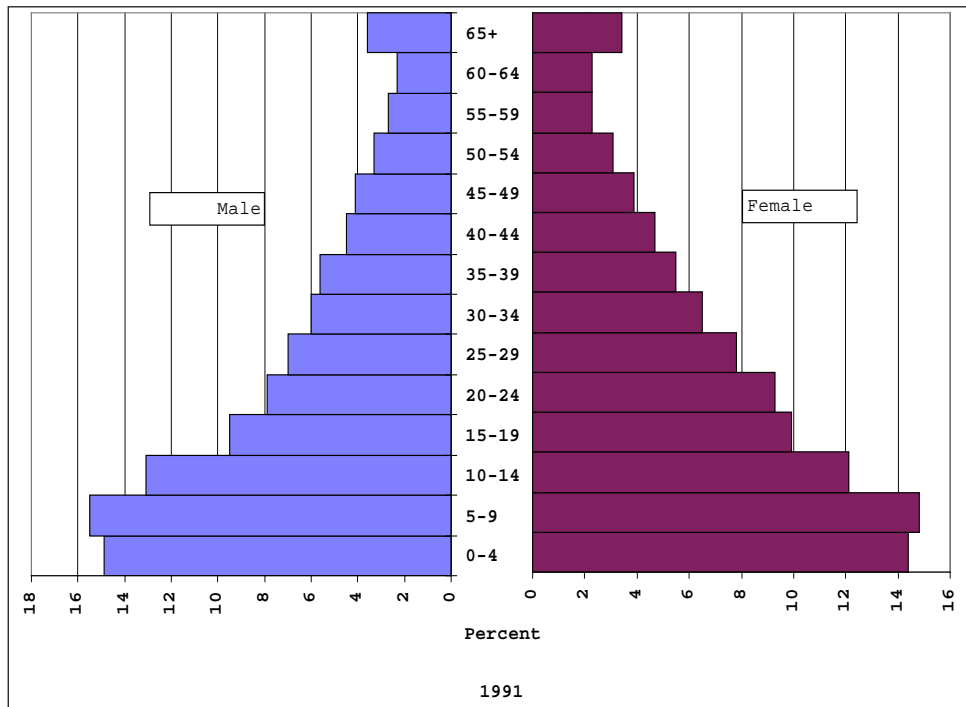
Figure 3.5: Population pyramid for 1981 population census.



Source: Ibid, Table 3.1

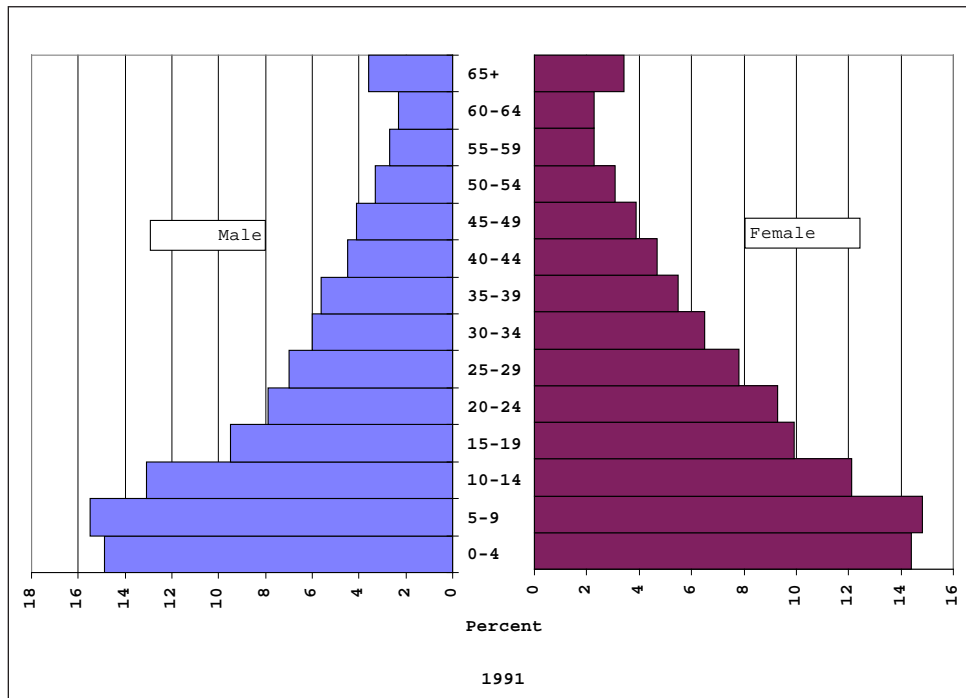
In 1991, the highest proportion of population was counted in the age group 5-9 for both males and females, and the population in the age group 0-4 was less than that of the 5-9 age groups for both sexes. For all age groups a lower population is counted than in subsequent age groups. A similar trend is observed in the 2001 census, however, the proportion of 0-4 age group is lower than in 1991 than in 2001 (see Figures 3.6 and 3.7).

Figure 3.6: Population pyramid for 1991 population census.



Source: *Ibid Table 3.1*

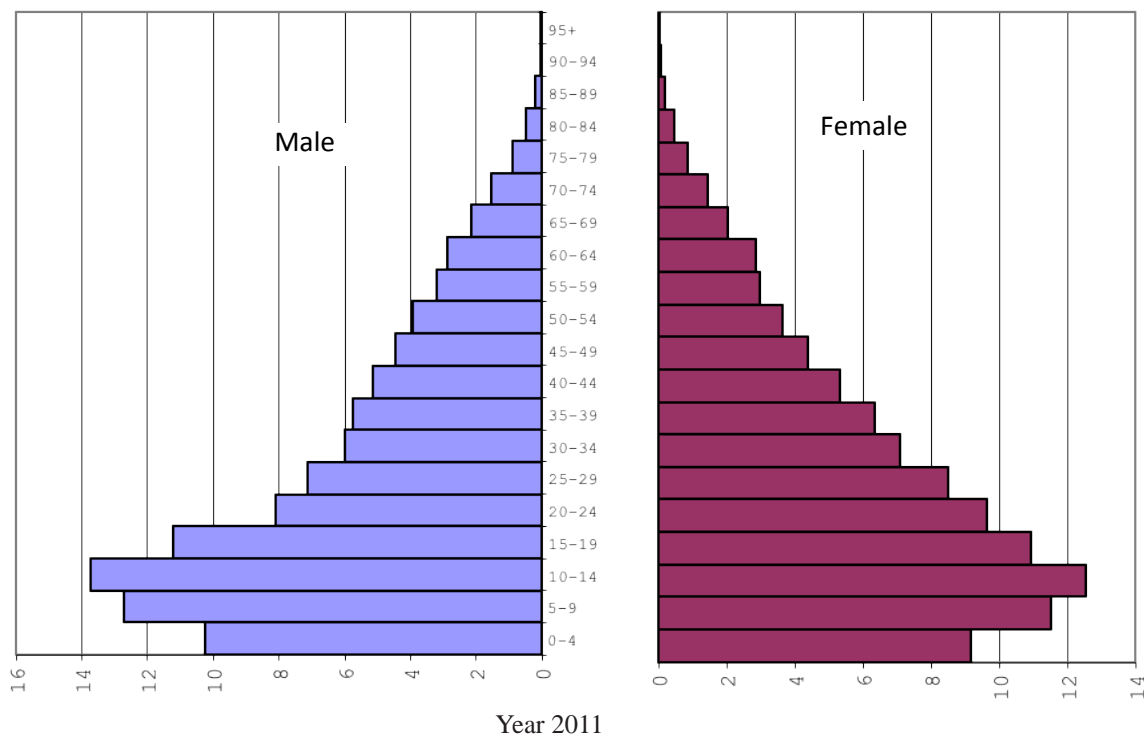
Figure 3.7: Population pyramid for 2001 population census.



Source: *Ibid, Table 3.1*

In 2011, the highest proportion of the population is in the age group 10-14 followed by the 5-9 age group. The population of the 0-4 age group is lower than the subsequent three (5-9, 10-14 and 15-19). The data clearly indicates declining fertility and mortality rates. (see Figure 3.8).

Figure 3.8: Population pyramid for 2011 population census.



Source: *Ibid*, Table 3.1

3.3.2 Age composition of population for urban/rural residence

The percentage distribution of the population by sex and five year age groups for urban/rural areas for the 2001 and 2011 population censuses is presented in Table 3.9. It is clearly observed from the table that in the early age groups, there is a higher proportion of the population in rural than in urban areas. A higher proportion of the population in the working age group (15-59) is reported in urban areas. A significant difference in the proportion of population in the old age group is also noted, with a higher proportion of this age group living in rural areas. This indicates younger people (15-49) from rural areas may have gone to urban areas for work or study. In general, urban areas have facilities and opportunities, for example schools, offices and industries. Table 3.9 also reveals that the population in age group 0-4 years is lower than the age group 5-9 and 10-14 years in both censuses. This could be the effect of declining rates of fertility and mortality. Urban areas have a lower population for the age group 0-4 years when compared to rural areas, this reveals urban fertility is declining more rapidly than rural fertility.

Table 3.9: Age distribution of population by sex and five years age groups for rural and urban, Nepal, 2001-2011.

Age group	2001				2011			
	Urban		Rural		Urban		Rural	
	Male	Female	Male	Female	Male	Female	Male	Female
00-04	9.42	9.55	12.78	12.33	7.48	6.97	10.84	9.61
05-09	11.58	11.52	14.86	14.25	9.87	9.18	13.35	11.96
10-14	12.03	12.02	13.76	12.84	11.57	10.86	14.21	12.86
15-19	11.56	11.29	10.25	10.46	11.86	11.14	11.09	10.87
20-24	10.96	11.31	7.88	9.1	11.3	11.72	7.43	9.22
25-29	9.12	9.6	6.9	7.69	9.55	10.46	6.61	8.14
30-34	7.95	7.85	6.12	6.53	7.87	8.6	5.59	6.77
35-39	6.61	6.53	5.58	5.68	7	7.38	5.49	6.13
40-44	5.3	4.94	4.66	4.8	5.92	5.7	4.97	5.25
45-49	4.23	3.9	4.12	4	4.62	4.47	4.44	4.36
50-54	3.32	3.13	3.48	3.31	3.75	3.57	3.98	3.68
55-59	2.56	2.29	2.85	2.52	2.77	2.7	3.31	3.02
60-64	1.87	2	2.38	2.32	2.27	2.42	3	2.93
65-69	1.39	1.57	1.78	1.7	1.62	1.75	2.28	2.08
70-74	0.99	1.09	1.29	1.17	1.14	1.29	1.64	1.46
75+	1.11	1.4	1.3	1.31	1.41	1.79	1.77	1.66
All ages	100	100	100	100	100	100	100	100
Total No.	1,664,362	1,563,517	9,695,016	9,814,039	2,306,049	2,217,771	10,542,992	11,427,692

Source: CBS, 2003

CBS, Population Census 2011, National Report Vol. I Table 15

3.3.3 Age composition of population for development regions

The percentage distribution of the population by sex and five year age groups for the Development Regions of the 2001 population census is presented in Table 3.9. Table 3.9 shows that the highest proportion of the population is found in the age group 5-9 years followed by a systematic decline in the subsequent age groups. The population in the age group 0-4 years is lower than in the age group 5-9 years. This may indicate the onset of a decline in fertility or could be attributed to an under enumeration of the 0-4 age group. In Table 3.10, it is also noted that the proportion of the working population is highest in the Central Development Region. A reason for this may be that the capital city lies within this region and there are many opportunities to study and gain employment in this region (CBS, 2003).

Table 3.10: Age distribution of population by sex and five years age group for development regions, Nepal, 2001 Census.

Age group	Eastern		Central		Western		Mid Western		Far Western	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
00-04	11.71	11.38	11.54	11.76	12.65	11.36	13.63	13.42	14.10	13.44
05-09	14.25	13.77	13.72	13.78	14.85	13.37	15.03	14.64	15.38	14.59
10-14	13.26	12.59	12.69	12.18	14.59	13.11	14.14	13.42	14.17	13.31
15-19	10.66	10.71	10.25	10.05	10.74	10.98	10.20	11.07	10.28	10.63
20-24	8.23	9.43	8.98	9.60	7.29	9.05	8.29	9.49	8.33	9.30
25-29	7.17	8.00	7.99	8.38	6.03	7.44	7.22	7.75	6.95	7.66
30-34	6.46	6.87	7.06	7.15	5.43	6.35	6.14	6.26	5.93	6.12
35-39	6.00	5.99	6.13	5.97	5.05	5.68	5.52	5.47	5.26	5.36
40-44	5.01	4.97	4.98	4.89	4.47	4.89	4.46	4.52	4.18	4.41
45-49	4.34	4.08	4.18	3.93	4.08	4.16	3.97	3.81	3.77	3.82
50-54	3.53	3.33	3.41	3.19	3.62	3.52	3.36	3.12	3.24	3.18
55-59	2.81	2.49	2.71	2.48	3.05	2.72	2.76	2.26	2.72	2.33
60-64	2.30	2.19	2.24	2.29	2.67	2.49	2.09	1.98	2.16	2.30
65-69	1.74	1.68	1.68	1.75	2.13	1.88	1.40	1.24	1.47	1.52
70-74	1.24	1.16	1.20	1.22	1.64	1.37	0.94	0.80	1.02	0.96
75+	1.30	1.37	1.24	1.38	1.69	1.61	0.84	0.77	1.03	1.07
All ages	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total No.	2,642,320	2,644,570	4,088,292	3,900,320	2,198,170	2,372,843	1,349,073	1,358,171	1,081,523	1,101,652

Source: Adopted from CBS 2003

The percentage distribution of the population by sex and five year age groups for the Development Regions from the 2011 census is presented in Table 3.11. Table 3.11 shows that the highest proportion of the population is in the age group 10-14 years followed by a systematic decline in the subsequent age groups. The population in the age group 0-4 years is lower than in the age group 5-9 years. Similarly, the population in the age group 5-9 years is lower than that of the age group 10-14 years. Comparing this data with the same cohort of the population of the 2001 population census, indicates that the onset of fertility is declining in Nepal (See Tables 3.10 and 3.11).

Table 3.11: Age distribution of population by sex and five years age groups for development regions, Nepal, 2011 Census.

Age group	Eastern		Central		Western		Mid Western		Far Western	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
00-04	9.82	8.72	9.24	8.84	10.19	8.29	12.19	10.91	12.47	10.85
05-09	12.49	11.20	11.89	11.34	12.72	10.56	14.23	12.90	14.50	12.71
10-14	13.51	12.17	12.79	12.22	14.45	12.34	14.77	13.52	15.19	13.56
15-19	11.24	10.82	11.05	10.39	11.86	11.30	10.99	11.56	11.09	11.30
20-24	7.46	9.40	9.00	9.76	7.49	9.69	7.86	9.69	7.71	9.50
25-29	6.69	8.52	7.96	8.87	6.28	8.45	6.89	8.14	6.87	7.87
30-34	5.83	7.09	6.75	7.56	5.21	6.88	5.56	6.49	5.49	6.42
35-39	5.81	6.44	6.35	6.69	5.02	6.19	5.39	5.83	5.24	5.76
40-44	5.38	5.54	5.57	5.50	4.65	5.34	4.69	4.87	4.39	4.72
45-49	4.86	4.70	4.62	4.43	4.32	4.54	4.10	3.90	3.85	3.83
50-54	4.39	4.01	3.90	3.60	4.16	4.00	3.52	3.17	3.21	3.08
55-59	3.63	3.24	3.03	2.87	3.55	3.30	2.93	2.60	2.74	2.57
60-64	3.14	2.91	2.68	2.68	3.23	3.14	2.68	2.69	2.57	2.94
65-69	2.28	2.04	2.06	2.02	2.55	2.26	1.90	1.70	1.94	2.01
70-74	1.64	1.43	1.48	1.46	1.95	1.64	1.20	1.05	1.38	1.47
75+	1.84	1.75	1.61	1.75	2.36	2.08	1.11	0.98	1.35	1.41
All ages	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total No.	2,790,483	3,021,072	4,841,624	4,815,361	2,292,597	2,634,168	1,706,450	1,840,232	1,217,887	1,334,630

Source: CBS, Population Census 2011, National Report Vol. I Table 15

3.3.4 Age composition of population for ecological zones

The percentage distribution of the population by sex and five year age groups for the Ecological Zones for the 2001 and 2011 population censuses is presented in Table 3.12. Table 3.12 reveals, as indicated above, that the proportion of the population in the age group 0-4 years in all regions shows the onset of a decline in fertility in all regions of the country. After the age group 5-9 years the percentage generally decreases in line with the national and development regions of the country.

Table 3.12: Age distribution of population by sex and five years age groups for ecological zones, Nepal, 2001 census.

Age group	2001						2011					
	Mountain		Hill		Tarai		Mountain		Hill		Tarai	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
00-04	12.69	12.40	12.10	11.32	12.39	12.48	11.86	10.86	9.93	8.55	10.27	9.51
05-09	14.49	14.00	13.98	13.16	14.71	14.52	13.64	12.79	12.08	10.65	13.14	12.08
10-14	13.68	13.10	14.00	13.11	13.05	12.32	14.14	13.24	13.64	12.25	13.76	12.70
15-19	10.18	10.44	10.82	11.14	10.14	10.06	10.79	10.89	11.62	11.46	10.97	10.43
20-24	7.87	8.74	8.45	9.57	8.29	9.34	7.13	8.57	8.54	10.09	7.92	9.37
25-29	6.64	7.26	6.88	7.76	7.61	8.22	6.39	7.19	7.16	8.57	7.22	8.65
30-34	6.23	6.23	6.29	6.50	6.50	6.97	5.26	5.92	5.96	6.89	6.12	7.38
35-39	5.52	5.58	5.40	5.68	6.05	5.94	5.20	5.57	5.52	6.24	6.03	6.51
40-44	4.79	4.89	4.65	4.79	4.84	4.84	4.83	5.00	5.11	5.38	5.20	5.31
45-49	4.19	4.02	3.94	3.98	4.29	3.99	4.47	4.33	4.43	4.47	4.52	4.31
50-54	3.61	3.57	3.49	3.45	3.41	3.08	4.12	3.79	4.09	3.85	3.78	3.48
55-59	2.93	2.67	2.90	2.61	2.71	2.35	3.42	2.99	3.26	3.02	3.15	2.93
60-64	2.60	2.65	2.40	2.39	2.19	2.11	3.05	3.21	2.84	2.89	2.87	2.76
65-69	1.88	1.83	1.88	1.81	1.58	1.54	2.22	2.18	2.18	2.11	2.14	1.93
70-74	1.35	1.26	1.36	1.24	1.14	1.08	1.61	1.62	1.61	1.54	1.50	1.32
75+	1.37	1.36	1.46	1.50	1.10	1.16	1.87	1.85	2.03	2.03	1.41	1.35
All ages	100	100	100	100	100	100	100	100	100	100	100	100
Total No.	746,814	758,218	4,930,807	5,146,228	5,681,757	5,473,110	862,592	919,200	5,440,067	5,953,940	6,546,382	6,772,323

Source: CBS, National Report vol. I Table 5

CBS, Population Census 2011, National Report Vol. I Table 15

3.4 Age data and its accuracy

There are many potential sources for error in age reporting, for example under and over estimation of age, or digit preference, for example 0 or 5. In developing countries where the literacy rate is low, the population may not remember their date of birth and reporting may be based on a respondent's estimate of their age. Therefore it is difficult to obtain accurate responses from people about their age. Several methods and indices for evaluating the accuracy of age reporting have been developed and widely employed for a more complete understanding of data structure and anomalies. The age ratios by sex, Whipple's Index, Myer's Blended Index, the UN Age-Sex Accuracy Index, and the Index of ageing and median age of the population are used to assess the accuracy of age data for different censuses.

3.4.1 Single year age distribution of the population

The percentage of single year age distributions up to age 20 from the 1981 to 2011 population censuses are shown in Table 3.13. The single year age distribution of all ages is presented in Table 3.14. The figures for both male and female are also detailed to clearly show the age heaping in the population census of 2011 (see Figures 3.9 and 3.10). The heaping at a certain age, especially on the digits zero and five, is clearly suggested by these figures. The digit preference seems lower in the younger generation but is clearly reflected in the older generation. It might be due to reasons of literacy, as illiterate population may not remember their date of birth. Moreover, the rate of birth registration is increasing in school age populations due to the compulsory requirement of birth certificates at the time of school enrolment. When the data are grouped into five year age groups or broader age groups, some errors, for example, misreporting and digit preference can be minimised, however several important errors remain in the age data even when the age data are grouped (Jacob and David, 2004).

Table 3.13: Percentage of total population by single year up to age 20, by sex, Nepal 1981-2011.

Age	2011		2001		1991		1981	
	Male	Female	Male	Female	Male	Female	Male	Female
0	1.89	1.67	2.22	2.13	3.12	3	2.3	2.67
1	1.70	1.50	2.11	1.99	2.55	2.43	3.42	3.06
2	2.09	1.88	2.51	2.46	2.92	2.85	3.21	3.3
3	2.19	2.01	2.69	2.68	3.16	3.15	3.06	3.24
4	2.36	2.12	2.76	2.68	3.13	2.98	3.08	3.07
5	2.65	2.35	3.25	3.1	3.54	3.34	3.53	3.51
6	2.49	2.26	2.95	2.85	3.16	3.02	2.93	3.04
7	2.47	2.28	2.72	2.71	3.02	2.95	2.72	2.87
8	2.95	2.60	3.25	3.05	3.18	2.98	3.01	2.89
9	2.17	2.00	2.21	2.15	2.61	2.55	2.32	2.35
10	3.25	2.89	3.43	3.2	3.27	2.97	3.2	2.85
11	2.21	2.04	2.1	2.01	2.24	2.04	1.83	1.69
12	3.19	2.82	3.27	2.98	3.12	2.02	3	2.61
13	2.45	2.30	2.27	2.2	2.24	2.11	1.84	1.7
14	2.63	2.49	2.42	2.34	2.23	2.12	2.09	1.91
15	2.54	2.39	2.36	2.25	2.21	2.12	2.03	1.84
16	2.49	2.39	2.25	2.26	2.04	2.06	2.12	1.95
17	2.06	2.00	1.79	1.85	1.57	1.67	1.36	1.34
18	2.64	2.53	2.59	2.67	2.31	2.49	2.29	2.26
19	1.51	1.60	1.46	1.55	1.39	1.48	1.25	1.24
20	2.17	2.46	2.24	2.66	1.97	2.43	2.13	2.69

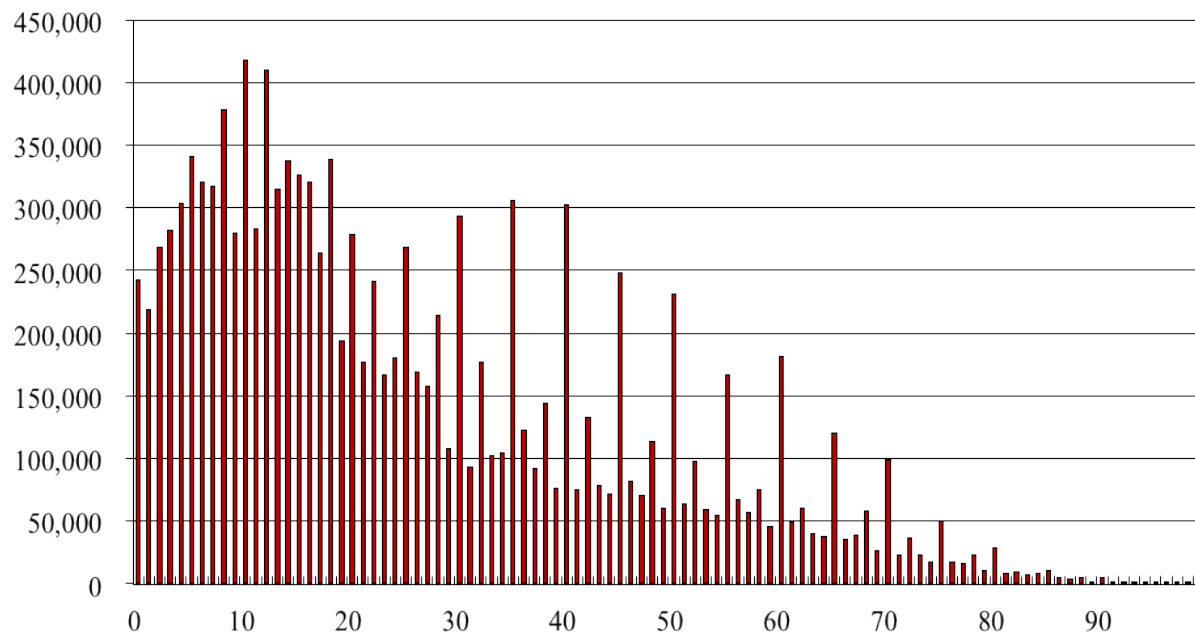
Source: *Ibid*, Table 3.1

Table 3.14: Percent total population by single year by sex, Nepal, 2011.

Age	Census 2011		Age	Census 2011		Age	Census 2011	
	Male	Female		Male	Female		Male	Female
0	1.89	1.67	34	0.82	0.96	68	0.45	0.38
1	1.7	1.5	35	2.38	2.53	69	0.2	0.15
2	2.09	1.88	36	0.95	1.05	70	0.77	0.76
3	2.19	2.01	37	0.72	0.77	71	0.18	0.15
4	2.36	2.12	38	1.12	1.33	72	0.29	0.25
5	2.65	2.35	39	0.59	0.64	73	0.18	0.15
6	2.49	2.26	40	2.35	2.43	74	0.14	0.11
7	2.47	2.28	41	0.58	0.58	75	0.39	0.4
8	2.95	2.6	42	1.03	1.01	76	0.13	0.12
9	2.17	2	43	0.62	0.71	77	0.13	0.12
10	3.25	2.89	44	0.56	0.59	78	0.18	0.17
11	2.21	2.04	45	1.93	1.83	79	0.08	0.07
12	3.19	2.82	46	0.64	0.64	80	0.22	0.24
13	2.45	2.3	47	0.55	0.52	81	0.06	0.05
14	2.63	2.49	48	0.88	0.92	82	0.08	0.07
15	2.54	2.39	49	0.47	0.47	83	0.06	0.05
16	2.49	2.39	50	1.8	1.68	84	0.07	0.06
17	2.06	2	51	0.49	0.43	85	0.08	0.09
18	2.64	2.53	52	0.76	0.66	86	0.04	0.03
19	1.51	1.6	53	0.46	0.47	87	0.03	0.03
20	2.17	2.46	54	0.42	0.42	88	0.04	0.03
21	1.37	1.57	55	1.3	1.16	89	0.02	0.01
22	1.88	2.22	56	0.53	0.48	90	0.04	0.05
23	1.3	1.65	57	0.44	0.39	91	0.01	0.01
24	1.4	1.73	58	0.59	0.59	92	0.01	0.01
25	2.09	2.52	59	0.36	0.34	93	0.01	0.01
26	1.31	1.61	60	1.42	1.4	94	0.01	0.01
27	1.23	1.45	61	0.38	0.36	95	0.01	0.01
28	1.67	2.03	62	0.47	0.47	96	0	0
29	0.84	0.91	63	0.31	0.33	97	0	0
30	2.28	2.78	64	0.29	0.29	98	0	0
31	0.72	0.77	65	0.93	0.96	99	0	0.01
32	1.38	1.57	66	0.27	0.26	100	0.01	0.02
33	0.8	0.99	67	0.3	0.28	Total	100	100

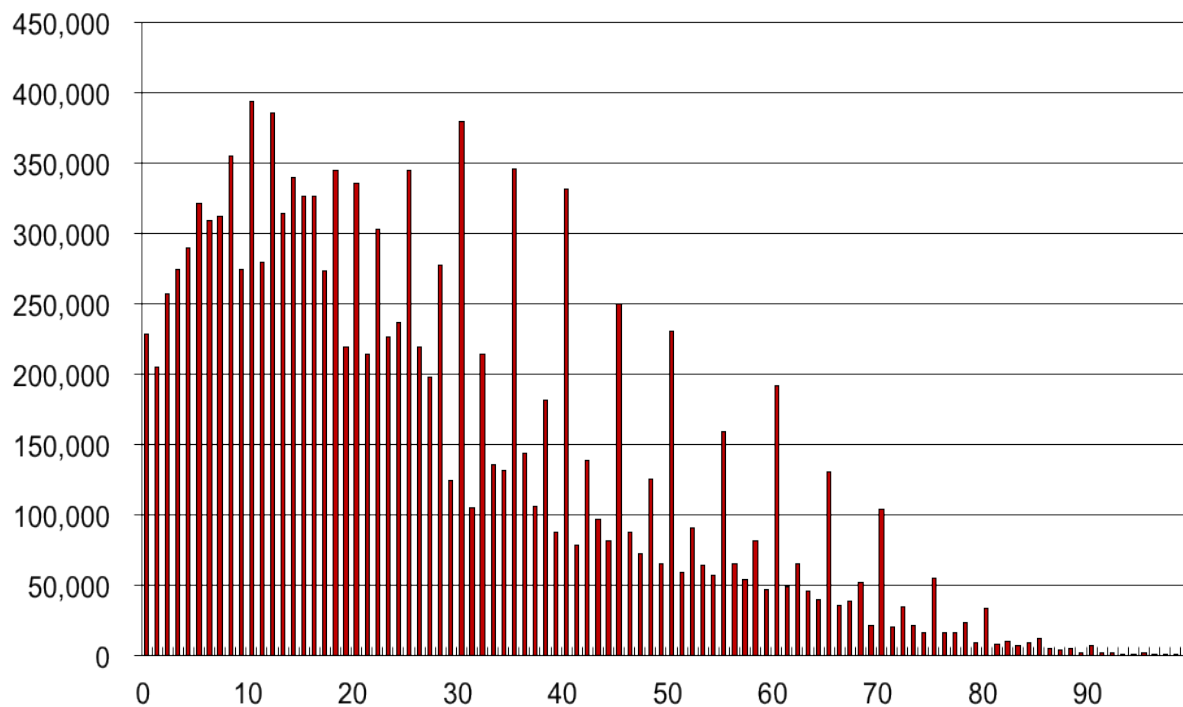
Source: *Ibid*, Table 3.1

Figure 3.9: Single age distribution of male population, 2011

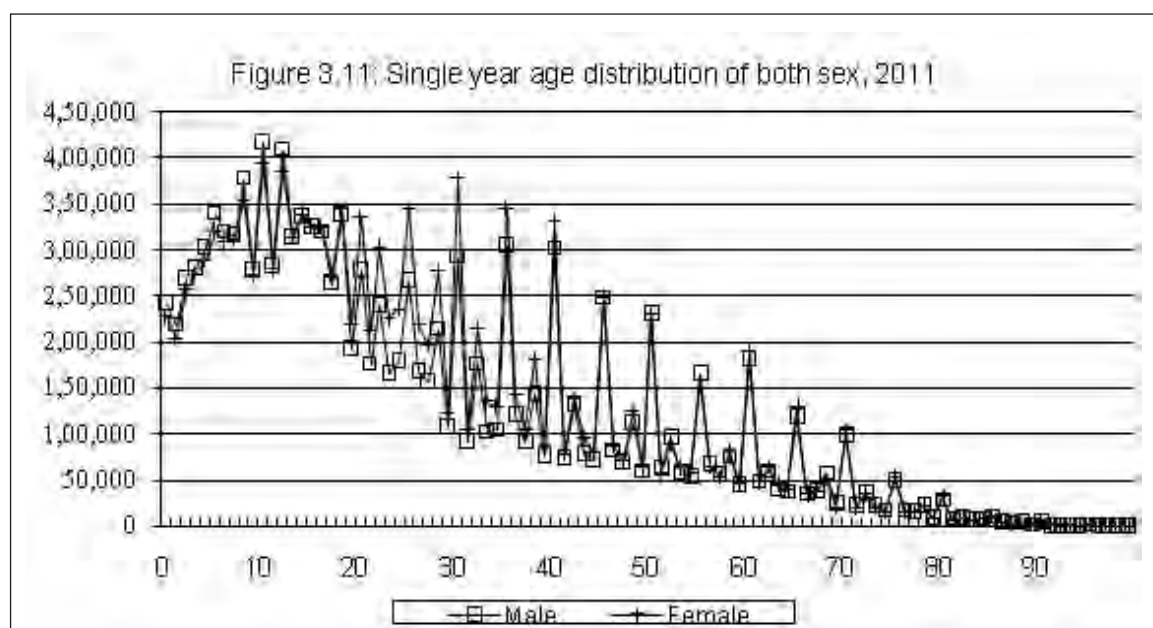


Source: Population Census 2011, CBS

Figure 3.10: Single age distribution of female population, 2011



Source: Population Census 2011, CBS



3.4.2 Whipple's index

Whipple's Index is a summary index that reflects the preference for or the avoidance of a particular terminal digit or of each terminal digit. This test is usually applied to measure the age preference for zero and five as compared to other digits. This index ranges between 100, representing no preference for "0" or "5" and 500, indicating that only digits "0" and "5" are reported in a census. Whipple's Index has been used in censuses from 1971 to 2011. The rating of the quality of the data using Whipple's index is indicated in Table 3.15. The use of Whipple's Index in all censuses indicates a high level of digit preference and that the quality of age data reporting is very rough, however the trend is improving (See Table 3.15). A decrease of approximately 58 points from 1971 to 2011 is a significant improvement in the quality of age data. In the population censuses, a proxy respondent is accepted who might not have all the information for other family members including age or date of birth.

Table 3.15: Whipple's indices for census years 1971-2011.

Sex	Census years				
	1971	1981	1991	2001	2011
Male	240	248	196	206	191
Female	253	255	209	207	186
Both Sex	247	251	202	206	189

Note: **Quality of the data rating**

1. Highly accurate
2. Fairly accurate
3. Approximate
4. Rough
5. Very rough

Whipple's index

- Less than 105
105-109.9
110-124.9
125-174.9
175 and over

Source: *Ibid*, Table 3.1

3.4.3 Myers' blended index

Myers' blended index is similar to Whipple's index, except that the index considers preference (or avoidance) of age ending in each of the digits 0 to 9 in deriving an overall age accuracy score. The theoretical range of Myers' index is from 0 to 90, where 0 indicates no age heaping and 90 indicates the extreme case where all recorded ages end in the same digit. Myers' blended index for censuses 1971 to 2011 is presented in Table 3.16. Table 3.16 shows that age reporting improves after the 1991 censuses and Myers' Index is reported at 15.6 in 2011, with minimal differentiation between males and females.

Table 3.16: Myers blended index for censuses 1971-2011 by sex.

Sex	Census years				
	1971	1981	1991	2001	2011
Male	23.3	23.8	15.8	18.3	15.7
Female	25.3	25.6	18.1	19.1	15.6
Both Sexes	24.3	24.7	16.9	18.7	15.6

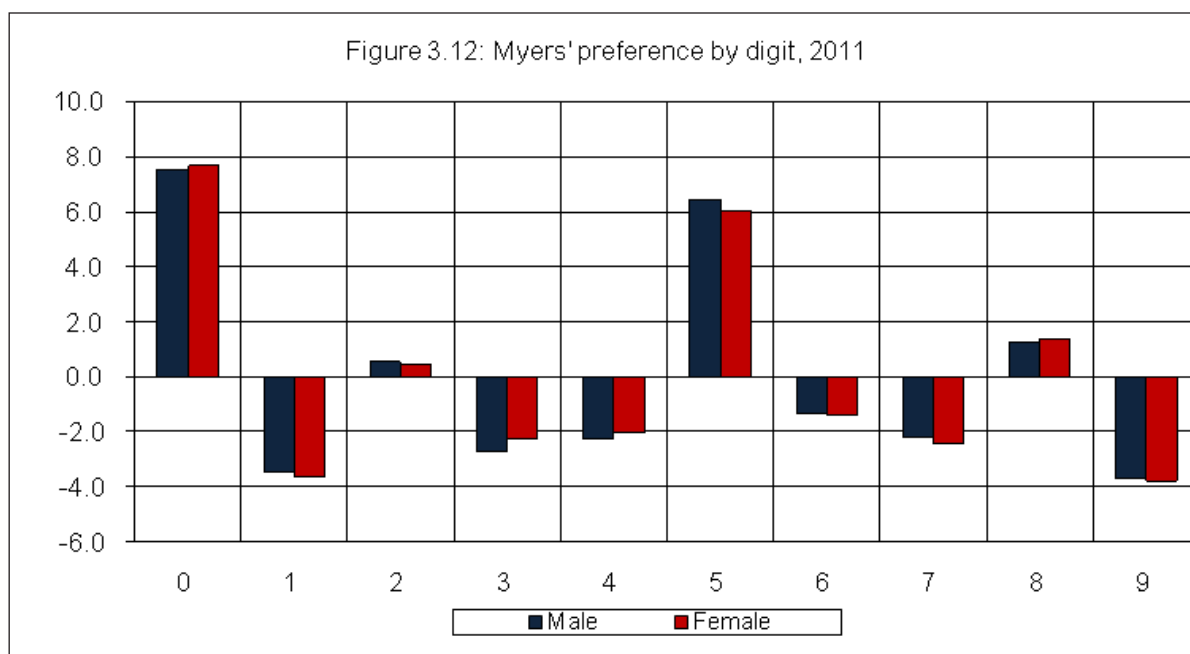
Source: *Ibid*, Table 3.1

Table 3.17 presents the degree of digit preference among males and females in different censuses in their age reporting. Positive indices indicate the degree of digit preference and negative indices represent understatements. Digit sending "0" and "5" are highly preferred for age reporting while ages ending in the digits 1, 3, 4, 6, 7 and 9 are most likely to be understated. This is the pattern for almost all censuses and the trend is approximately the same for males and females (See Figure 3.12).

Table 3.17: Myers index of digit preference by sex for censuses 1971-2011.

Digits	Male				Female			
	1981	1991	2001	2011	1981	1991	2001	2011
0	12.7	7.5	8.6	7.5	14.8	9.6	9.5	7.7
1	-4	-2.5	-3.5	-3.5	-4.3	-3.4	-3.9	-3.7
2	0.7	0.8	0.9	0.5	0.6	1	0.8	0.5
3	-4.5	-3.1	-3.2	-2.7	-4.6	-3.5	-3.2	-2.2
4	-3.8	-2.4	-2.7	-2.3	-3.8	-2.6	-2.7	-2.0
5	9.9	7.2	7.5	6.4	9.6	7.3	7.3	6.1
6	-2.1	-1.6	-1.6	-1.3	-2.8	-2	-1.8	-1.4
7	-4.2	-2.5	-3	-2.2	-4.7	-3.1	-3.1	-2.4
8	0.5	0.7	1.2	1.3	0.7	0.7	1.5	1.3
9	-5.1	-3.8	-4.1	-3.7	-5.4	-4	-4.3	-3.8

Source: *Ibid*, Table 3.1

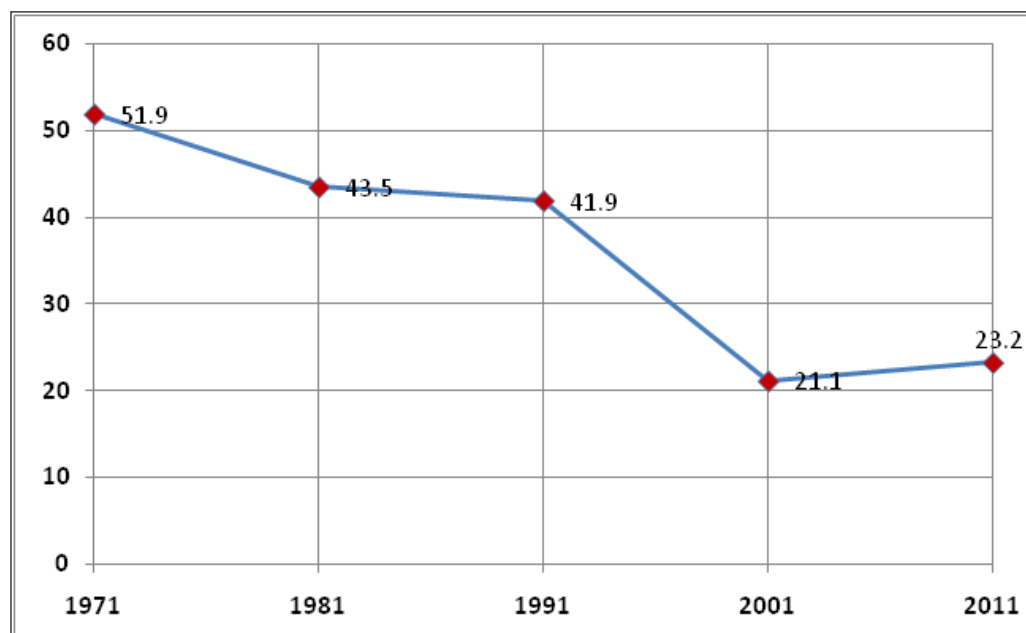


3.4.4 United Nations age-sex accuracy index

The United Nations has also developed an index to assist with the accurate reporting of age sex distribution. The United Nations Age-Sex Accuracy Index evaluates the quality of reported age sex distribution in five year age groups (United Nations, 1956). The following rating is suggested by the United Nations for estimating the quality of age sex data:

Quality of the data	UN age sex accuracy index
Accurate	Under 20
Inaccurate	20-40
Highly inaccurate	Over 40

The calculated value of the United Nations age sex accuracy index for the population census is presented in Figure 3.12. The figure shows that there is sharp decline in this index in 2001; however it slightly higher in 2011 compared to 2001. The figure also reveals that the age sex distribution of the population from 1971 to 1991 is rated highly inaccurate, with indices values greater than 40. However, indices decline sharply from 2001 to 2011 compared to previous censuses. In the census of 2011, the UN Age Sex Accuracy Index is higher at 23.2 compared to 21.2 in the 2001 census, indicating that there is an emerging trend toward greater accuracy and reliability.

Figure 3.13: United Nations age sex accuracy indices for population censuses 1971-2011.

Source: *Ibid*, Table 3.1

The comparison age accuracy index for some countries is presented in Table 3.18. Table 3.18 indicates that it is not only Nepal that encounters issues with mis reporting of age but other developing countries as well. Table 3.18 also indicates that reporting is better in Nepal compared to Bangladesh.

Table 3.18: Whipple's, Myer's and UN age sex accuracy ratio of the some countries

Country	Census year	Whipple's index	Myers' index	UN age sex accuracy ratio
Bangladesh	2011	262	27.4	49.2
Indonesia	2010	114	3.4	17.3
Kenya	2009	147	7.4	21.7
Maldives	2000	111	-	-
Malaysia	2000	115	3.3	21.6
Tanzania	2002	158	13.3	30.5
Nepal	2011	189	15.6	23.2

Source : *Gonzalez et al*, 2014

3.5 Ageing index and median age of population

The ageing index and the median age of the population for the population censuses from 1971 to 2011 are presented in Table 3.19. The ageing index is calculated by dividing the population of persons of old age (age 60 and over) by children (age 0-14 years) and then multiplying by one hundred. The table shows that the ageing index was less than 15 prior to the 2001 census. In 2001, the ageing index increased to 16.7, with minimal variation between males and females. In 2011, the ageing index increased sharply and reached 23.3, higher for females than males. This might be due to the combined effects of declined fertility and mortality and a population shift from younger to old age.

Table 3.19: Index of ageing and median age by sex, Nepal, 1971-2011.

Census Year	Ageing index			Median age		
	Male	Female	Total	Male	Female	Total
1971	13.20	14.75	13.86	19.80	20.70	20.30
1981	14.08	13.51	13.81	19.50	20.30	19.90
1991	13.56	13.80	13.58	18.41	19.40	18.92
2001	16.51	16.32	16.70	19.00	20.00	20.00
2011	22.59	24.03	23.30	21.28	23.05	22.26

Source: *Ibid*, Table 3.1

The median age is the age that divides the population into two numerically equal groups, i.e. half the population is younger than the age, while half is older. A median age that is lower than 20 years shows a younger population. One between 20 to 30 years indicates an intermediate population that is either becoming younger or ageing, while a population with a median age of above thirty years is an old population.

Table 3.19 shows the median age of the country in the years 1971 to 2011. The median age was around 20 prior to 2001, however, the median age increased to approximately 23 in 2011 and is higher for females than males. This indicates that the population of Nepal is growing older and there are older females than males. This is attributed to two reasons. Firstly, the young population is migrating abroad in search of employment and return home when they are older. Secondly, the life expectancy of females is higher than males in Nepal.

3.6 Dependency ratios

The dependency ratio measures the dependency burden of the population. Dependents are the young population between 0-14 years categorised as 'Child dependents', as well as the aging population, 60 years and over, known as the 'Old-age dependents'. The non-dependents are the Working population aged 15-59 years old. The dependency ratio is expressed as the ratio of Child dependents plus the Old-Age dependents to the Working population. The higher the dependency ratio, the higher the number of dependents to be cared for by the working population, particularly the income earners. The dependency ratios for Nepal since 1952/54 to 2011 are presented in Table 3.20.

The figures show that Nepal's dependency ratio in 2011 was 76, meaning that for every 100 persons in the working age population, 76 persons were dependents. The table also reveals that child dependency started to decrease from 2001; conversely old age dependency is increasing consistently overtime. The old age dependency ratio was approximately 9 in 1952/54 and reached 15 in 2011. The highest child dependency ratio was observed in 1991, started to decrease after that. As detailed above, this could be due to the decrease in fertility. Total dependency is also high (94) in 1991, largely attributed to the levels of child dependency (82) (See Table 3.20).

Table 3.20: Dependency ratios for censuses 1952/54-2011

Census year	Total population	Age 0-14	Age 15-59	Age 60+	Child Dependency Ratio	Old Dependency Ratio	Total Age Dependency Ratio
		(i)	(ii)	(iii)	[(i)/(ii)*100]	[(iii)/(ii)*100]	[(i)+(iii)/(ii)*100]
1952/54	8235079	3165645	4659673	409761	67.94	8.79	76.73
1961	9412996	3753065	5170585	489346	72.58	9.46	82.05
1971	11555983	4674578	6232702	648703	75.00	10.41	85.41
1981	15022839	6211972	7953806	857061	78.10	10.78	88.88
1991	18491097	7840771	9576569	1073757	81.87	11.21	93.09
2001	23151423	8948587	12310968	1477379	72.69	12.00	84.69
2011	26494504	9248246	15091848	2154410	61.28	14.28	75.56

Source: *Ibid*, Table 3.1

3.7 Conclusions and policy implications

Age and sex are the most basic and important characteristics of a population in a demographic analysis. A society's age sex structure has important implications for socio-economic and demographic development, as well as for labour force participation and gender relations. However, the quality of age reporting is still far from the satisfactory level. The digit preference is clearly reflected on analysing the single year age of the population. Childhood data is less affected than adult age groups. When the single year age data are grouped into five year age or broad age groups, errors are minimised and the trend towards accuracy and reliability of data are improving. However, for the purpose of demographic analysis and planning process, the adjustment in age sex data is necessary. For future censuses, it is suggested to pay more attention before and during the census operation to ensure the collection of more accurate information especially on age data. To achieve this, one more question should be added for verification purpose when collecting age data, for example 'date of birth'.

When assessing the age sex data it can be observed that the population of Nepal is becoming older. Similarly, the dependency index also indicates that old age dependency is increasing year by year. This indicates that there will be a deficit of labour force in the market in the future. Moreover, female dominance is largely increasing in Nepal, especially in rural and hilly areas. This is mainly due to male migration for employment and better education both internally and internationally. The imbalance in sex structure may create abnormal demographic behaviour in society. Economic activities should be generated in both rural and hilly areas to retain the male population in their native homes.

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Annex 3.1: Sex ratios, absentee population and sex ratios of absentee population, 1981-2011

District	Sex ratio				Absentee pop. & distribution 2011	Sex ratio of absentee pop. 2011
	1981	1991	2001	2011		
Nepal					1921494	709.4
Eastern mountain	102	96	97	91	1.44	1036.6
Taplejung	101	95	97	91	0.51	1342.3
Sankhuwasabha	102	96	96	90	0.63	1313.4
Solukhumbu	102	97	98	94	0.29	533.3
Eastern Hill	101	97	97	90	6.7	1117.1
Panchthar	99	97	96	89	0.93	1342.3
Ilam	107	101	101	95	0.93	1342.4
Dhankuta	104	97	97	88	0.75	1545.4
Terhathum	98	95	94	87	0.51	1790.2
Bhojpur	102	93	93	89	0.77	1327.8
Okhaldhunga	96	95	93	87	0.55	793.5
Khotang	101	94	95	89	0.92	1425.2
Udayapur	105	98	100	89	1.15	989.9
Eastern Tarai	108	103	102	94	14.24	869.1
Jhapa	111	102	99	90	4.2	589.3
Morang	108	103	101	94	3.67	739
Sunsari	107	102	102	95	2.62	629.3
Saptari	105	103	104	96	1.38	3414.4
Siraha	108	105	106	95	2.38	9234.5
Central Mountain	107	100	99	91	1.72	249.8
Dolakha	99	96	96	87	0.53	445.6
Sindhupalchowk	112	101	99	93	1.03	195.2
Rasuwa	108	107	109	98	0.16	250.7
Central Hill	106	102	102	101	11.91	377
Kavrepalanchowk	103	97	96	92	0.76	639.1
Lalitpur	113	103	104	104	1.27	257.9
Bhaktapur	105	100	104	103	0.53	377.8
Kathmandu	117	108	114	110	5.19	256.9
Nuwakot	106	99	98	92	0.74	676
Sindhuli	103	99	99	92	0.8	1090.6
Ramechhap	93	93	90	86	0.58	668.6
Dhading	105	98	96	89	1.17	867.3
Makwanpur	106	103	103	97	0.86	661.5
Central Tarai	107	106	107	102	10.55	1642.6
Dhanusa	108	107	109	101	3.14	7309.2
Mahottari	107	107	108	98	2.11	4349.2
Sarlahi	107	107	107	103	1.11	1193.9
Rautahat	108	107	107	105	0.49	2727

Bara	107	107	107	104	0.65	1891.9
Parsa	106	108	110	108	0.42	1248.9
Chitawan	106	98	99	93	2.62	653.3
Western Mountain	108	109	116	116	0.09	208.7
Manang	102	108	111	127	0.01	146.9
Mustang	112	109	120	112	0.07	224.6
Western Hill	100	88	87	81	21.86	848.7
Gorkha	98	92	87	81	1.46	929.8
Lamjung	90	90	89	83	1.1	1003.2
Tanahu	103	90	87	80	2.41	1329.5
Syangja	91	86	83	77	2.63	1034
Kaski	102	93	95	92	2.98	536.7
Myagdi	115	90	87	83	0.74	1310.2
Parbat	94	86	86	80	1.13	1013.5
Baglung	99	87	85	78	2.22	859.5
Gulmi	94	83	82	76	3.05	697.9
Palpa	103	87	87	80	2.06	962.8
Arghakhanchi	122	87	86	76	2.08	792.5
Western Tarai	109	103	102	95	8.22	858.3
Nawalparasi	106	99	98	89	3.4	876.3
Rupandehi	108	103	104	97	3.27	783.6
Kapilbastu	113	106	106	100	1.55	1011.6
Mid-Western Mountain	107	103	103	102	0.28	339.8
Dolpa	108	103	99	99	0.02	413.8
Jumla	109	103	105	102	0.08	329
Kalikot	106	101	102	101	0.11	461.9
Mugu	108	104	103	103	0.04	345.2
Humla	109	106	107	103	0.04	155.4
Mid-Western Hill	100	96	97	90	6.57	821
Pyuthan	96	87	86	78	1.92	872.3
Rolpa	96	92	94	85	1.23	1017.3
Rukum	103	98	103	91	0.68	922.7
Salyan	100	98	100	92	0.74	963.1
Surkhet	101	98	98	93	1.21	667.1
Dailekh	100	99	96	94	0.58	636.3
Jajarkot	109	101	103	100	0.22	542.2
Mid-Western Tarai	107	102	101	94	4.66	830.6
Dang	104	98	98	90	2.25	1026.8
Banke	109	107	106	99	1.11	765.1
Bardiya	109	102	101	93	1.3	653.2
Far-Western Mountain	102	94	96	92	1.97	298.7
Bajura	102	96	98	95	0.42	300.7

Bajhang	101	92	93	91	1.19	248.6
Darchula	105	97	96	91	0.36	655.9
Far-Western Hill	92	92	94	87	4.54	520.6
Achham	94	89	89	87	1.61	386.4
Doti	96	93	100	85	1.23	777.2
Dadeldhura	106	93	94	88	0.61	824.7
Baitadi	103	92	94	88	1.09	462.5
Far-Western Tarai	116	101	103	94	5.26	470.2
Kailali	112	101	103	95	3.26	413.4
Kanchanpur	123	102	103	92	2	595.7

Source : *Ibid*, Same as Table 3.1

Annex 3.2: Sex ratios and growth rates of municipalities of Nepal, 2001 and 2011

S.N.	Municipality	District	Sex ratio, 2001	Sex ratio, 2011	GR:01-11
	NEPAL		106.4	98.6	3.02
1	Ilam	Ilam	105.4	92.4	1.38
2	Bhadrapur	Jhapa	101.3	95.6	0.01
3	Damak	Jhapa	100.5	89.3	7.63
4	Mechinagar	Jhapa	102.4	92.1	1.60
5	Biratnagar Sub-Metropolitan City	Morang	111.0	102.8	1.88
6	Dharan	Sunsari	97.7	88.7	1.98
7	Inaruwa	Sunsari	104.3	99.3	2.04
8	Itahari	Sunsari	99.9	90.7	5.92
9	Dhankuta	Dhankuta	99.8	88.0	2.46
10	Khandbari	Sankhuwasava	95.4	90.3	1.88
11	Triyuga	Udayapur	100.2	88.7	2.36
12	Rajbiraj	Saptari	114.4	109.0	2.18
13	Lahan	Siraha	110.7	105.6	1.96
14	Siraha	Siraha	103.4	94.8	1.70
15	Janakpur	Dhanusha	117.7	112.8	2.76
16	Jaleswor	Mahottari	110.7	98.8	0.65
17	Malangawa	Sarlahi	108.9	106.7	3.06
18	Kamalami	Sindhuli	99.6	91.1	1.83
19	Bhimeswor	Dolakha	95.8	87.1	0.28
20	Banepa	Kavre	99.3	99.1	4.48
21	Dhulikhel	Kavre	101.9	99.5	2.15
22	Panauti	Kavre	92.6	91.8	0.68
23	Lalitpur Sub-metropolitan city	Lalitpur	107.7	106.3	3.04
24	Bhaktapur	Bhaktapur	102.3	101.0	1.19
25	Madhyapur Thimi	Bhaktapur	107.6	48.5	-1.11
26	Kathmandu Metropolitan City	Kathmandu	115.5	110.4	3.73

27	Kirtipur	Kathmandu	113.2	125.2	4.74
28	Bidur	Nuwakot	95.3	90.6	2.33
29	Hetauda	Makwanpur	106.5	99.3	2.12
30	Gaur	Rautahat	111.3	109.9	3.19
31	Kalैया	Bara	111.7	109.5	2.83
32	Birgunj Sub-Metropolitan City	Parsa	118.3	114.6	1.89
33	Bharatpur	Chitawan	105.5	98.0	4.76
34	Ratnanagar	Chitawan	100.4	91.6	2.05
35	Prithbinarayan	Gorkha	91.2	82.8	2.31
36	Byas	Tanahu	90.9	82.4	4.18
37	Putalibazar	Syangja	84.2	79.0	0.34
38	Waling	Syangja	86.1	81.9	1.62
39	Lekhnath	Kaski	89.0	84.1	3.52
40	Pokhara Sub Metropolitan City	Kaski	103.7	97.7	4.91
41	Baglung	Baglung	92.8	85.8	3.42
42	Tansen	Palpa	99.8	89.5	3.54
43	Ramgram	Nawalparasi	104.6	97.1	1.38
44	Butawal	Rupandehi	105.6	98.6	4.52
45	Siddharthnagar	Rupandehi	105.1	99.6	1.89
46	Kapilbastu	Kapilvastu	108.1	99.9	1.13
47	Tribhuwannagar	Dang	100.1	91.7	3.78
48	Tulsipur	Dang	99.0	92.0	4.20
49	Nepalgunj	Banke	110.8	105.4	2.31
50	Gulariya	Bardiya	106.8	100.7	1.92
51	Birendranagar	Surkhet	102.6	95.4	4.23
52	Narayan	Dailekh	93.1	87.7	0.82
53	Dipayal Silgadhi	Doti	102.9	85.2	0.60
54	Dhangadhi	Kailali	109.3	101.8	4.13
55	Tikapur	Kailali	100.9	92.0	3.71
56	Bhimdatta	Kanchanpur	104.1	95.5	2.58
57	Amargadhi	Dadeldhura	94.7	89.0	1.44
58	Dasharathchanda	Baitadi	90.1	84.3	-0.89

Source: CBS, Population census 2001, Selected Urban Tables, Table 2
Population Census 2011, National Report 1, Table 15

CHAPTER 4

NUPTIALITY TRENDS AND DIFFERENTIALS IN NEPAL

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Abstract

This chapter provides an update to the previous studies on nuptiality trends and differentials in Nepal based on the 2011 census data. Analysis of the data shows that universality of marriage still prevails in Nepal. The nuptiality pattern in the country can be characterised by the growing proportion of single persons and conversely the decreasing proportion of ever-married persons. Consequently, the mean age at marriage for both males and females increased, which is the same for urban and rural areas, ecological and development regions. However, there is a marked gender differential in the value of singulate mean age at marriage (SMAM) observed in urban and rural, ecological, development region and district levels. The mean age at marriage for males exceeds those of females in all regions. Also, increased mean age at marriage was observed in urban areas compared to rural areas for both males and females. The persistence of child marriage is distinct; about half of the marriages in the cohort of ever-married persons below 25 years took place before reaching the minimum legal age of marriage, i.e., 18 years. The value of SMAM is positively correlated with the level of education and the effect of education is more profound in reducing SMAM for females. The gender imbalance in nuptiality patterns is distinct with the increased number of married women than their male counterparts in all age groups, possibly due to the increased number of people, largely males, leaving the country for employment. This finding demands further studies on the impact of such imbalances on the welfare of children and overall social and familial harmony. The proportion of divorce/separated person shows an increased trend from the last intercensal period (2001-2011), particularly after the age group of 30-34 years for both males and females. The key findings of this study have some important policy implications, such as the need for programmes related to education and employment for women, particularly in those areas with lower SMAM values.

4.1 Introduction

Marital status is an important element of population composition and is a significant factor in population dynamics as it affects fertility to a large extent, particularly in societies like Nepal, where marriage is almost universal and most births take place within wedlock. This chapter examines the nuptiality trends and differentials in Nepal based on the 1971-2011 censuses. Various authors have carried out analyses on nuptiality trends and differentials in previous censuses. Hence, this chapter in essence duplicates and updates the chapters on nuptiality in the previous Population Monograph of Nepal based on new information and analysis of data from the 2011 census.

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Looking at the history of the Nepal censuses, all the censuses held since 1952/54 have collected information on the marital status of the population above a particular minimum age. In the 1952/54 censuses, information on marital status was obtained for the population aged 5 years and above, whereas the age limit for collecting the particulars related to marital status was 6 years in 1961 and 1971. However, the age limit was raised to 10 years and above in the subsequent four censuses, (1981, 1991, 2001 and 2011).

In each census before 1991, the information on marital status were collected under four categories, (i) never married; (ii) married; (iii) widowed and (iv) divorced/separated. Unlike the previous censuses, the 1991 census categorised divorced/separated as two independent categories, and information on marital status was collected under five categories. The 2001 census further classified the category 'married' into three sub-categories: (i) single married (married persons living with a single spouse), (ii) multiple married (married persons living with more than one spouse), and (iii) re-married. The 2011 census followed the same categories and age limit (10 years and above) as the 2001 census in collecting the information on marital status. Categorically, marital status has four main categories and four sub-categories: (1) single; (2) married; (2a) single married; (2b) multiple married; (2c) re-married; (3) widowed; (4) divorced/separated (4a) divorced; and (4b) separated.

The 2011 population census also differs from the 2001 population census in respect of the data base on marital status. Shifting the question on marital status from Form 2 (used only in sampled households) to Form 1 (used in complete enumeration), the 2011 population census collected the particulars on marital status from all the individuals above 10 years of age from all the households enumerated, unlike the 2001 population census which only collected information from approximately 21% of the total households.

There is little intercensal variation in the operational definitions of marital status categories with the exception of the further clarification and elaborations that have been introduced since 1981. The operational definitions of marital status categories adopted by various censuses are tabulated in Table 4.1.

Table 4.1: Definitions and categories of marital status in various censuses in Nepal

1952/54-1971	1981	1991	2001-2011
<p>1. Never married: A person who has not lived as husband and wife even once is known as a person who has never married.</p> <p>2. Married: A person who has lived as husband and wife after being married religiously or socially is defined as married.</p> <p>3. Widower/widow: A man who has lost his wife due to death and has not re-married is defined as a widower. On the other hand if a woman has lost her husband on account of death and has not re-married she is known as a widow.</p> <p>4. Divorced/separated: A married person who has broken up the marital relationship is classified as divorced. Even if, the wife has chosen another husband but the husband has not yet re-married, he is considered to be divorced.</p>	<p>1. Never married: A person who is not married in any way (legally, religiously or socially), or who has not lived as husband or wife even once at the time of the census is known as a person who has never married.</p> <p>2. Married: No matter how one is married, one who has lived once as a husband or wife in the community at the time of census enumeration and has continued to do so is known as a married person, even though, living in a separate place. This includes polygamy and re-marriage cases.</p> <p>3. Widowed: If the wife is dead at the time of the census, the person is known as a widower. If the wife loses her husband on account of his death she is known as a widow. In the case of such persons, if they have not re-married at the time of the census they are known as widower or widow. But if they are re-married they are considered to have been married again.</p> <p>4. Divorced/separated: A married person who has broken the marital status legally or by any means is known as divorced. If the husband and wife continue to live separately for ever, they are considered to be divorced. If the wife has chosen another husband but if the husband has not yet re-married at the time of the census, the husband is considered divorced. But once the husband and wife have divorced and lived separately and after sometime both remarry other people, they are considered to be married.</p> <p>A person who has not broken the marital union legally or by any means but is living separately from his/her husband or wife without any relationship to each other is considered separated.</p>	<p>1. Never married: Same as 1981 census</p> <p>2. Married: Same as 1981 census</p> <p>3. Widowed: Same as 1981 census</p> <p>4. Divorced: Same as 1981 census</p> <p>5. Separated: Same as 1981 census</p>	<p>1. Never married: Same as 1981 census</p> <p>2. Single married: New categories in 2001, followed same in 2011 (details please see below)</p> <p>3. Multiple married: New categories in 2001, followed same in 2011 (details please see below)</p> <p>4. Re-married: New categories in 2001, followed same in 2011 (details please see below)</p> <p>5. Widowed: Same as 1981 census</p> <p>6. Divorced: Same as 1981 census</p> <p>7. Separated: Same as 1981 census</p>

Source: Population Monograph of previous censuses

Looking at the definitions followed in various censuses, it is distinctive that the definition employed by the 1981 census places more emphasis on the legal aspect of marriage, while the definitions employed in 1952/54, 1961 and 1971 placed more emphasis on religious and social aspects. The definitions employed by the 1981 census were also followed by the subsequent censuses with the sub-division of married persons into (i) Single married (ii) Multiple married and (iii) Re-married in the 2001 and 2011 censuses.

Single married (Living with one spouse): Persons who are living with only a single spouse at the time of census enumeration are kept in this category. However, a person married again after divorce or separation or death of a previous spouse/s is included in the “Re-marriage” category, even though s/he is currently living with a single spouse at the time of enumeration. If a wife and husband are living separately with consensus and have only a single spouse, they are categorised as “Single Married”. Likewise, a person who used to have more than a single spouse in the past, but s/he is currently living with only a single spouse due to divorce or separation or death of other spouses, then the person comes under the category of “Single Married”. If a widowed person marries with a “Never married” person and is living with single spouse at the time of enumeration, the married widowed person is categorised as “re-married” and the other in the “single married” category.

Multiple married (Living with more than one spouse): Any person comes under the category of “Multiple married” if s/he is living with more than one spouse at the time of census enumeration. However, the spouses may live in different places with consensus, or spouses, do not live in the same place or eat in the same kitchen. This category includes both polyandry (a woman has currently more than one husband) and polygamy (a man currently has several wives) at the time of enumeration.

Re-married: Any currently married person is enumerated as “Re-married” if they have married more than once and are currently living with only a single spouse at the time of enumeration. This means “Re-married” persons are previously divorced or separated, or a widowed person who marries again with other persons of any marital status.

Beside the categorical changes, the other intercensal change is the practice of coding information on the marital status for treating missing cases. In the 1971 and 1981 censuses there was no “unstated” category, as the missing cases were assigned any one of the four categories (never married, married, widowed and divorced) on the basis of some a priori internally consistent assumption. However, in the other censuses (1952/54, 1961, 1991, 2001 and 2011), eligible people from whom information on their marital status could not be obtained, were classified as “unstated”.

4.2 Intercensal changes

4.2.1 Distribution of men and women by marital status

Single or “Never married” persons constitute slightly more than one-third (35.6%) of the population. Approximately two-thirds (64.4%) of the population are “Ever married”. The “Ever married” female population exceeds males by nearly 13%, which could be due to the higher proportion of females in Nepal, or could be due to females being married off at a younger age than males (Please refer to Section 4.2.5 for SMAM Value). Currently the married female population exceeds males by approximately 12%.

In comparing the data on “marital status” obtained by the census with the Nepal Demographic and Health Survey (NDHS) 2011 data, it is apparent from Table 4.2 that the marital status picture employing the census data closely corresponds to the picture from the NDHS 2011. It is impressive to note that both the Population Census and NDHS show the exact percentage (92.9%) of single men in the age group 15-19. The percentage of single men and women obtained from the Population Census is a little higher than the figure obtained from the NDHS. Since the information on marital status is collected from the complete enumeration of households as compared

to a small sample size of 10,826 households in the NDHS 2011, the data collected by the 2011 census may be considered more robust and reliable.

Table 4.2: Percentage distribution by marital status and sex in the reproductive age (15-49 years), Nepal census year 2011 and Nepal Demographic and Health Survey (NDHS) 2011

Age	Population Census 2011					DHS 2011				
	Marital status					Marital status				
	Never married	Married	Divorced	Separated	Widow	Never married	Married	Divorced	Separated	Widow
Men										
15-19	92.9	7.1	0.0	0.0	0.0	92.9	6.9	0.0	0.2	0.0
20-24	57.7	42.0	0.1	0.1	0.1	54.4	44.7	0.2	0.7	0.0
25-29	21.3	78.3	0.1	0.1	0.2	17.3	81.0	0.4	1.1	0.2
30-34	6.7	92.7	0.2	0.2	0.2	6.4	91.9	1.5	0.0	0.1
35-39	2.9	96.3	0.2	0.2	0.4	2.4	95.3	0.3	0.9	1.1
40-44	2.0	96.9	0.2	0.2	0.7	1.4	96.6	0.6	0.2	1.2
45-49	1.6	96.7	0.2	0.2	1.2	0.2	96.3	0.0	1.1	2.4
Total	36.3	63.1	0.1	0.1	0.3	34.8	63.7	0.4	0.6	0.5
Women										
15-19	76.8	23.1	0.0	0.0	0.0	71.0	28.8	0.0	0.2	0.0
20-24	27.3	72.3	0.1	0.1	0.2	22.6	76.6	0.1	0.3	0.2
25-29	7.3	91.9	0.1	0.2	0.5	7.0	91.1	0.2	0.6	1.2
30-34	2.9	95.7	0.1	0.3	1.0	2.0	95.7	0.1	0.6	1.6
35-39	2.0	95.6	0.2	0.4	1.8	1.4	93.8	0.1	1.0	3.6
40-44	1.8	94.5	0.2	0.4	3.1	1.2	92.6	0.1	1.0	5.0
45-49	1.4	93.1	0.2	0.5	4.8	1.3	87.9	0.2	2.3	8.3
Total	23.2	75.2	0.1	0.2	1.2	21.4	75.8	0.1	0.7	2.0

Source: CBS, 2012 National Report; Ministry of Health and Population, Nepal Demographic Health Survey 2011.

Table 4.3 presents data on the marital distribution of the population aged 10 years and above for the five censuses since 1971. An examination of the Table shows a changing composition of population by marital status during the last five decades, particularly between 1961-71, 1971-81, 1991-2001 and 2001-2011. While the change in single person, i.e., never married population was nominal between 1981 and 1991; the increase in the single population was much greater during the period 1991-2001. However, this increase in the single population was not maintained during the period 2001-2011. During the last intercensal period, the population increased by more than 2%. The single male population increased from 38.4% in 2001 to 40.6% in 2011. In the case of the single female population, the population increased from 30.3% to 31.1% during the same period. There was an increase of approximately 1% in the single population for both males and females during this period.

Data show a modest change in the composition of the population by marital status in which the proportion of single persons increased and widowed decreased. However, the increase in the proportion of single persons was not accompanied by an the expected decline in the proportion married. This could be due to a decline in the proportion widowed.

Table 4.3: Marital status of population aged 10 years and over by sex, Nepal, census years 1971-2011

Marital Status and Sex	1971 Census		1981 Census		1991 Census		2001 Census		2011 Census	
	%	Standardised*	%	Standardised*	%	Standardised*	%	Standardised*	%	Standardised*
Males	4140804		5387614		6418531		8330576		9898908	
All statuses	100		100		100		100		100	
Never married	31.93	33.15	35.12	36.19	35.65	34.96	39.23	38.42	40.56	40.56
Married	64.13	62.23	62.14	60.80	60.56	60.75	58.52	59.14	57.57	57.57
Widowed	3.66	4.35	2.36	2.63	2.95	3.44	1.34	1.53	1.63	1.63
Divorced/Separated	0.28	0.27	0.38	0.37	0.46	0.46	0.79	0.24	0.25	0.25
Females	4037816		5130274		6556558		8439703		10822774	
All statuses	100		100		100		100		100	
Never married	19.35	20.76	23.30	24.26	25.71	24.36	30.26	30.26	31.13	31.13
Married	70.27	67.88	70.84	69.14	65.73	65.86	65.45	65.45	63.91	63.91
Widowed	10.10	11.09	5.45	6.18	7.18	8.37	3.65	3.65	4.61	4.61
Divorced/Separated	0.28	0.27	0.42	0.42	0.69	0.71	0.32	0.32	0.35	0.35

* In respect of population aged 10 years and above.

** Standardised on the basis of 2011 age distribution for the population of Nepal aged 10 years and above.

Source: CBS, 1975 Vol. II, Part II, Table 15; CBS, 1984 Vol. II, Part Table 15

CBS, 1993 Vol. I, Part XI, Table 34; CBS, 2002 National Report Vol. II, Table 17

CBS, 2012 National Report Vol. I, Table 19

The effect of the increase in the single population could easily be reflected in the decreased proportion of married person. However, it is to be noted that the increase in the proportion of single persons was not accompanied by an expected decline in the proportion married, particularly in the case of males. The proportion married is higher among females than males in all censuses. At least 64% of females and 58% of males remain married in all the census years. The proportion of married males declined from 64% in 1971 to approximately 58% in 2011 at the rate of 0.16% per annum over the last four decades. The proportion of married females declined from 70% in 1971 to 64 % in 2011, mirroring the same decline rate as males over the same period. This could be an indication of delaying marriage by both females and males.

The proportion of widowhood has decreased considerably for both males and females over the last 40 years. The proportion of widowhood in females decreased from 10% in 1971 to less than 5% in 2011. Similarly, the proportion of widowhood in males dropped to 1.63% in 2011 from 4% in 1971. The reduced proportion of widowhood in both males and females may be due to the increased proportion of re-marriage by both ever-married men and women or the increased longevity of both men and women as married couples.

The proportion of males who were divorced or separated was observed to be low and fluctuated between 0.2 to 0.0.5%. The proportion of males divorced or separated in 2011 was almost equal to the proportion of males divorced or separated in 1971. Likewise, the proportion of divorced/separated females was also stable during the last two inter censal periods. However, the proportion of divorced/separated females has increased from 0.28% in 1971 to 0.35% in 2011. The intercensal marriage pattern, as noted above, remains unchanged even when allowance is made for the effect of variation in age distribution over the years (see the standardised rates in Table 4.3).

The overall picture of marital composition of the population does not explain the changes in marital status, particularly those that have taken place in recent years and in different geographical locations. The following sections will look at marital distribution by age groups and geographical regions to understand the changes in the nuptiality patterns.

4.2.2 Gender imbalance in married population

One of the most striking features of the marital status of the Nepalese population is its gender imbalance in the currently married population. The sex ratio (per 1000) among the currently married person not only exceeds 1000 in every census but also is an increasing trend. This impact is illustrated by the increased number of currently married females compared to males (see Table 4.4). The imbalance in the number of currently married males and females has become more distinct over the last decade (2001-2011). The currently married female population

Table 4.4: Sex ratio among the currently married persons, Nepal, Census Years 1952-54 – 2011

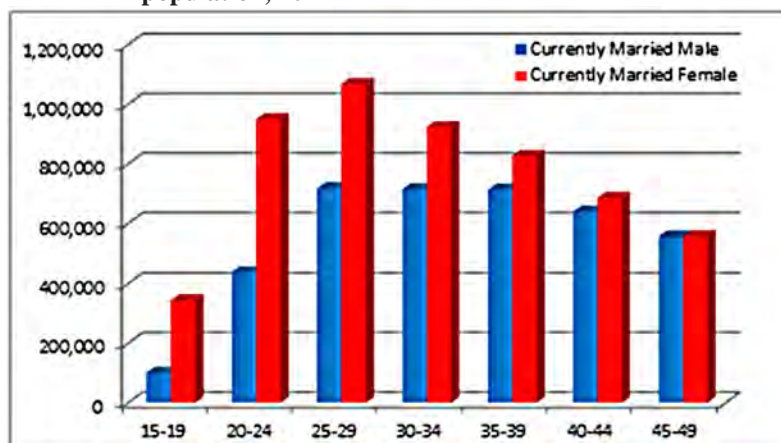
Census years	Currently married males	Currently married females	Sex ratio (per 1,000 males)	Surplus married females to males (%)
1952/54	1,905,571	2,078,957	1,091	9.1
1961	2,149,756	2,373,199	1,104	10.4
1971	2,655,329	2,837,798	1,069	6.9
1981	3,347,744	3,634,205	1,086	8.6
1991	3,887,062	4,309,626	1,109	10.9
2001	4,874,884	5,523,737	1,133	13.3
2011	5,698,674	6,917,125	1,214	21.4

Source : CBS 1995; CBS 2002, CBS 2012

exceeds the currently married male population by more than 21%. The imbalance in the number of currently married population is primarily within the population of reproductive age. The largest difference in the number of married males and females is in the age group of 20-24 years followed by 25-29 years (See Figure 4.1).

The increased number of currently married females may be attributed to the increased number of males leaving the country for overseas employment. A large number of emigrants are predominantly males (around 88%) and they leave behind their spouses if they are married. Another possible reason could be the limited practice of polygamy. Yet another plausible reason could be that males are intentionally delaying marriage, while females are generally being married off at a younger age and married to men much older than them. The number of currently married men reported to have had more than one wives constitutes 1.5% of the population in 2011

Figure 4.1: Imbalance in currently married male and female population, 2011



Source: CBS 2012 National Report

4.2.3 Proportion married by age and sex

Table 4.5 provides data on the percentage distribution of the married population aged 10 years and above by age and sex. The table shows a number of distinct intercensal marital patterns and variations that are instrumental in explaining the variation in fertility behaviour in Nepalese society. Firstly, there is a decreasing trend of the proportion of both men and women marrying in the early age groups, which indicates the postponement of the age at first marriage. Secondly, the proportion of both men and women marrying at an early age, particularly in the age group 10-14 years has significantly reduced during the last 50 years. The intercensal reduction in the proportion married from 2001 – 2011 is highest in the age group 10-14 for both men and women. This shows that the custom of early or child marriage is fading out from Nepalese society; particularly due to an increment in the legal age of consent. However, the fact that about one-fourth of women in the age group 15-19 are married indicates the persistence of the early marriage of girls to some extent. Thirdly, the higher proportion of married women in the age group 15-19 years, 23.09%, compared to 7.05% for males, shows that women marry earlier than men. Fourthly, the relationship between the age and the proportion married is curvilinear for both men and women. However, there are different variations and patterns in the curve for men and women. In the case of married women, the curve rises sharply after the age group 10-14 years and plateaus in the age group 30-34 years for women, whereas the curve, for men rises suddenly after the age group 15-19 years and peaks at the age group 40-44 years. This shows that the propensity of marriage in women starts and ends earlier than men.

Table 4.5: Age-sex specific proportions of currently married by age and sex, Nepal, census years 1961-2011 and percentage change in proportions married between 1961-71, 1971-81, 1981-91, 1991-2001, 2001-2011 and 1961-2011.

Sex/Age	% Currently married						Percentage change					
	1961	1971	1981	1991	2001	2011	1961-71	1971-81	1981-91	1991-2001	2001-2011	1961-2011
Males												
All ages*	65.37	64.13	62.14	60.56	58.52	57.57	-1.9	-3.1	-2.5	-3.4	-1.6	-11.9
6-9	2.97	1.2					-59.6					
10-14	10.59	6.23	14.03	4.06	0.76	0.45	-41.2	125.2	-71.1	-81.3	-40.2	-95.7
15-19	35.86	26.62	25.09	19.13	11.7	7.05	-25.8	-5.7	-23.8	-38.8	-39.7	-80.3
20-24	69.63	65.59	57.82	60.29	47.82	42.03	-5.8	-11.8	4.3	-20.7	-12.1	-39.6
25-29	85.27	85.65	78.8	85.51	81.05	78.27	0.4	-8	8.5	-5.2	-3.4	-8.2
30-34	90.42	91.5	85.76	92.8	93.36	92.74	1.2	-6.3	8.2	0.6	-0.7	2.6
35-39	91.83	93.31	88.98	94.75	96.02	96.34	1.6	-4.6	6.5	1.3	0.3	4.9
40-44	91.05	92.94	89.07	94.35	96.22	96.89	2.1	-4.2	5.9	2	0.7	6.4
45-49	89.5	92.44	89.16	93.49	96.2	96.73	3.3	-3.5	4.9	2.9	0.5	8.1
50-54	86.96	90.51	88.36	91.15	95.22	95.88	4.1	-2.4	3.2	4.5	0.7	10.3
55-59	84.13	88.54	87.18	89.18	94.12	94.89	5.2	-1.5	2.3	5.5	0.8	12.8
60+	73.17	78.95	80.82	79.32	88.33	87.47	7.9	2.4	-1.9	11.4	-1.0	19.5
Females												
All ages*	69.16	70.27	70.8	65.73	65.45	63.91	1.6	0.8	-7.2	-0.4	-2.4	-7.6
6-9	5.29	2.33					-56					
10-14	24.64	13.36	13.36	7.21	1.73	1.12	-45.8	0	-46	-76	-35.3	-95.5
15-19	71.42	60.19	50.05	45.5	33.26	23.09	-15.7	-16.8	-9.1	-26.9	-30.6	-67.7
20-24	91.57	91.07	85.93	85.09	78.17	72.28	-0.5	-5.6	-1	-8.1	-7.5	-21.1
25-29	93.71	95.42	93.21	94.13	93.64	91.86	1.8	-2.3	1	-0.5	-1.9	-2.0
30-34	91.83	94.99	94.78	95.13	96.1	95.74	3.4	-0.2	0.4	1	-0.4	4.3
35-39	86.65	91.95	93.81	93.89	96.07	95.62	6.1	2	0.1	2.3	-0.5	10.4
40-44	78.32	86.64	91.12	90.85	95	94.47	10.6	5.2	-0.3	4.6	-0.6	20.6
45-49	68.59	80.57	87.8	86.33	93.23	93.09	17.5	9	-1.7	8	-0.2	35.7
50-54	59.15	70.82	81.74	78.23	89.46	90.20	19.7	15.4	-4.3	14.4	0.8	52.5
55-59	50.78	66.62	79.06	72.26	86.35	86.62	31.2	18.7	-8.6	19.5	0.3	70.6
60+	32.13	44.38	61.04	49.17	71.75	68.18	38.1	37.5	-19.4	45.9	-5.0	112.2

* In respect of population aged 10 years and above.

** Standardised on the basis of 2011 age distribution for the population of Nepal aged 10 years and above.

Source: CBS, 1968 Vol. III, Part VI, Table 7; CBS, 1968 Vol. III, Part VI, Table 7

CBS, 1975 Vol. II, Part II, Table 15; CBS, 1984 Vol. II, Part Table 15

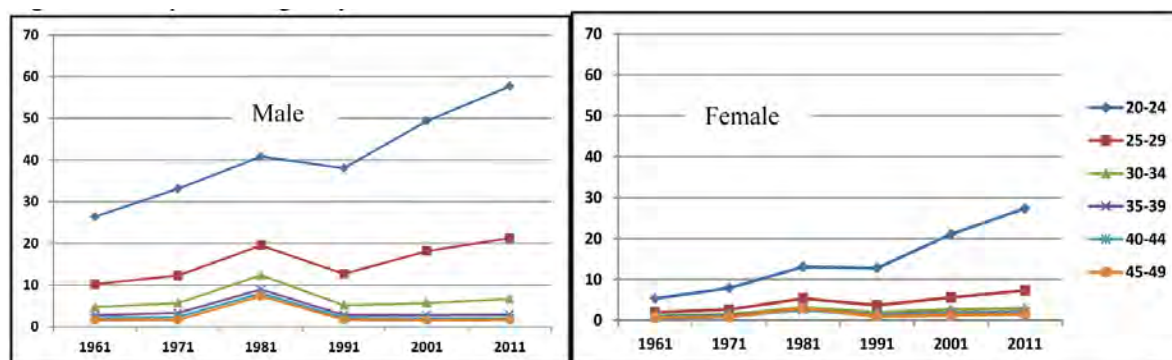
CBS, 1993 Vol. I, Part XI, Table 34; CBS, 2002 National Report Vol. II, Table 17

CBS, 2012 National Report Vol. I, Table 19

4.2.4 Proportion single by age and sex

Annex 4.1 gives the proportion of the population by age and sex who have never married for the last 50 years. Close examination of the table reveals a number of interesting facts: (i) Males and females who have never married is still increasing primarily in the early two five year age groups 20-24 and 25-30 years. This clearly supports the increasing mean age at marriage for both males and females. (ii) The proportion of single women in 2011 accounts for less than half of the proportion of single men in the same age group 20-24 years and only one-third of single men in the age group 25-29 years. This data clearly indicates the custom of relatively early marriage for women compared to men (iii) Universality of marriage is apparent from the data that shows only a small fraction of men and women are not married after the age of forty. (iv) The proportion of males and females who are not married sharply decreases after the age group 25-29 years and is almost static from the age group 35-39 years to the age group 55-59 years.

Figure 4.2 : Proportion singles by sex 1961-2011



Source: Same as Annex 4.2

4.2.5 Singulate mean age at marriage

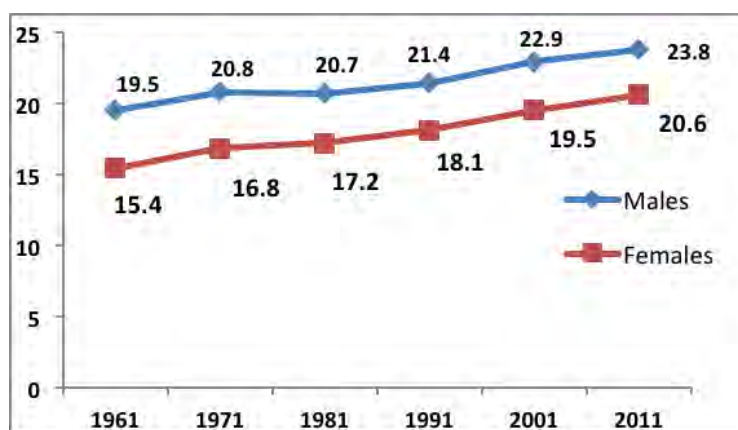
Singulate mean age at marriage (SMAM) is an estimate of the average number of years lived as “Single or Never married” by those who marry before the age of 50. A high value of SMAM means postponement of marriage to a higher age. A high SMAM for females reduces lifetime fertility..

The 2011 census data show an increased mean age at marriage - a continuation of the previous trend in each census. This trend holds true for males and females, ecological zones and most of the development regions. Also, the difference between the SMAM of males and females is getting narrower and the value is at its lowest in the last intercensal period.

In the absence of a direct question on the age at marriage in the censuses, except for the last two censuses in 2001 and 2011, an indirect estimate of mean age at marriage by the Hajnal Technique, known as Singulate Mean Age at Marriage (SMAM), is used to analyse the status of the mean age of marriage. SMAM is computed from the proportion of single persons or “Never married” in each age group from 15-19 to 50-54 years.

The previous section indicated that there has been a sharp reduction in the proportion of married persons, particularly in the younger age groups over the last five decades, which may be interpreted as a deliberate attempt on the part of young men and women to postpone marriage. This premise is also supported in Figure 4.3.

Figure 4.3: Singulate mean age at marriage (in years) by sex, Nepal, census years 1961-2011.



Source: Same as Table 4.3

Table 4.6 reveals that the singulate mean age at marriage (SMAM) has been rising for both males and females since 1961. During the last 50 years, the value of SMAM has increased by 4.3 years for males and 5.2 years for females. The increase in the value of SMAM confirms the postponement of marriage by younger people. The

table also shows that SMAM values for males are higher than females by more than 3 years in all censuses. This difference could be due to the custom of maintaining the age difference between a bride and groom at the time of marriage, a custom practiced in Nepalese society.

Table 4.6 reveals that the singulate mean age at marriage (SMAM) has been rising for both males and females since 1961. During the last 50 years, the value of SMAM has increased by 4.3 years for males and 5.2 years for females. The increase in the value of SMAM confirms the postponement of marriage by the younger people. The Table also shows that SMAM values for males are higher than females their counterparts by more than 3 years in all censuses. This difference could be due to the custom of maintaining the age difference between a the bride and and the groom at the time off or marriage, a custom usually practiced in the Nepalese society.

Table 4.6: Singulate mean age at marriage (in years) by sex, Nepal, census years 1961-2011.

Sex	Singulate mean age at marriage						2011-1961
	1961	1971	1981	1991	2001	2011	Difference in SMAM
Males	19.5	20.8	20.7	21.4	22.9	23.8	4.3
Females	15.4	16.8	17.2	18.1	19.5	20.6	5.2
Male-female difference in SMAM	4.1	4	3.5	3.3	3.4	3.2	-0.9

Source: *Ibid* Table 4.5

The value of SMAM for both males and females has increased by about one year during the last intercensal period. In 2011, the SMAM for males reached approximately 24 years and approximately 21 years for females. it is about 21 years in 2011. The difference of SMAM between males and females has come down to its narrows down to the lowest value, 3.2 years, so far, during the last intercensal period. The Singulate Mean Age at Marriage (SMAM) varies by rural/urban residence, ecological zone and development region (see Table 4.7).

Table 4.7: Singulate mean age at marriage (in years) by rural/urban residence and regions for Nepal, 2001 and 2011

Residence	Singulate mean age at marriage						2011-2001	
	2001			2011			Difference in SMAM	
	Male	Female	Male-female difference	Male	Female	Male-female difference	Male	Female
Urban	24.5	20.7	3.8	25.9	22.1	3.8	1.4	1.4
Rural	22.5	19.3	3.2	23.2	20.2	3.0	0.7	0.9
Urban-rural difference in SMAM	2	1.4		2.7	1.9			
Ecological zones								
Mountain	22.1	19.6	2.5	22.6	20.3	2.3	0.5	0.7
Hill	23.4	20.2	3.2	24.4	21.1	3.3	1.0	0.9
Terai	22.5	18.9	3.6	23.5	20.1	3.4	1.0	1.2
Development regions								
Eastern	23.7	20.3	3.4	24.4	20.9	3.5	0.7	0.6
Central	23.1	19.5	3.6	24.4	20.9	3.5	1.3	1.4
Western	22.7	19.5	3.2	23.8	20.4	3.4	1.1	0.9
Mid-Western	21.8	18.9	2.9	22.1	19.6	2.4	0.3	0.7
Far-Western	21.8	18.5	3.3	22.8	20.1	2.7	1.0	1.6

Source: CBS 2002, CBS 2012 National Report

4.2.5.1 Rural/urban differences in singulate mean age at marriage

The rural-urban differences in SMAM is high in 2011, at 2.7 years for males and 1.9 years for females, compared to 2 years for males and 1.4 years for females in 2001. SMAM values are higher in urban than in rural areas, a pattern seen in all previous censuses. The postponement of marriage in rural areas is insignificant compared to the postponement in marriage in urban areas for both males and females during the last intercensal period. There is an increment of approximately 1.5 years in the value of SMAM for both males and females in urban areas, whereas the corresponding increment is only 0.7 and 0.9 years for males and females in rural areas. This clearly demonstrates the reluctance of both males and females in urban areas to marry early. Urban women generally delay marriage by approximately two years compared to women living in rural areas. Various reasons may be contributing to the delay of marriage in the urban areas. Firstly, both males and females in urban areas are more educated than people in rural areas. The educational status of females is the most important factor that influences their age at marriage. Secondly, the trends in the labour market in urban areas have opened up employment opportunities, particularly for women, and widened their aspirations while freeing them from financial dependence on men. In general, education and employment tend to expand women's horizons and provide them with previously unavailable opportunities and lifestyles that compete with marriage.

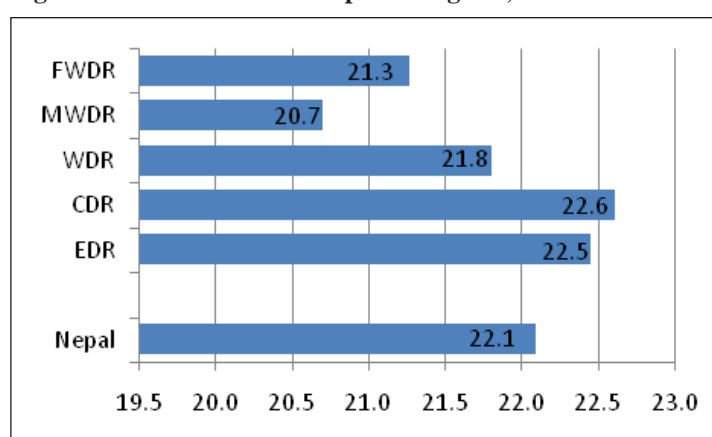
The increase in the value of SMAM for both males and females is more rapid in urban than in rural areas. However, there is a larger male-female difference in the SMAM value in urban than in rural areas. The value of SMAM for males increased by 5.7% and for females by 6.8% keeping the gender difference in SMAM unchanged to 1.4 years during the last two-census period. This higher rate of increment in SMAM for women may be attributed to increased modernisation of society and an expansion in the service sectors that has resulted in structural changes in the labour market, creating large numbers of jobs for women. These new opportunities will encourage women, particularly young unmarried women, to enter into paid employment away from their homes.

There is a larger urban-rural difference in SMAM values for males than females (See Table 4.7). The value of SMAM is 26 and 22 years for urban males and females. The corresponding value in rural areas is 23 years and 22 years for males and females respectively. The lower literacy rate of both males and females in rural areas, subsistence agro-economy, relatively lower employment opportunities and cultural practices in rural areas, especially a desire to bring a daughter-in-law into the household as household/farm labour may be contribute to the lower value of SMAM in rural areas.

4.2.5.2 Variation in singulate mean age at marriage: ecological and development region

Data from the five development regions provide a discerning picture of inequalities in regional SMAM values for 2011 (Figure 4.4). Table 4.7 reveals that the value of SMAM continues to remain higher for males than females in all ecological zones and development regions. Among the three ecological regions, the Hills continue to have the highest SMAM value of 21.1 for females, followed by the Mountain at 20.3 and the Terai at 20.1, a pattern seen in the 2001 census. Among the development regions, both Eastern and Central Development Region reported the highest value of SMAM at 24.4 for males and 20.9 for females. The increment in the value of SMAM is more notable in the Central Development Region than in the Eastern Region

Figure 4.4: SMAM for development regions, 2011

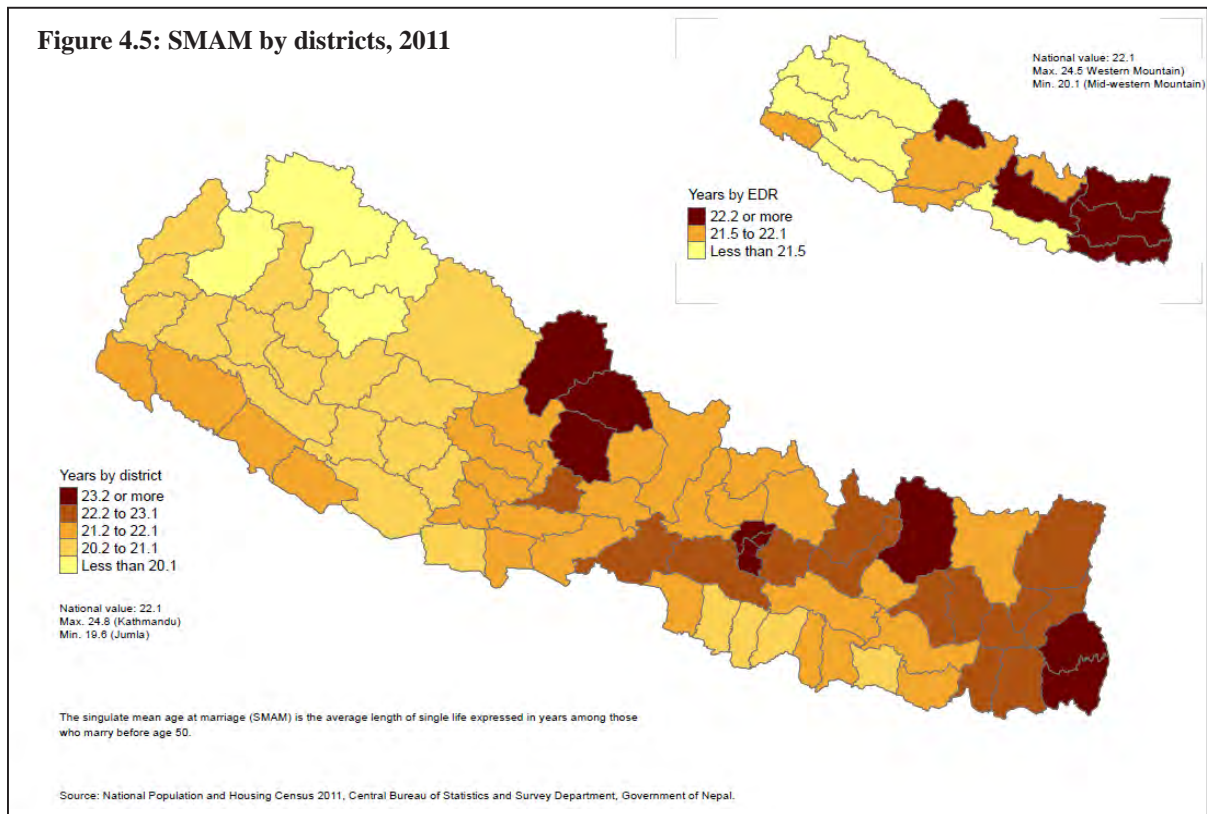


Source: CBS 2012

during the last intercensal period. The value of SMAM has increased by 1.3 years for males and 1.4 years for females in the Central Development Region, whereas the value of SMAM in the Eastern Development Regions has only increased by 0.7 and 0.6 years for males and females respectively. The Mid-Western Region has the lowest value of SMAM and the least increase during the last intercensal period. The rank-order of the ecological zones with regard to singulate mean age at marriage for males remained unchanged in Eastern, Central and Western Development Regions during the last intercensal period (2001 to 2011), except Far-Western moved to fourth and Mid-Western moved to fifth. However, there is major shift in the rank-order of the ecological zones in regard to SMAM for females. With an increment of 1.4 years of SMAM for females in Central Development Region (CDR) in comparison to an increase of only 0.6 years in Eastern Development Region (EDR) during the last intercensal period, CDR moves to first-rank and EDR moves to second. The Far Western Development Region has experienced the highest increase in SMAM by 1.6 years during the last intercensal period and moved to fourth position in the rank-order of development regions.

4.2.5.3 SMAM at district level:

Annexes 4.4 and 4.5 present data on the singulate mean age at marriage for males and females by district for the years 1981, 2001 and 2011. In the previous sections, it has been noted that the value of SMAM has been increasing in all regions. This section looks at the mean age at marriage at the district level. In order to study the trend of the mean age at marriage for both males and females, the value of SMAM has been calculated at the district level for both males and females. The calculated SMAM was then compared to the corresponding value of SMAM at the district level in the last census 2001 to observe changes in the mean age at marriage. The calculated value is also compared with the SMAM values in the year 1981 to study long-term variations in the mean age at marriage.



Examination of the SMAM at the district level reveals that overall the SMAM value is highest in Kathmandu district (24.8 years) followed by Lalitpur (24.6 years), Mustang (24.61 years), Manang (24.47 years) and Bhaktapur district (24.21), (See Figure 4.5). There may be a number of reasons for the higher SMAM value in

these districts. Firstly, Kathmandu, alongside Lalitpur and Bhaktapur district, attract large number of people, especially educated males in search of better services, and opportunities from all corners of the country. The higher proportion of males in the composition of the population of these districts is largely the result of a high in-flow of migrants from outside the Kathmandu Valley. As discussed above, education and employment are the main contributing factors behind the postponement of age at marriage. Also, it is interesting to note that all the above five districts with the highest SMAM values in the country have a sex ratio greater than 100, indicating that the male population in these districts out numbers the female population. Secondly, four among five of the districts, namely Kathmandu, Lalitpur, Bhaktapur and Manang are in the top ten districts in terms of literacy rates. Thirdly, Kathmandu, Lalitpur, Bhaktapur and Manang have the highest human development index (HDI) and the lowest human poverty index among the districts (UNDP 2014), an indicator of better education, life expectancy (health) and income.

The lowest SMAM values are observed in districts of Mid-Western and Far-Western Development Regions that include Jumla district (19.6 years) followed by Mugu (19.8 years), Humla (20 years), Bajhang (20.1 years) and Rolpa (20.2 years). Table 4.7 confirms that Mid-Western and Far-Western Development Regions have the lowest SMAM for both males and females. Low literacy rates may be the major cause of low SMAM values in these districts.

Among the districts, Mustang (24.1 years), Manang (23.3 years), Lalitpur (23 years), Kathmandu (22.9 years) and Bhaktapur (22.8 years) have the highest SMAM value for females in 2011, whereas Jumla (18.5 years), Rautahat (18.6 years), Mugu (18.8 years), Mahottari (19 years) and Bara (19 years) have the lowest.

SMAM values for males is highest in three districts of the Kathmandu Valley; Kathmandu (26.5 years), Lalitpur (26.2 years), and Bhaktapur (25.6 years). Jhapa and Kaski are two further districts that have high SMAM values for males at 25.5 years and 25.4 years respectively. The five districts with the lowest SMAM values for males are Jumla (20.8 years), Mugu (20.9 years), Humla (21 years), Dolpa (21 years) and Bajhang (21.2 years).

During the last 30 years (1981-2011), the largest increment in SMAM value is reported mainly in the Terai districts. The highest increment of 6.4 years in SMAM values for females is in Kanchanpur district, a change from 14.2 years in 1981 to 20.6 years in 2011. Saptari, Parsa, Rupandehi and Mahottari districts are four other districts where the value of SMAM for females increased by more than five years during the last 30 years. Even with this achievement, SMAM for females in Parsa and Mahottari districts are still below the minimum legal age of marriage, i.e. below 18 years. Likewise, the largest increment in SMAM values for females is observed in Nawalparasi (18.5 to 20.6 years), Kapilbastu (17.7 to 19.6 years), Doti (17.7 to 19.6 years), Parsa (17.2 to 19.1 years) and Kalikot (17.6 to 19.4 years) during the last intercensal period.

4.2.6 Median age at marriage

Table 4.8 shows that the median age at marriage varies within the range of 17 to 22 years according to the place of residence for both males and females. The higher median age at marriage in urban areas suggests the postponement of marriages by younger person in these areas. Half of the marriages of urban men in Eastern, Central and Western Development Regions were at the age of 22 years, whereas same proportion of male marriage in urban areas in Mid-Western and Far-Western were at the age of 20 years. The largest gap of 3 years in median age at marriage between males and females is observed in rural parts of Central and Western Development Regions. Median age at marriage of females in rural areas in all development regions is 17 years, except in Eastern Development Region where the median age at marriage is 18 years. It is important to note at this point that the minimum legal age of marriage is 18 years but more than half of young girls are married off by the age of 18 years in all rural areas and most urban areas of Nepal.

Table 4.8: Median age at marriage by place of residence -2011

Location	Development Region									
	Eastern		Central		Western		M-Western		F-Western	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Urban	22	18	22	19	22	18	20	17	20	17
Rural	20	18	20	17	20	17	19	17	19	17
Nepal	21	18	20	17	20	17	20	17	20	17

Source: Analysis of the population census 2011 data

4.2.7 Child marriage

The 11th Amendment of the Civil Code in 2002 states that the minimum legal age at marriage without parental consent is 20 years for both men and women in Nepal, and is 18 years with parental consent. Prior to 2002, the age of consent was 16 years for girls and 18 years for boys with parental consent and 18 years for girls and 20 years for boys without parental consent. Hence, some marriages, especially in higher age group cohorts, although taking place before 18 years of age may not be considered as 'child marriage' in legal terms. Since 2002, marriage before the age of 18 years is defined as 'Child Marriage'. Table 4.9 clearly shows the huge incidence of child marriage for both men and women.

Looking at the cohort of ever-married persons in the age group less than 25 years, it is surprising to note that about half of the marriages in this cohort took place before the minimum legal age at marriage of 18 years. The gender disparity in child marriage is distinct with 55% of marriages of girls and 31% of marriages of boys in this cohort.

Table 4.9: Percentage of ever-married population (10+ years) who married before reaching 18 years by Sex and Age, 2011

Age of ever-married person	Percentage of Child Marriage		
	Male	Female	Total
Less than 25 years	31.3	55.0	48.0
25-49 years	17.1	48.4	34.4
50+ years	25.6	60.3	43.0
Total	21.3	52.7	38.8

Source: Analysis of the population census 2011 data

4.2.8 Polygamy

Table 4.10 shows the data on polygamy and re-marriage in the 2001 and 2011 censuses. An examination of the Table reveals that although monogamy is the most dominant marital system in Nepal, the practice of polygamy prevails among a fraction (2.2% of ever-married persons) of the population, primarily males in rural areas. The percentage of ever married men practicing polygamy reduced during the last intercensal period. Nearly 4% of ever-married men reported practicing polygamy at the time of the census enumeration. The practice of polyandry is rare both in rural and urban areas, although data shows an increase in this practice during the last intercensal period. Polyandry is prevalent in an indigenous ethnic community in the Mountain and high Hill areas where a woman is bound to get married to all the brothers of the same family.

A fraction of the population practices polygamy, largely males in rural areas. However polygamy is observed as a decreasing trend. This practice rises with the age of ever-married person.

The incidence of polygamy among ever-married males varies by rural/urban residence, ecological zone, development region and age. The reporting of multiple marriages for both males and females was higher in rural than urban areas. However, the incidence of polygamy among males decreased both in urban and rural areas. This shows that the practice of polygamy is disappearing from Nepalese society. Among the three ecological zones, reporting of polygamy among ever-married males is higher in Mountain and Hill than Terai, whereas polyandry is observed to be highest in Mountain. Among the development regions, the Central Development Region reported the lowest proportion of polygamy at 3.6%, while the highest incidence was in the Western Development Region at 4.6%.

Age differences in polygamy: Table 4.10 shows an increasing proportion of incidences of polygamy with a corresponding increase in the age of ever-married males. The positive relationship between the age and the proportion of incidence of polygamy plateaus at the age of 59 years, reaching its highest proportion at 6.42%.

Table 4.10 : Percentage of ever-married population aged 10 years and above who married more than one spouse and those who re-married by gender, rural/urban residence, ecological zones, development region and age, Nepal 2001-2011.

Variables	Married more than one spouse				Re-marriage			
	2001		2011		2001		2011	
	Male	Female	Male	Female	Male	Female	Male	Female
Total	5.54	0.04	4.02	0.82	4.20	2.69	4.20	2.22
Urban	4.4	0.01	3.09	0.50	2.36	1.1	1.83	0.72
Rural	5.74	0.04	4.23	0.88	4.52	2.98	4.73	2.52
Zone								
Mountain	6.59	0.37	4.94	1.21	5.85	4.29	6.65	3.97
Hill	6.79	0.03	4.73	0.95	5.38	3.7	5.34	3.06
Terai	4.37	0	3.33	0.65	2.99	1.57	2.97	1.27
Development Regions								
Eastern	5.97	0.05	4.14	0.78	3.95	2.31	3.86	1.63
Central	4.73	0.01	3.57	0.67	3.01	1.57	2.52	1.13
Western	7.05	0.06	4.60	0.83	4.8	3.14	4.74	2.45
Mid-Western	5.45	0.04	4.30	1.34	7.3	5.84	8.46	5.66
Far-Western	4.79	0.03	4.19	0.72	4.42	2.95	5.14	2.51
Age								
10-14	2.29	0.02	5.16	4.24	1.74	0.71	5.86	7.65
15-19	1.52	0	3.07	0.92	0.96	0.85	3.98	2.22
20-24	1.06	0.01	1.99	0.57	1.12	1.17	2.37	1.50
25-29	1.9	0.03	1.94	0.60	1.85	1.78	2.17	1.60
30-34	3.15	0.06	2.84	0.82	2.57	2.49	3.06	2.25
35-39	4.45	0.06	3.53	0.90	3.51	3.2	3.63	2.52
40-44	6.06	0.09	4.21	0.96	4.84	3.8	4.37	2.76
45-49	7.26	0.11	5.22	1.03	5.61	4.24	5.38	2.96
50-54	8.66	0	5.38	0.97	6.34	4.32	5.68	2.87
55-59	9.79	0	6.42	1.18	7.11	4.01	6.80	3.31
60-64	10.32	0	5.69	0.82	7.2	3.86	5.77	2.10
65+	11.12	0	4.96	0.57	7.4	2.98	4.74	1.40

Source: CBS, 2002 National Report. Vol. II., CBS 2012 National Report Vol. I, Table 18

4.2.9 Re-marriage

The data on re-marriage has been available since the 2001 census. Table 4.10 shows that the percentage of ever married men reported to have re-married was almost double than ever married women reporting re-marriage. This pattern of re-marriage holds true for urban-rural areas, ecological zones, and development regions and in all age groups. However, the data reveals that the incidence of re-marriage has not gone up in comparison to the 2001 data. The incidence of re-marriage varies by gender, rural-urban residence, ecological zones, development regions and age groups (see Table 4.10).

A small proportion of both evermarried males and females re-marry. Ever married males are more likely to re-marry than are evermarried females.

Rural-urban differences in re-marriage: The pattern of re-marriage in 2011 by both ever married males and females follows almost the same pattern as in 2001. The re-marriage rate is unchanged for ever married males but slightly lower among ever married females during the last inter censal period. The likelihood of re-marriage among both ever married males and females in rural areas is greater than in urban areas. However, re-marriage among ever married women shows a decreasing trend in both rural and urban areas in comparison to 2001 data. In urban areas, the re-marriage rates among ever married women declined from 1.1% in 2001 to 0.72% in 2011.

Re-marriage among both ever married males and females is highest in rural areas, Mountain, Mid-Western Development regions and at the age group 65 and above for males and 50-54 for females.

Regional (ecological zones) differences in re-marriage: The practice of re-marriage is highest in Mountain with 6.65% of re-marriage rates among ever married males in 2011. Terai shows the least incident of re-marriage among the three ecological zones with approximately 3% of re-marriage rates among ever married males. In all three ecological zones, ever married women have a lower propensity of re-marrying than their male counterparts and there is a decreasing trend of re-marrying among ever married women. Re-marriage rates in 2011 for males in Mountain, Hill and Terai were 6.7%, 5.3% and 3.0% respectively. The corresponding rates for females were 4.0%, 3.1% and 1.3% respectively.

Regional (development) differences in re-marriage: Among the five development regions, Mid-Western Development Region had the highest rate of re-marriage for both ever married males and females in 2011, followed by Far-Western and Western Development Regions. The re-marriage rate for males in Mid-Western increased from 7.3% in 2001 to 8.5% in 2011. Central and Eastern Development Regions reported re-marriage of 1.13% and 1.63% of ever married women respectively. There is a decreasing pattern of re-marriage in all development regions, both for ever married women and men in the last intercensal period, except among men in Mid-Western and Far-Western Regions.

Age differences in re-marriage: The propensity for re-marriage increases after the age group 15-19 years for each successive age group for both ever married males and females, reaching its highest (6.8% for males and 3.3 %for females) at the age-group 55-59 years. Thereafter it decreases with age, indicating diminishing chances of re-marriage among ever married older men and women.

4.2.10 Widowhood

The percentage distribution of widowers and widows by the five year age groups for the census years (1961-2011) is presented in Annex 4.3. Examination of the Table shows the following pattern of widowhood and its change over time: (i) The proportion of the population widowed tends to increase with age reaching its peak at the age of 60 years and above (see Figure 4.6). This is expected due to greater risks of mortality at higher ages and its variation by sex; (ii) In both the 2001 and 2011 censuses, the proportion of widows exceeds that of widowers in every age group. For instance, 30% of women aged 60 years and above were widowed, whereas the corresponding figure

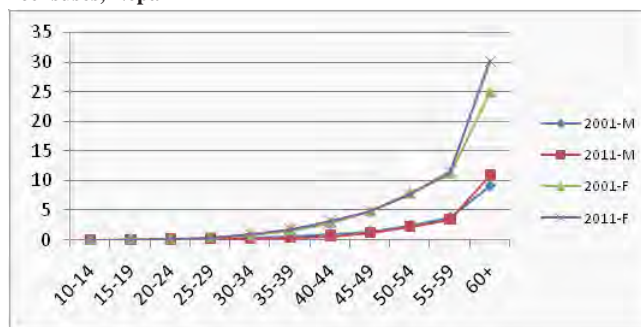
for men was only 11% in 2011- a continuation of the 2001 pattern confirming gender disparity in widowhood. The probable causes for such disparities could be due to the higher chances of re-marriage for men than women. About 8% of older men (60 years and above) compared to less than 3 % of older women reported as 're-married' in 2011. Also the life expectancy of women is greater than men and the spouses of men, as seen in the values of SMAM, are younger by two to three years on average. Hence wives have a higher chance of survival than their husbands.

(iii) There is a decline in the proportion of men widowed at every age group during the last intercensal (2001-2011) period, except in the age group 60 years and above. In the case of females, the proportion widowed increased in age groups 20-24 to 40-44 years by up to 13% at the age group 30-35 years. The increase in the proportion of widows may be due to the decade-long armed conflict during the period causing the deaths of thousands of young men and/or the impact of the differing coverage of the marital status questions in the 2001 and 2011 censuses. The information on marital status was in the sample questionnaire (long form) in 2001 and was administered only in sampled households, whereas the information on marital status was collected from all households in the 2011 census. Interestingly,

the proportion widowed in the older age group (60 years and above) is significantly higher among women compared to their male counterparts. Almost one-third of women in the older age group are widows, whereas this proportion is only 11% for men. This figure clearly demands policy implications to address the issue of the aging population as the number of older persons in the country is increasing at a faster rate, particularly after the age of sixty, and one-third of older women are widows and likely to be illiterate and living under acute poverty.

Even though there has been a considerable decline in the proportion of widowed persons over the last five decades, indicating declining mortality, the proportion of widows has increased, particularly in the age group 20-24 and 40-44 during the last intercensal period. The proportion of widows exceed that of widowers in every age group.

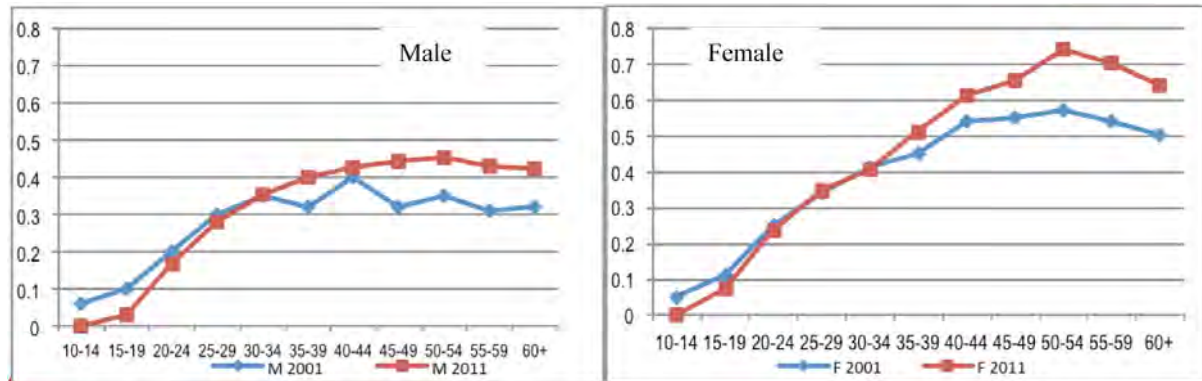
Figure 4.6: Age-sex specific proportion widow in 2001 and 2011 censuses, Nepal



Source: CBS, 2002 National Report Vol. II, Table 17
CBS, 2012 National Report Vol. I, Table 19

4.2.11 Proportion divorced/separated

The incidence of 'Divorce/Separated' among both ever-married men and women is very rare in Nepal. Annex 4.3 presents data on the percentage distribution of divorced/separated persons by age and sex for the census years 1961-2011. The divorce/separated rate shows an increased trend during the last intercensal period (2001-2011) after the age group 30-34 for both males and females. The divorce/separated rate is higher among ever-married females in all age groups than their male counterparts (see Figure 4.7). This may be due to the prevalence of men deserting their first wives by taking second wives.

Figure 4.7: Proportion of divorce/separated by age group from 2001-2011

Source: CBS, 2002 National Report Vol. II, Table 17
CBS, 2012 National Report Vol. I, Table 19

Figure 4.7 shows that the propensity of divorce/separation for both ever-married men and women increases correspondingly with age. In comparison to 2001, the proportion of divorce/separated persons has increased in 2011 among all age groups particularly after 30-34 years for both ever married men and women, and reaches a plateau at the age group 50-54 years. While ever married women follows the same pattern of divorce/separation rates, the figure shows relatively higher proportion of divorce/separated women than their male counterparts in all age groups. This may be an indication that re-marriage after divorce/separation is more common among ever married men than their female counterparts.

4.3 Variation in marital pattern

4.3.1 Rural/urban differences in marital pattern

Table 4.11 presents data on the distribution of population by marital status for rural and urban areas. An examination of the table shows that the proportion of married males and females is higher in rural than in urban areas. Conversely, a higher proportion of single persons, both male and female, are observed in urban areas. These findings continue to be true even when allowance is made for the effect of variation in age distribution over time and between rural and urban areas (see standardised rates in Table 4.11). The rural-urban difference in the proportion of the population married remains almost unchanged over the last intercensal period. The pattern of rural urban differential is also reflected in the mean age at marriage. The estimated singulate mean age at marriage (SMAM) is found to be higher in urban than in rural areas for both males and females and for each census year covered in this report. The SMAM values for males and females in urban areas in 2001 were 24.5 and 20.7 respectively. The corresponding figures for males and females were 22.5 and 19.3 respectively in rural areas.

The proportion of married persons, both males and females, is higher in rural than in urban areas and this remains almost unchanged during the last intercensal period. Conversely, there are more single persons in urban areas. The mean age at marriage is higher in urban than in rural areas.

Table 4.11: Percentage distribution of population aged 10 years and above by marital status and sex, Nepal by rural and urban areas 2001-2011.

Marital status by sex	2001						2011					
	Both areas		Rural areas		Urban areas		Both areas		Rural areas		Urban areas	
	Percent	Standardised Percent*	Percent	Standardised percent*	Percent	Standardised Percent*	Percent	Standardised Percent*	Percent	Standardised Percent*	Percent	Standardised Percent*
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Never Married	39.2	39.2	38.6	38.3	42.7	43.3	40.6	40.6	39.8	39.3	43.9	45.6
Married	58.5	58.5	59.1	59.4	55.5	54.8	57.6	57.6	58.2	58.7	55.0	54.0
Widowed	1.3	1.3	1.4	1.4	0.8	1.0	1.6	1.6	1.8	1.7	0.9	1.2
Divorced/ Separated	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2
Unknown	0.7	0.7	0.7	0.7	0.8	0.8						
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Never Married	30.3	30.3	29.9	29.6	32.6	33.8	31.1	31.1	30.7	30.1	33.3	35.4
Married	65.5	65.5	65.8	66.1	63.2	61.6	63.9	63.9	64.3	65.0	61.8	59.2
Widowed	3.7	3.7	3.7	3.6	3.5	3.8	4.6	4.6	4.6	4.6	4.4	4.9
Divorced/ Separated	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.5	0.5
Unknown	0.3	0.3	0.3	0.3	0.4	0.4						

* Standardized on the basis of 2011 age-distribution for the population of Nepal aged 10 years and above.

Source : CBS 2002 National Report Table 17

CBS 2012 National Report, Table 18

4.3.2 Regional differences in marital pattern: ecological zones

Tables 4.12 and 4.13 present data on the distribution of ever married and never married persons by ecological zones of the country. Confining the analysis to the standardised rates it may be observed that the proportion of ever married is lowest in the Hill for both males and females and highest in the Tarai, particularly for females (see Table 4.12). Ever married males in the Mountain and the Tarai make up 61.7% and 60.6% of the population 10 years and above. Conversely, the proportion of single people is highest in the Hill for both males and females. The proportion of single persons is lowest in the Tarai at 29.5% for females and in the Mountain for males at 38.6% (see Table 4.7).

Among the ecological zones Tarai has the lowest proportion of persons who are single and the highest who are married. Conversely, the Hill has the highest proportion of persons who are single and the lowest who are married.

The variation in the proportion of single males and females is reflected in the estimated score of singulate mean age at marriage (SMAM). The estimated SMAM in 2011 for females was 21.1, 20.3 and 20.1 for the Hill, Mountain and Tarai respectively. The corresponding figures for males were 24.4, 22.6 and 23.5 respectively (see Table 4.7).

Table 4.12: Percentage of ever -married persons (10 years and above) by sex for different ecological zones Nepal, census year 2011

Age group	Nepal		Mountain		Hill		Tarai	
	Males	Females	Males	Females	Males	Females	Males	Females
10-14 Years	0.5	1.1	0.4	0.7	0.3	0.7	0.6	1.6
15-19 Years	7.1	23.2	9.1	22.9	5.7	19.9	8.1	26.5
20-24 Years	42.3	72.7	54.9	76.5	37.6	67.5	45.0	77.1
25-29 Years	78.7	92.7	85.4	93.0	74.6	90.3	81.4	94.8
30-34 Years	93.3	97.1	94.4	96.6	92.0	96.0	94.3	98.1
35-39 Years	97.1	98.0	96.4	97.2	96.6	97.2	97.7	98.7
40-44 Years	98.0	98.2	96.9	97.4	97.7	97.6	98.4	98.9
45-49 Years	98.4	98.6	97.5	97.9	98.1	98.0	98.8	99.2
50-54 Years	98.5	98.6	97.4	97.6	98.2	98.0	98.9	99.3
55-59 Years	98.8	98.9	97.9	97.9	98.5	98.3	99.2	99.5
60-64 Years	98.9	99.0	97.8	98.3	98.6	98.5	99.2	99.5
65+ Years	98.9	99.0	98.2	98.3	98.8	98.6	99.2	99.4
All ages 10 years and above*	60.2	69.3	60.9	67.3	57.9	67.3	60.5	70.5
Standardized 10 years and above**	59.7	69.2	61.7	69.3	58.4	67.6	60.6	70.8

Source: CBS 2012 National Report Vol I, Table 19 & Table 16.

* In respect of population aged 10 years and above.

** Standardised on the basis of 2011 age distribution for the population of Nepal aged 10 years and above.

Table 4.13: Percentage of never-married persons (10 years of age and over) by sex for different ecological zones Nepal, census year 2011

Age group	Nepal		Mountain		Hill		Tarai	
	Males	Females	Males	Females	Males	Females	Males	Females
10-14 Years	99.5	98.9	99.6	99.3	99.7	99.3	99.4	98.4
15-19 Years	92.9	76.8	90.9	77.1	94.3	80.1	91.9	73.5
20-24 Years	57.7	27.3	45.1	23.5	62.4	32.5	55.0	22.9
25-29 Years	21.3	7.3	14.6	7.0	25.4	9.7	18.6	5.2
30-34 Years	6.7	2.9	5.6	3.4	8.0	4.0	5.7	1.9
35-39 Years	2.9	2.0	3.6	2.8	3.4	2.8	2.3	1.3
40-44 Years	2.0	1.8	3.1	2.6	2.3	2.4	1.6	1.1
45-49 Years	1.6	1.4	2.5	2.1	1.9	2.0	1.2	0.8
50-54 Years	1.5	1.4	2.6	2.4	1.8	2.0	1.1	0.7
55-59 Years	1.2	1.1	2.1	2.1	1.5	1.7	0.8	0.5
60-64 Years	1.1	1.0	2.2	1.7	1.4	1.5	0.8	0.5
65+ Years	1.1	1.0	1.8	1.7	1.2	1.4	0.8	0.6
All ages 10 years and above*	40.6	31.1	39.1	32.7	42.1	32.7	39.5	29.5
Standardized 10 years and above**	40.6	31.1	38.6	31.1	41.9	32.9	39.6	29.5

Source: Same as in Table 4.12

* In respect of population aged 10 years and above.

** Standardised on the basis of 2011 age distribution for the population of Nepal aged 10 years and above.

4.3.3 Regional differences in marital pattern: development region

Marital patterns and their changes over time were also examined for the development regions. Tables 4.14 and 4.15 present data on the distribution of ever married and never married persons by development regions for the census year 2011.

Table 4.14: Ever -married persons as proportion of total population 10 years of age and over and sex for different development regions Nepal, census year 2011

Age group	Eastern Dev. Region		Central Dev. Region		Western Dev. Region		Mid-Western Dev. Region		Far-Western Dev. Region	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
10-14 Years	0.5	0.9	0.6	1.5	0.4	1.1	0.3	0.9	0.3	0.7
15-19 Years	5.4	20.5	6.6	22.1	6.8	23.3	11.5	29.9	7.6	23.2
20-24 Years	37.3	69.8	37.7	68.4	41.0	74.6	59.5	81.4	52.3	79.0
25-29 Years	75.9	91.1	74.8	91.0	80.3	93.9	88.3	95.9	86.8	96.5
30-34 Years	92.3	96.0	92.2	96.8	94.2	97.4	96.0	98.3	96.0	98.8
35-39 Years	96.7	97.0	97.0	97.9	97.1	98.0	97.7	98.8	98.1	99.3
40-44 Years	97.7	97.3	98.1	98.3	97.9	98.2	98.1	98.9	98.6	99.4
45-49 Years	98.3	97.9	98.5	98.6	98.2	98.5	98.4	99.2	98.9	99.6
50-54 Years	98.5	98.0	98.6	98.5	98.4	98.7	98.4	99.2	98.9	99.6
55-59 Years	98.8	98.3	98.8	98.9	98.6	98.9	98.8	99.3	99.2	99.7
60-64 Years	98.8	98.6	99.0	99.0	98.8	99.0	98.8	99.3	99.1	99.6
65+ Years	99.0	98.7	98.8	98.8	98.9	99.0	99.0	99.3	99.2	99.4
All ages 10 years and above*	59.5	68.5	59.8	69.0	58.5	69.8	60.5	68.5	58.2	67.8
Standardized 10 years and above**	58.52	68.02	58.66	68.34	59.7	69.7	63.4	71.9	61.9	70.7

Source: *Ibid*, Table 4.12.

* *In respect of population aged 10 years and above.*

** *Standardised on the basis of the 2011 age distribution for the population of Nepal aged 10 years and above.*

It may be observed that the proportion of those who are ever married is lowest in the Eastern Development Region and highest in the Far-Western Development and Mid-Western Development regions for both females and males respectively (see Table 4.14). Conversely, the proportion of single people is highest in the Eastern Development Region and lowest in the Mid-Western Development region for both males and females. The Central, Western and Far-Western Development Regions occupy the intermediary position (see Table 4.15).

Among the development region, the Eastern Development region has the lowest proportion of ever married persons at 59.5% and 68.5% for males and females respectively. It also has the highest proportion of single persons at 40.5% and 31.5% for males and females respectively. Conversely, the Mid-Western Development regions has the highest proportion of ever married persons at 71.9% and 63.4% for males and females respectively and has the lowest proportion of single males and females.

Table 4.15: Never-married persons as proportion of total population 10 years of age and over and sex for different Development regions Nepal, census year 2011

Age group	Eastern		Central		Western		Mid-Western		Far-Western	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
10-14 Years	99.5	99.1	99.4	98.5	99.6	98.9	99.7	99.1	99.7	99.3
15-19 Years	94.6	79.5	93.4	77.9	93.2	76.7	88.5	70.1	92.4	76.8
20-24 Years	62.7	30.2	62.3	31.6	59.0	25.4	40.5	18.6	47.7	21.0
25-29 Years	24.1	8.9	25.2	9.0	19.7	6.1	11.7	4.1	13.2	3.5
30-34 Years	7.7	4.0	7.8	3.2	5.8	2.6	4.0	1.7	4.0	1.2
35-39 Years	3.3	3.0	3.0	2.1	2.9	2.0	2.3	1.2	1.9	0.7
40-44 Years	2.3	2.7	1.9	1.7	2.1	1.8	1.9	1.1	1.4	0.6
45-49 Years	1.7	2.1	1.5	1.4	1.8	1.5	1.6	0.8	1.1	0.4
50-54 Years	1.5	2.0	1.4	1.5	1.6	1.3	1.6	0.8	1.1	0.4
55-59 Years	1.2	1.7	1.2	1.1	1.4	1.1	1.2	0.7	0.8	0.3
60-64 Years	1.2	1.4	1.0	1.0	1.2	1.0	1.2	0.7	0.9	0.4
65+ Years	1.0	1.3	1.2	1.2	1.1	1.0	1.0	0.7	0.8	0.6
All ages 10 years and above*	40.5	31.5	40.2	31.0	41.5	30.2	39.5	31.5	41.8	32.2
Standardised 10 years and above**	41.7	32.4	41.5	32	40.6	30.7	37	28.5	38.3	29.5

Source: *Ibid*, Table 4.12;

* In respect of population aged 10 years and above.

**Standardised on the basis of the 2011 age distribution for the population of Nepal aged 10 years and above.

The mean age at marriage for both males and females was lowest in the Mid-Western Development Region, followed by the Far-Western Development Region, while it was highest in the Eastern and Central Development Regions. The Western and Far-Western Development Regions occupied the intermediary position. The SMAM values for males and females in both Eastern and Central Development Regions were 24.4 and 20.9 respectively. The SMAM values for males in the Western, Mid-Western and Far-Western Development regions were 23.8, 22.1 and 22.8 respectively. The corresponding figures for females were 20.4, 19.6 and 20.1 respectively.

4.4 Intercensal changes in the marital distribution by development region

Table 4.16 presents data on the intercensal changes in marital distribution. Examination of the table reveals a noticeable intercensal change in the marital distribution where all development regions experienced a decline in the proportion of those ever married with a corresponding increase in the proportion of single people for both males and females. At the forefront of this change is the Central Development Region, followed by the Western Development Region, while the Mid-Western Development region is lagging behind.

Table 4.16: Percentage distribution of population aged 10 years and above by marital status and sex and by development region, Nepal, census year 2001-2011.

Sex/regions	Ever married*						Never married*					
	%		% Change	Standardized rate**		% Change	%		% Change	Standardized rate**		% Change
	2001	2011		2001	2011		2001	2011		2001	2011	
Males												
Eastern	58.9	59.5	1.5	59.3	58.3	-1.7	40.6	40.5	-0.2	40.1	41.7	4.0
Central	60.9	59.8	-1.5	60.4	58.5	-3.1	38.4	40.2	4.7	38.9	41.6	6.9
Western	59.3	58.5	-0.8	56.2	59.4	5.7	40.1	41.5	3.5	38.0	40.6	6.8
Mid-Western	61.0	60.5	-0.3	63.3	63.0	-0.5	38.2	39.5	3.4	36.0	37.0	2.8
Far-Western	60.2	58.2	-3.0	63.0	61.7	-2.1	38.8	41.8	7.7	36.1	38.3	6.1
Females												
Eastern	67.4	68.5	-6.0	68.9	67.6	-1.9	32.3	31.5	-2.5	30.8	32.4	5.2
Central	70.7	69.0	-7.9	71.2	68.0	-4.5	29.0	31.0	6.9	28.5	32.0	12.3
Western	69.3	69.8	-7.4	71.4	69.3	-2.9	30.4	30.2	-0.7	28.4	30.7	8.1
Mid-Western	69.1	68.5	-7.1	72.9	71.5	-1.9	30.5	31.5	3.3	26.6	28.5	7.1
Far-Western	70.5	67.8	-19.2	73.8	70.5	-4.5	29.0	32.2	11.0	25.7	29.5	14.8

Source: *Ibid*, Table 4.11

* In respect of population aged 10 years and above.

** Standardised on the basis of the 2011 age distribution for the population of Nepal aged 10 years and above.

4.5 Nuptiality index

Various additional indexes of nuptiality have been calculated from the 2011 census data to measure the changing pattern of nuptiality over a period of time and also to show inter-regional differences in marriage patterns in Nepal. The indexes include the proportion married (I_m), the proportion single (I_s), the proportion separated (I_p), the proportion divorced (I_d) and the proportion widowed (I_w).

The indexes (I_s , I_d , I_p and I_w) are the reciprocal

components of the index proportion of women married (I_m). The index I_m (proportion of women married) was originally developed by Coale (1970), which was further broken down into separate indexes by Hull and Saladi (1977) in an attempt to broaden its use. The processes employed to calculate these indexes were the same as those originally used by Coale.

Examination of nuptiality indexes between intercensal periods confirms the continuation of universal marriage in Nepal. However, the proportion of married persons is declining slowly with a corresponding increase in the proportion of the population who are single. The effect of the rising proportion of single persons on fertility is, to some extent, counteracted by the decreasing proportion of the population who are widowed.

These indexes indicate “distributions of women of reproductive age of various status that are weighted according to a Hutterite, 1921-30, schedule of age specific fertility (one of the most reliable marital fertility schedules on record), which is meant to represent an approximate weighting for potential fecundity patterns” (Hull and Saladi, 1977). In other words, these indexes reflect not only the marriage pattern of women but also the potential effect of their marital status on fertility. For instance, the proportion divorced will be inflated in the index I_d if divorced women are predominantly young (and presumably capable of having children). This would determine the potential effect of divorce on reducing fertility, if it is among younger than older women. The coefficients of these indexes are presented in Table 4.17.

Table 4.17 shows that approximately 78% ($I_m = 0.767$) of the reproductive potential of Nepal's population was realised through the existing marriage pattern in 2011. In other words, 78% of women of presumable reproductive potential are currently married which indicates that universality of marriage still prevails in Nepal. About 22% ($I_s = 0.222$) of potential fertility was unrealised because women of reproductive age were still single. The remaining 1 % of unrealised reproductive potential was due to marriage dissolution from divorce, separation and widowhood. Among the three forms of marital dissolution, widowhood had a greater effect on fertility than divorce and separation together for different regions of the country.

It should be noted that approximately three-fourths of women of presumed reproductive potential are currently married. However, examination of the value of I_m and I_s in each census in Table 4.17 reveals that the I_m has been falling slowly but consistently over the years from 0.884% in 1961 to 0.767 % in 2011. The falling I_m is the result of a rising I_s and slightly increased widowhood (I_w) during the last intercensal period. The proportion of single people (I_s) has increased by 296%, from 0.056 in 1961 to 0.222 in 2011, while the proportion of widowed people (I_w) declined by 86%, from 0.056 in 1981 to 0.008 in 2011. Even though the decline of I_w falls short of the increase in I_s , the former is likely to lessen somewhat the potential fertility control effect of the rapidly rising I_s .

The changing pattern of marriage as observed above for the country as a whole is the same for different regions of the country, although there are some interesting regional variations in these patterns.

4.5.1 Rural/urban differences in nuptiality indexes

Table 4.17 shows the distinct variation in the nuptiality pattern, particularly with respect to the indexes of the proportion married (I_m) and the proportion single (I_s) between rural and urban areas. The proportion married is higher in rural than in urban areas. The value of I_m varies from a high 0.782 in rural areas to a low of 0.704 in urban areas in 2011. Conversely, the proportion single in urban areas exceeds that of rural areas. The value (I_s) ranges from 0.207 in rural areas to 0.285 in urban areas. Data show no significant reduction in the rural-urban gap regarding the proportion of married and single people over the years. The proportion widowed (I_w) is marginally higher in rural than in urban area and the proportion separated is higher in urban than in rural areas. There is no rural/urban difference in regard to the proportion of the population divorced.

Table 4.17: Nuptiality indexes for Nepal, rural urban areas, geographic and development regions.

Region, zone and rural/urban areas	Year	Proportion single (I_s)	Proportion married (I_m)	Proportion widowed (I_w)	Proportion divorced (I_d)	Proportion separated (I_p)	Proportion not currently married (I_u)
Nepal	1961	0.056	0.884	0.056	NA	NA	0.116
	1971	0.085	0.881	0.031	NA	NA	0.119
	1981	0.126	0.854	0.016	NA	NA	0.146
	1991	0.123	0.844	0.016	0.002	0.004	0.156
	2001	0.187	0.801	0.007	0.001	0.002	0.197
	2011	0.222	0.767	0.008	0.001	0.002	0.233
Rural/Urban residence							
Rural	1981	0.122	0.857	0.017	0.004	0.000	0.143
	1991	0.126	0.851	0.016	0.003	0.004	0.149
	2001	0.177	0.811	0.008	0.001	0.002	0.188
	2011	0.207	0.782	0.008	0.001	0.002	0.218

Region, zone and rural/urban areas	Year	Proportion single (I _s)	Proportion married (I _m)	Proportion widowed (I _w)	Proportion divorced (I _d)	Proportion separated (I _p)	Proportion not currently married (I _u)
Urban	1981	0.189	0.795	0.013	0.003	0.000	0.205
	1991	0.209	0.773	0.012	0.002	0.004	0.227
	2001	0.238	0.750	0.007	0.001	0.002	0.248
	2011	0.285	0.704	0.007	0.001	0.003	0.296
Ecological zones							
Mountain	1981	0.168	0.808	0.018	0.006	0.000	0.192
	1991	0.155	0.815	0.02	0.01	0.006	0.185
	2001	0.197	0.789	0.008	0.004	0.002	0.210
	2011	0.228	0.760	0.009	0.001	0.002	0.240
Hill	1981	0.163	0.817	0.015	0.005	0.000	0.183
	1991	0.172	0.805	0.015	0.008	0.000	0.195
	2001	0.221	0.767	0.007	0.004	0.002	0.232
	2011	0.255	0.733	0.008	0.002	0.002	0.267
Terai	1981	0.076	0.903	0.018	0.003	0.000	0.097
	1991	0.095	0.884	0.015	0.006	0.004	0.116
	2001	0.153	0.835	0.008	0.003	0.002	0.163
	2011	0.191	0.798	0.008	0.001	0.002	0.202
Development regions							
Eastern	1981	0.151	0.827	0.017	0.005	0.000	0.173
	1991	0.177	0.799	0.016	0.008	0.000	0.201
	2001	0.221	0.767	0.007	0.003	0.000	0.232
	2011	0.238	0.751	0.007	0.001	0.003	0.249
Central	1981	0.111	0.868	0.017	0.004	0.000	0.132
	1991	0.122	0.858	0.014	0.006	0.000	0.142
	2001	0.181	0.807	0.007	0.003	0.000	0.191
	2011	0.230	0.761	0.007	0.001	0.002	0.239
Western	1981	0.133	0.848	0.015	0.004	0.000	0.152
	1991	0.137	0.842	0.014	0.006	0.000	0.158
	2001	0.190	0.798	0.007	0.004	0.000	0.200
	2011	0.218	0.770	0.008	0.002	0.002	0.230
Mid-Western	1981	0.124	0.854	0.017	0.005	0.000	0.146
	1991	0.115	0.859	0.017	0.009	0.004	0.141
	2001	0.162	0.823	0.008	0.005	0.002	0.175
	2011	0.189	0.797	0.010	0.002	0.002	0.203
Far-Western	1981	0.102	0.881	0.015	0.002	0.000	0.119
	1991	0.084	0.888	0.023	0.005	0.000	0.112
	2001	0.142	0.844	0.010	0.002	0.000	0.154
	2011	0.204	0.783	0.011	0.001	0.001	0.217

Source: CBS 1995; CBS 2002, 2012 National Report.

Note: NA = Not available.

4.5.2 Variation in Nuptiality Indexes: geographic zones

The data show a considerable variation in the marital pattern by geographic zones. For example, the proportion married ranges from a low of 0.733 in the Hill to a high of 0.798 in the Terai. The Mountain occupies the intermediary position with the value of I_m at 0.760. The rank-order in respect to value of I_m is unchanged in 2011. Conversely, the proportion single (I_s) in the Hill is 34% higher than that of the corresponding proportion in the Terai. The value of I_s ranges from 0.191 in the Terai to 0.228 and 0.255 in the Mountain and Hill respectively. There is little difference among the geographical zones in the values of I_w (proportion widowed) and I_d . The value of I_{pw} was equal (0.002) in all three geographical zones in 2011. (see Table 4.17).

4.5.3 Variation in Nuptiality Indexes: development regions

It can be observed from Table 4.17 that the proportion of single people (I_s) ranged from 0.189 in the Mid-Western Region to 0.238 in the Eastern Development Region in 2011, showing the decreasing pattern from East to West. The data shows that more than one-fifth of women of presumed reproductive potential are currently single in each region except Mid-Western. Conversely, the proportion of married persons (I_m) ranges from a low of 0.751 in Eastern Development Region to a high of 0.797 in the Mid-Western Development region. In other words, more than three-quarters of women of presumed reproductive potential are currently married in each region.

While the proportion widowed account for a very small proportion of ever married women, the value of proportion widowed (I_w) shows a nominal increment during the last intercensal period. The lowest value of I_w (0.007) is observed in Eastern and Central Development Regions and the highest value (0.011) is in Far-Western Development Region. The proportion of divorced hovers within a narrow range of 0.001-0.003 with the decreased value of I_d and increased value of I_s in each region during the last intercensal period.

4.5.4 The Coale Model for first marriage

Coale (1971) developed a model to study the risk of marriage with age in specific cohorts using a double exponential curve and a standard form of first-marriage frequencies that enables expressing the first marriage experience of a cohort by three parameters: a_0 - the origin of the curve or the approximate earliest age of a significant number of first marriages, k is the time-scale according to which nuptiality occurs (which indicates how fast the population marry after a_0 and C is the proportion ultimately ever-married (proportion ever-married when first marriages have effectively ceased).

Table 4.18 shows the values of the parameters for female that were calculated using Coale's models for first marriage employing the 2011 census data.

Table 4.18 : Coale's nuptiality parameters (females) for 1981 and 2011 censuses.

Area	1981			2011		
	a_0	k	c	a_0	k	c
Nepal	12.18	0.491	0.9615	14.24	0.56	.9860
Development regions						
Eastern	12.53	0.600	0.9611	14.79	0.537	0.9824
Central	12.15	0.467	0.9641	13.80	0.634	0.9855
Western	12.09	0.502	0.9564	14.73	0.499	0.9852
Mid-Western	12.41	0.453	0.9529	12.31	0.641	0.9879
Far-Western	11.67	0.427	0.9405	12.11	0.703	0.9922

Source : CBS 1984, CBS 2012 National Report, Table 19.

Examination of the parameters in 1981 and 2011 shows a sizable increase in the age at which a significant number of marriages take place (a_0), from 12.2 in 1981 to 14.2 in 2011. This positive shift is noted in almost every region of the country, except in Mid-Western Development region. Data also show an expansion of the period in which the marriages take place (k), from 0.49 in 1981 to 0.56 in 2011 – indicating a change in the pace of marriage. The expansion in k values is positive in Central, Mid-Western and Far-Western whereas development regions Eastern and Western Development region shows shrinking time span of marriage. However, " c " value not only remained high but has also increased during the period (1981-2011), confirming that marriage not only remaining universal but also the ultimate proportion who have ever married increased. This may be attributed to declining proportion of widowed.

4.6 The effect of education on Nuptiality

In the previous section, it has been observed that the mean age at marriage is continuously increasing in all regions of Nepal. In this section, the relationship between education and age at marriage is explored to determine whether there is a direct correlation between the increasing age at marriage in Nepal and rising educational attainment.

There are various ways in which education can have a positive impact on increasing the age at marriage. Firstly, education, particularly higher education, tends to increase the age at marriage. Secondly, education widens women's opportunities to gain paid employment that in turn reduces their economic dependency on other household members and enhances women's empowerment and autonomy. With education and paid employment, women gain relatively more freedom in determining the appropriate time of marriage, without sacrificing their career aspirations. Thirdly, employment outside the home may foster interests in non-formal activities, which may compete with marriage and consequently lead to a postponement of marriage. In the following section, cross-tabulation of data looks at the relationship between the age at marriage and literacy/ level of education based on the 2011 census data.

4.6.1 Literacy and age at marriage

Examination of Table 4.19 reveals that literate men and women have a higher singulate mean age at marriage than their illiterate counterparts. The singulate mean age at marriage for illiterate and literate men is 21.8 and 24.2 respectively. The corresponding figures for women are 18 and 21.2 respectively. This shows that literacy is more effective in increasing the mean age at marriage but the effectiveness is more profound among females than males.

The impact of literacy on increasing mean age at marriage is also reflected in the age standardised proportion of single people. The age standardised proportion of single males is 36.4 for illiterate males and 41 for their literate counterparts. The corresponding figures for women are 23.9 and 33 respectively, confirming a higher impact of women's literacy on increased singlehood.

4.6.2 Educational attainment and age at marriage

Data on educational attainment and age at marriage shows a positive relationship between SMAM and the level of education, from no formal education category to secondary level for both men and women. The mean age at marriage rises substantially beyond the lower secondary level for both men and women. The mean age at marriage for males rises from 21.8 for those with primary education to 22.6 and 24.4 for those who have completed lower secondary and secondary level education respectively. The corresponding mean age at marriage for females rises from 19 to 20 and 22 years respectively. Surprisingly, the mean age at marriage for both men and women with education above secondary level is lower than those with completed secondary level. For men who have completed higher secondary education or above, the mean age at marriage is 22.3, which is closer to the value of SMAM of those males with lower secondary education. This decreased value of SMAM may be interpreted by

the hypothesis that this group belongs to a wealthy patriarchal society who can afford to keep women in seclusion, while poverty forces women with completed secondary education in to employment that might cause them to postpone the age at marriage. In such a situation, women belonging to wealthy family enjoy both less authority and freedom than poorer women.

The standardised proportion of single persons for both male and female increases with the level of education up to secondary level. The proportion of single persons increased significantly from 30.2% of women with lower secondary education to 35% of women with secondary education. The corresponding proportion for males is 37.7 % and 41.3% respectively. The standardised proportion of single people among women rises from 23.9% for those with no formal schooling to 28.2%, 30.2% and 35% for those with primary, lower secondary and secondary educations respectively. The corresponding figures among men are 36.4%, 36.1%, 37.7% and 41.3% respectively.

Table 4.19 : Percentage of men and women never married and singulate mean age at marriage by level of literacy and educational attainment, Nepal census year 2011.

Age group	Total illiterate		Total literate		No schooling		Primary		Lower secondary		Secondary		HS/University	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
10-14 Years	98.7	95.9	99.6	99.2	98.7	95.7	99.6	99.3	99.6	99.1	99.5	99.0	96.1	86.7
15-19 Years	83.4	49.9	93.8	81.2	83.5	50.1	88.0	67.9	93.6	80.1	95.5	86.4	82.6	59.4
20-24 Years	37.8	8.4	60.6	34.1	38.0	8.5	36.0	14.2	41.8	15.7	64.5	38.2	47.2	24.7
25-29 Years	12.5	2.7	23.2	10.1	12.5	2.7	10.5	4.6	12.7	5.2	20.8	9.9	13.8	9.0
30-34 Years	5.8	1.6	6.9	4.1	5.8	1.6	3.9	2.6	4.3	2.9	6.2	4.6	3.8	5.5
35-39 Years	3.8	1.4	2.5	2.9	3.8	1.4	2.0	2.1	2.1	2.5	2.2	3.4	1.6	5.0
40-44 Years	3.3	1.4	1.3	2.6	3.3	1.4	1.3	2.0	1.2	2.1	1.2	3.3	1.2	5.1
45-49 Years	2.6	1.2	1.0	2.3	2.6	1.2	0.9	1.7	0.9	2.0	0.9	3.2	1.0	6.3
50-54 Years	2.4	1.2	0.8	2.3	2.4	1.2	0.7	1.5	0.8	1.9	0.8	3.4	0.9	5.6
55-59 Years	1.8	1.0	0.6	2.0	1.8	1.0	0.6	1.4	0.5	1.7	0.5	2.9	0.6	6.8
60-64 Years	1.6	0.9	0.5	2.2	1.6	0.9	0.5	1.6	0.4	1.2	0.5	3.5	0.6	8.1
65+ Years	1.3	0.9	0.7	3.0	1.3	0.9	0.7	2.6	0.7	2.8	0.8	4.3	1.4	9.3
Total	13.9	7.2	49.2	50.4	13.0	6.8	55.4	58.8	57.5	58.2	46.3	47.1	40.1	40.8
Standardized for age*	36.4	23.9	41.0	33.0	36.4	23.9	36.1	28.2	37.7	30.2	41.3	35.0	36.2	28.8
Singulate mean age at marriage	21.8	18.0	24.2	21.2	21.8	18.0	21.9	19.3	22.6	19.9	24.4	21.5	22.3	18.9
Male-Female difference	3.8		3.0		3.8		2.7		2.7		2.8		3.4	

Source : CBS 2014 (Analysis of raw data).

*Standardised on the basis of 2011 population.

The gender differential in mean age at marriage is higher among illiterate people and people with no formal schooling. The data show increasing gender differences with an increase in education levels. The gender difference between men and women who have a primary or lower secondary education on the mean age at marriage is 2.7 years. The gender difference between men and women with secondary and higher secondary/university education is 2.8 and 3.4 years respectively. The greater gender disparities in mean age at marriage are related to the increased age of marriage of males without a corresponding increase in the age at marriage of females. This data shows that the impact of education on increasing age at marriage is greatest particularly among people with secondary education.

Table 4.20: Intercensal changes (1981-2011) in mean age at marriage by level of education and sex

Level of education	1981		2011		Change (in years)	
	Male	Female	Male	Female	Male	Female
Illiterate	20.0	16.7	21.8	18	1.8	1.3
Literate	20.1	17.3	24.2	21.2	4.1	3.9
No Schooling	20.8	18.1	21.8	18	1	-0.1
Primary	20.4	17.9	21.9	19.3	1.5	1.4
Lower Secondary	21.1	19.9	22.6	19.9	1.5	0
Secondary and Higher	22.1	19.5	23.6	20.8	1.5	1.3

Source : CBS 1987, CBS 2003, CBS 2014 (Analysis of 2011 raw data).

4.7 The effect of changes in the marriage pattern on fertility

As detailed above, the marital or nuptiality pattern in Nepal is changing steadily with an increasing proportion of single people and a decreasing proportion of married people during the period 1961 to 2011. Consequently, the mean age at marriage for both males and females is increasing. The mean age at marriage for females rose from 15.4 in 1961 to 20.6 in 2011. Furthermore, the proportion of widows decreased from 4.8% in 1961 to 1.6% in 2011 and the proportion of single females increased by 106% from 15.2% in 1961 to 30.3% in 2011. These changes have obvious implications for birth rates and fertility. The increasing age at marriage will have a reverse effect on fertility as it limits younger women's potential to give birth, while a decrease in the proportion of widows has the opposite effect of increasing the number of women's potential to give birth. This section uses a methodology adopted by Stoeckel et. al. (1976) to measure the effect of the changes in the nuptiality pattern on fertility through estimating and comparing Crude Birth Rate (CBR), which would have resulted if the proportion married, and the proportion widowed, had remained stable from 1961. The methodologies employed in the present calculations are the same as those employed by Stoeckel et. al. employing 2011 census data. The results are presented in Table 4.21.

Table 4.21: Impact of changes in marital structure on birth rate.

CBR (2011) = 22
ECBR (2011) = 30
CBRW (2011) = 23
% change (CBRW - CBR) 2011 = (23-22) = 5%
% change (ECBR - CBR) 2011 = (30-22) = 36%

Where,

- CBR (2011) = Estimated Crude Birth Rate in 2011.
- ECBR (2011) = Estimated CBR in 2011 if the proportion married in 2011 had remained unchanged from 1961.
- CBRW (2011) = Estimated CBR in 2011 if the rate of widowhood in 2011 had remained unchanged from 1961.

The formulae for these estimates are as follows:

$$\begin{aligned}
 \text{CBR} &= \frac{\sum_{i-n} [(ASFR)_i (n_{mw})_i]}{P}; & \text{ECBR} &= \frac{\sum_{i-n} [W (PMW) (F)]}{P} \\
 & & & \\
 & & & \\
 \text{CBRW} &= \frac{\sum_{i-n} [(\frac{W1}{EW}) (EW)] (F) + \sum_{i-n} [(F) (MW)]}{P}
 \end{aligned}$$

Where,

\sum_{i-n}

- \sum_{i-n} = summation of the quantity for the ith through the n age groups.
- $ASFR_i$ = marital age-specific fertility rate ith age group (estimated for 2011).
- MW = number of married women (2011).
- P = total population (2011).

W	=	number of women (2011).
PMW	=	percentage of married women in 1961.
W1	=	number of widowed women in 1961.
w	=	number of widowed women in 2011.
EW1	=	number of ever-married women in 1961.
EW	=	number of ever-married women in 2011.

It can be observed that the effect of the increasing age at marriage on reducing fertility outweighs the boosting effect of the declining proportion of those widowed. If the proportions married in 2001 were the same as those in 1961 the CBR in 2001 would have been 40 instead of 32 – a reduction of CBR by 20%. Whereas, if the proportion widowed in 2001 were the same as in 1961 the CBR would have been 3% lower than is now the case. It shows that the net impact of the increase in age at marriage on the reduction of birth rate still holds, although slightly attenuated, even when allowance is made for the counteracting effect of the falling incidence of widowhood on birth rate. This has been further explored by estimating the percentage change in births by age group produced by the changes in marital structure. The data are presented in Table 4.22.

Table 4.22: Estimated percentage change in births by age between 1961 and 2011 produced by shift in marital structure

Age group	Percentage change
15-19	- 53.8
20-24	- 15.6
25-29	- 20.0
30-34	+ 2.0
35-39	+ 7.2
40-44	+ 16.5
45-49	+ 29.9

It is to be noted that there has been a substantial decline in the number of births to younger women aged 15-29 years due to the increasing proportion of single girls in this age group in 2001. This was followed by a slow but steady percentage increase in the number of births to women aged 30 years and older due to the falling incidence of widowhood in 2001. The percentage decline in the number of births to women aged 15-29 years was sufficient to offset the percentage increase in the number of births to women aged 30 years and above for the following reasons: the contribution to the total number of births by younger women, particularly those in the age-groups 20-24 and 25-29, is considerably higher than that of women in the higher age-groups 30-49 due to differences in age-specific fertility. As a result, the impact of increasing age at marriage on the number of births is higher than that of the declining incidence of widowhood. This finding points out that a significant increase in age at marriage can outweigh the boosting effect of the falling incidence of widowhood on fertility, if other factors remain constant.

4.8 Summary of the findings and policy implications

The major findings relating to nuptiality patterns and differentials can be summarised as follows:

Even though universality of marriage still prevails in the country, the nuptiality pattern in the country can be characterised by the growing proportion of single persons and conversely the decreasing proportion of ever married persons. Consequently, the mean age at marriage for both males and females increased in urban and rural areas,

and ecological and development regions. However, there is a marked gender differential in the value of SMAM in urban and rural areas, ecological, development regions and at the district level. The mean age at marriage for males exceeds those of females in all regions. In addition, an increased mean age at marriage was observed in urban areas compared to rural areas for both males and females. Among the ecological zones, the Hills continue to have the highest SMAM value for both males and females. The Eastern and Central Development Region have the highest SMAM values for both males and females, whereas the Mid-Western Development Region has the lowest. Among the 75 districts, Kathmandu has the highest SMAM value followed by Lalitpur, Mustang and Bhaktapur, whereas the lowest SMAM value is observed in Jumla, Mugu, Humla, Bajhang and Rolpa districts.

Examination on the inter censal changes during the last 30 years in district level nuptiality shows that Kanchanpur, Saptari, Parsa and Rupandehi observed the highest increase in SMAM values for females, while the highest increase for males was in Saptari, Dhanusa, Rupandehi and Kanchanpur. Humla, Dolpa, Mustang and Mugu reported the lowest increase in SMAM value for males while the lowest SMAM values for females were observed in Manang, Dolpa, Humla and Myagdi.

Other key findings include: there are an increasing number of females among ever married persons. The practice of polygamy still exists among a small proportion of people, largely rural males. There has been a significant decline in widowhood, indicating improved mortality over the years with a predominance of widows among widowed persons, particularly at older ages. The age at marriage is increasing which may be attributed to increased levels of education; this increased age at marriage has had a reverse effect on fertility.

The major findings of this report demand further study and research to uncover possible causes for certain trends which may have serious policy implications. The presence of an increased number of ever married females, for example, may be, among others, caused by the growing number of males leaving the country for overseas employment who leave behind their children and family, with poorer access to health, education and where the female is responsible for the well-being of their children. Aggravated by a long period of separation spouses are more susceptible to separate causing familial and social complexity for their children. Additionally, male emigration for foreign employment also contributes to the “feminisation of agriculture” and “feminisation of poverty”; hence impacting adversely on the physical, psychological and emotional well being of women left behind at home. This demands further study on the implications of overseas employment on social and familial relations and calls for immediate appropriate policy interventions to mitigate this adverse impact.

Findings of the practice of polygamy, even among a small group of people, largely rural males, indicates the inferior position of women. A study has shown that a large proportion of women, living with their husband who has multiple spouses, expressed their ignorance about the illegality of polygamy and suffered in silence in fear of dividing the family if they raised their voice against polygamy. Such a scenario confirms the insufficiency of the publicity campaign about women’s right, education and violence against women.

The data also reveals regional discrepancies in SMAM that need further study to identify the key determinants of early marriage. The fact that about half of ever married women aged 25 years and below married before reaching the minimum legal age of marriage, indicates the insufficiency of advocacy for and implementation of the legal provisions of the minimum age of marriage. This necessitates strategic plans and programmes, particularly in those areas with lower SMAM values, to discourage the early marriage of females in particular. Studies have shown that education and employment are the most effective factors for increasing SMAM values. The 2011 census data also confirms that SMAM values are positively related to the level of education and the effect of education is more marked among females than their male counterparts.

Spouse age gender gaps at marriage, in which married women are more likely to be younger than their male counterparts, are also an indication of the lower social position of women compared to men. This is detrimental to the promotion of equitable conjugal role relationships and gender equity and equality. Appropriate programme interventions are needed to reduce the male-female gap in age at marriage for changing socio-cultural norms to equality in conjugal relationships

The finding of more widows than widowers at older ages is also a cause of concern. The proportion of widows in the older age group (60 years and above) is significantly higher among women compared to their male counterparts. Almost one-third of women of older ages are widows whereas this proportion is only 11% for men. This figure clearly demands policy implications to address the issues of an aging population as the number of older persons in the country is increasing at a fast rate, particularly after the age of sixty, and one-third of older women are widows and are more likely to be illiterate and living under acute poverty.

The key findings, such as increasing proportions of single persons and consequently the increased value of SMAM for both sexes, have reverse effects on fertility. This shows the importance of a study on nuptiality to identify the key determinants of fertility, particularly in a country like Nepal, where most births take place within wedlock. Such a study will be instrumental to formulating appropriate policies and programmes to maintain the mean age at marriage at an appropriate level so that the lower or higher SMAM values will not disturb the harmony in the society.

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Annex 4.1: Age-sex proportions of never married persons, Nepal, census year 1961-2011 and percentage changes in proportions never married between 1961-71, 1971-81, 1981-91, 1991-2001, 2001-2011 and 1961-2011

Age group and sex	% Never married						Percentage change					
	1961	1971	1981	1991	2001	2011	1961-71	1971-81	1981-91	1991-2001	2001-2011	1961-2011
Males												
All ages*	28.47	31.93	35.12	35.65	39.23	40.56	12.2	10	1.5	10	3.38	42.45
5-9	97.01	98.78					1.8					
10-14	89.3	93.71	85.11	95.76	99.18	99.55	4.9	-9.2	12.5	3.6	0.37	11.47
15-19	63.33	73.02	74.13	79.44	87.08	92.91	15.3	1.5	7.2	9.6	6.69	46.70
20-24	26.35	33.11	40.85	38.07	49.38	57.72	25.7	23.4	-6.8	29.7	16.89	119.05
25-29	10.21	12.26	19.52	12.66	18.15	21.29	20.1	59.2	-35.1	43.4	17.31	108.53
30-34	4.72	5.7	12.36	5.15	5.69	6.67	20.8	116.8	-58.3	10.4	17.27	41.36
35-39	2.71	3.25	8.93	2.75	2.77	2.86	19.9	174.8	-69.2	0.6	3.28	5.57
40-44	2.06	2.31	8.04	2.11	2.01	1.98	12.1	248.1	-73.8	-5	-1.32	-3.71
45-49	1.6	1.6	7.37	1.64	1.52	1.61	0	360.6	-77.7	-7.6	6.23	0.92
50-54	1.47	1.43	6.88	1.55	1.43	1.49	-2.7	381.1	-77.5	-7.9	4.49	1.65
55-59	1.26	1.22	7.04	1.38	1.35	1.21	-3.2	477	-80.4	-2.5	-10.68	-4.29
60+	0.98	1.07	7.83	1.29	1.42	1.10	9.2	631.8	-83.5	9.9	209.86	348.98
Females												
All ages*	15.12	19.35	23.3	25.71	30.26	31.13	28	20.4	10.3	17.7	2.86	105.86
5-9	94.67	97.65					3.1					-100.00
10-14	75.14	86.56	85.73	92.36	98.19	98.88	15.2	-1	7.7	6.3	0.70	31.60
15-19	25.68	39.33	49.17	52.72	66.05	76.80	53.2	25	7.2	25.3	16.27	199.05
20-24	5.33	7.87	13.06	12.76	21.02	27.32	47.7	65.9	-2.3	64.8	29.95	412.49
25-29	1.91	2.59	5.35	3.66	5.58	7.31	35.6	106.6	-31.6	52.3	31.03	282.81
30-34	1.04	1.4	3.07	1.92	2.61	2.89	34.6	119.3	-37.5	36.1	10.59	177.55
35-39	0.77	1.08	2.63	1.3	1.75	2.04	40.3	143.5	-50.6	35	16.43	164.62
40-44	0.68	0.92	2.52	1.09	1.5	1.77	35.3	173.9	-56.7	37.3	18.26	160.86
45-49	0.58	0.77	2.93	0.9	1.24	1.44	32.8	280.5	-69.3	38.1	15.88	147.75
50-54	0.55	0.71	3.56	0.93	1.31	1.40	29.1	401.4	-73.9	40.6	7.17	155.25
55-59	0.51	0.68	4.2	0.89	1.05	1.13	33.3	517.6	-78.8	17.6	7.74	121.83
60+	0.45	0.62	6.24	0.89	1.18	1.03	37.8	906.5	-85.7	33.1	253.39	826.67

Source: CBS, 1968 Vol. III, Part VI, Table 7

CBS, 1968 Vol. III, Part VI, Table 7

CBS, 1975 Vol. II, Part II, Table 15

CBS, 1984 Vol. II, Part Table 15

CBS, 1993 Vol. I, Part XI, Table 34

CBS, 2002 National Report Vol. II, Table 17

CBS, 2012 National Report Vol. I, Table 19

* In respect of population aged 10 years and above

Annex 4.2: Age-specific proportion of widowed persons, Nepal, census years 1961-2011 and percentage changes in proportions widowed between 1961-71, 1971-81, 1981-91, 1991-2001, 2001-2011 and 1961-2011

Age group and sex	% Widowed/Widower						Percentage change					
	1961	1971	1981	1991	2001	2011	1961-71	1971-81	1981-91	1991-2001	2001-2011	1961-2011
Males												
All ages*	4.76	3.66	2.36	2.95	1.34	1.63	-23.1	-35.5	25.0	-54.4	-71.8	-65.8
10-14	0.09	0.04	0.68	0.05	0.01	0.00	-55.6	1600.0	-92.6	-80.0	-88.9	-100.0
15-19	0.58	0.24	0.55	0.13	0.09	0.01	-58.6	129.2	-76.4	-27.2	-83.7	-98.0
20-24	0.54	0.9	0.82	0.38	0.10	0.08	66.7	-8.9	-53.7	-74.2	-81.9	-85.2
25-29	2.46	1.59	1.09	0.68	0.23	0.16	-35.4	-31.4	-37.6	-66.6	-90.8	-93.5
30-34	3.25	2.35	1.35	1.03	0.34	0.23	-27.7	-42.6	-23.7	-67.0	-89.5	-92.8
35-39	4.12	3.05	1.67	1.59	0.58	0.40	-26.0	-45.2	-4.8	-63.6	-85.9	-90.4
40-44	5.69	4.4	2.48	2.67	0.96	0.69	-22.7	-43.6	7.7	-64.0	-83.1	-87.8
45-49	7.73	5.67	3.11	4.04	1.46	1.21	-26.6	-45.1	29.9	-63.9	-81.1	-84.3
50-54	10.41	7.79	4.39	6.43	2.49	2.17	-25.2	-43.6	46.5	-61.3	-76.1	-79.2
55-59	13.52	9.99	5.44	8.57	3.79	3.48	-26.1	-45.5	57.5	-55.8	-72.0	-74.3
60+	24.5	19.68	10.92	18.24	9.11	11.00	-19.7	-44.5	67.0	-50.1	-62.8	-55.1
Females												
All ages*	14.26	10.1	5.45	7.18	3.65	4.61	-29.2	-46.0	31.7	-49.1	-74.4	-67.7
10-14	0.18	0.06	0.7	0.06	0.02	0.00	-66.7	1066.7	-91.4	-58.7	-86.2	-100.0
15-19	0.8	0.3	0.49	0.16	0.22	0.04	-62.5	63.3	-67.3	37.0	-72.6	-95.3
20-24	1.62	0.73	0.62	0.4	0.17	0.17	-54.9	-15.1	-35.5	-58.2	-89.7	-89.5
25-29	3.24	1.64	1.03	0.89	0.44	0.48	-49.4	-37.2	-13.6	-50.9	-86.5	-85.1
30-34	6.14	3.28	1.73	1.76	0.86	0.97	-46.6	-47.3	1.7	-51.2	-86.0	-84.2
35-39	11.56	6.62	3.1	3.62	1.71	1.83	-42.7	-53.2	16.8	-52.7	-85.2	-84.2
40-44	19.88	12.1	5.82	6.74	2.91	3.14	-39.1	-51.9	15.8	-56.8	-85.4	-84.2
45-49	29.57	18.3	8.74	11.35	4.84	4.82	-38.1	-52.2	29.9	-57.4	-83.6	-83.7
50-54	38.99	28.13	14.08	18.93	7.90	7.65	-27.9	-49.9	34.4	-58.3	-79.7	-80.4
55-59	47.24	32.39	16.19	24.85	11.21	11.54	-31.4	-50.0	53.5	-54.9	-76.3	-75.6
60+	65.73	54.65	32.07	47.53	24.94	30.14	-16.9	-41.3	48.2	-47.5	-62.1	-54.1

Source: CBS, 1968 Vol. III, Part VI, Table 7

CBS, 1968 Vol. III, Part VI, Table 7

CBS, 1975 Vol. II, Part II, Table 15

CBS, 1984 Vol. II, Part Table 15

CBS, 1993 Vol. I, Part XI, Table 34

CBS, 2002 National Report Vol. II, Table 17

CBS, 2012 National Report Vol. I, Table 19

* In respect of population aged 10 years and above

Annex 4.3: Age-sex specific proportion of divorced/separated persons, Nepal census years 1961-2011 and percentage changes in proportion divorced/separated between 1961-71, 1971-81, 1981-91, 1991-2001, 2001-2011 and 1961-2011

Age group and sex	Proportion divorced/separated						Percentage change					
	1961	1971	1981	1991	2001	2011	1961-71	1971-81	1981-91	1991-2001	2001-2011	1961-2011
Males												
All ages*	0.4	0.28	0.38	0.46	0.23	0.25	-30.0	35.7	21.1	-49.3	7.5	-38.2
10-14	0.02	0.02	0.17	0.06	0.06	0.00	0.0	750.0	-64.7	-5.8	-100.0	-100.0
15-19	0.23	0.13	0.23	0.2	0.10	0.03	-43.5	76.9	-13.0	-52.3	-68.4	-86.3
20-24	0.63	0.4	0.52	0.59	0.20	0.17	-36.5	30.0	13.5	-66.2	-16.6	-73.5
25-29	0.69	0.5	0.6	0.7	0.30	0.28	-27.5	20.0	16.7	-56.8	-5.8	-59.0
30-34	0.61	0.46	0.52	0.65	0.35	0.35	-24.6	13.0	25.0	-45.6	1.0	-42.0
35-39	0.47	0.39	0.43	0.63	0.32	0.40	-17.0	10.3	46.5	-48.9	25.6	-14.5
40-44	0.41	0.35	0.41	0.62	0.40	0.43	-14.6	17.1	51.2	-35.6	7.4	4.8
45-49	0.41	0.29	0.37	0.59	0.32	0.44	-29.3	27.6	59.5	-45.9	38.6	8.2
50-54	0.39	0.26	0.36	0.62	0.35	0.45	-33.3	38.5	72.2	-43.9	30.0	16.6
55-59	0.35	0.25	0.34	0.59	0.31	0.43	-28.6	36.0	73.5	-47.2	38.7	22.8
60+	0.39	0.3	0.43	0.56	0.32	0.43	-23.1	43.3	30.2	-42.7	33.0	9.1
Females												
All ages*	0.34	0.28	0.42	0.69	0.32	0.35	-17.6	50.0	64.3	-54.1	-5.9	4.3
10-14	0.03	0.02	0.21	0.08	0.05	0.00	-33.3	950.0	-61.9	-36.7	68.7	-100.0
15-19	0.29	0.18	0.29	0.34	0.11	0.07	-37.9	61.1	17.2	-66.2	-60.4	-74.4
20-24	0.45	0.33	0.39	0.64	0.25	0.24	-26.7	18.2	64.1	-61.2	-44.8	-47.7
25-29	0.45	0.35	0.42	0.72	0.34	0.35	-22.2	20.0	71.4	-53.1	-24.9	-23.1
30-34	0.43	0.33	0.42	0.78	0.41	0.40	-23.3	27.3	85.7	-47.6	-5	-6.2
35-39	0.46	0.35	0.45	0.91	0.45	0.51	-23.9	28.6	102.2	-50.3	-1.6	10.8
40-44	0.46	0.35	0.54	1.07	0.54	0.61	-23.9	54.3	98.1	-49.4	17.7	33.1
45-49	0.42	0.35	0.53	1.16	0.55	0.65	-16.7	51.4	118.9	-52.5	31.2	55.4
50-54	0.38	0.34	0.62	1.37	0.57	0.74	-10.5	82.4	121.0	-58.1	50.9	94.6
55-59	0.41	0.31	0.55	1.32	0.54	0.70	-24.4	77.4	140.0	-59.0	31.9	71.4
60+	0.24	0.36	0.65	1.05	0.50	0.64	50.0	80.6	61.5	-52.2	109.1	166.6

Source: CBS, 1968 Vol. III, Part VI, Table 7

CBS, 1968 Vol. III, Part VI, Table 7

CBS, 1975 Vol. II, Part II, Table 15

CBS, 1984 Vol. II, Part Table 15

CBS, 1993 Vol. I, Part XI, Table 34

CBS, 2002 National Report Vol. II, Table 17

CBS, 2012 National report Vol. I, Table 19

* In respect of population aged 10 years and above

Annex 4.4: Singulate mean age at marriage and rank-order for male by districts, Nepal, 1981-2011

S.N.	District	Both sexes 2011	1981		2001		2011		Difference (Male)	
			Male	Rank-order	Male	Rank-order	Male	Rank-order	1981-2011	2001-2011
1	Kathmandu	24.8	22.4	19	25.7	2	26.5	1	4.1	0.8
2	Lalitpur	24.6	21.7	26	24.8	5	26.2	2	4.5	1.4
3	Bhaktapur	24.2	21.2	38	24.0	9	25.6	3	4.4	1.6
4	Jhapa	23.3	22.8	14	25.0	4	25.4	4	2.6	0.5
5	Kaski	23.2	22.6	18	23.8	18	25.4	5	2.8	1.6
6	Manang	24.5	25.4	2	28.3	1	25.3	6	-0.1	-3.0
7	Ilam	23.6	24.2	3	24.8	6	25.2	7	1.0	0.4
8	Mustang	24.6	25.8	1	25.2	3	25.1	8	-0.7	-0.1
9	Morang	22.8	21.9	24	23.9	14	25.0	9	3.1	1.1
10	Syangja	22.2	21.3	36	24.0	8	24.9	10	3.6	0.9
11	Panchthar	23.1	22.8	15	23.8	16	24.6	11	1.8	0.8
12	Sunsari	22.7	21.0	41	24.0	10	24.6	12	3.6	0.6
13	Solukhumbu	23.2	23.9	4	23.9	11	24.6	13	0.7	0.7
14	Chitawan	22.8	21.6	28	23.9	12	24.5	14	2.9	0.6
15	Taplejung	22.6	23.4	6	23.8	19	24.3	15	0.9	0.5
16	Terhathum	22.5	23.1	10	23.9	13	24.3	16	1.2	0.4
17	Dhanusa	21.5	18.4	70	22.9	30	24.1	17	5.7	1.3
18	Parbat	21.7	22.7	16	23.2	24	24.1	18	1.4	0.9
19	Gulmi	21.4	21.6	29	23.2	23	24.0	19	2.4	0.8
20	Bhojpur	22.4	23.4	7	23.8	15	24.0	20	0.6	0.2
21	Khotang	22.3	23.0	11	23.1	26	24.0	21	1.0	0.9
22	Dhankuta	22.5	23.3	9	24.6	7	23.9	22	0.6	-0.6
23	Palpa	21.8	22.2	23	23.8	17	23.9	23	1.7	0.1
24	Kavre	22.7	21.2	39	22.7	32	23.8	24	2.6	1.1
25	Tanahun	21.5	21.4	35	22.6	37	23.8	25	2.4	1.2
26	Lamjung	21.4	22.3	20	22.7	35	23.8	26	1.5	1.1
27	Arghakhanchi	21.1	21.6	30	22.7	34	23.7	27	2.1	1.0
28	Nawalparasi	21.8	19.9	51	21.2	65	23.6	28	3.7	2.4
29	Kanchanpur	21.9	18.4	71	22.6	38	23.6	29	5.2	1.0
30	Mahottari	21.2	18.6	68	22.2	45	23.5	30	4.9	1.3
31	Makawanpur	22.2	20.4	46	23.6	20	23.5	31	3.1	-0.1
32	Gorkha	21.6	21.3	37	22.7	31	23.5	32	2.2	0.8
33	Saptari	21.5	17.7	75	22.9	28	23.5	33	5.8	0.6
34	Siraha	21.1	18.5	69	22.0	48	23.5	34	5.0	1.5
35	Ramechhap	22.3	21.7	27	22.1	47	23.5	35	1.8	1.4
36	Udaypur	21.9	21.6	31	22.9	29	23.5	36	1.9	0.6
37	Rupandehi	21.8	18.1	72	23.1	25	23.4	37	5.3	0.4
38	Dolakha	22.2	22.7	17	22.5	39	23.4	38	0.7	0.9
39	Okhaldhunga	22.0	21.8	25	22.4	42	23.4	39	1.6	1.1
40	Sankhuwasabha	21.9	23.5	5	23.5	21	23.4	40	-0.1	-0.1

S.N.	District	Both sexes 2011	1981		2001		2011		Difference (Male)	
			Male	Rank-order	Male	Rank-order	Male	Rank-order	1981-2011	2001-2011
41	Baglung	21.5	22.3	21	22.7	33	23.4	41	1.1	0.7
42	Nuwakot	22.0	22.3	22	22.0	49	23.4	42	1.1	1.4
43	Kailali	21.7	19.8	52	22.1	46	23.1	43	3.3	1.0
44	Myagdi	21.2	21.0	42	23.0	27	23.1	44	2.1	0.1
45	Sindhupalchok	21.9	21.5	34	21.4	62	23.1	45	1.6	1.7
46	Rasuwa	21.8	22.9	13	22.2	44	23.0	46	0.1	0.8
47	Sarlahi	21.1	19.4	60	21.8	54	23.0	47	3.6	1.3
48	Banke	21.3	20.9	43	23.3	22	23.0	48	2.1	-0.3
49	Parsa	21.1	18.0	73	21.1	66	22.9	49	4.9	1.8
50	Dhading	21.5	21.6	32	22.0	51	22.9	50	1.3	0.9
51	Sindhuli	21.5	21.6	33	22.5	40	22.9	51	1.3	0.4
52	Dadeldhura	21.1	19.8	53	22.3	43	22.8	52	3.0	0.5
53	Bardiya	21.3	19.1	61	21.5	58	22.7	53	3.6	1.1
54	Baitadi	20.8	20.0	50	22.4	41	22.5	54	2.5	0.1
55	Doti	20.8	20.4	47	21.4	59	22.5	55	2.1	1.1
56	Darchula	20.7	19.7	54	21.4	60	22.5	56	2.8	1.0
57	Pyuthan	20.6	20.1	49	21.6	56	22.4	57	2.3	0.8
58	Dang	20.9	20.6	45	21.9	52	22.4	58	1.8	0.5
59	Kapilbastu	20.9	17.9	74	20.6	72	22.4	59	4.5	1.8
60	Bara	20.7	18.7	65	21.2	64	22.3	60	3.6	1.1
61	Achham	20.8	19.5	57	20.6	71	22.0	61	2.5	1.4
62	Rautahat	20.3	18.7	66	21.4	61	22.0	62	3.3	0.6
63	Bajura	20.7	19.5	58	21.0	68	21.9	63	2.4	0.9
64	Surkhet	20.5	19.1	62	21.8	53	21.9	64	2.8	0.1
65	Kalikot	20.5	19.7	55	21.0	67	21.7	65	2.0	0.7
66	Dailekh	20.3	19.5	59	20.8	70	21.6	66	2.1	0.8
67	Rukum	20.5	20.9	44	21.4	63	21.5	67	0.6	0.2
68	Jajarkot	20.2	18.9	64	21.7	55	21.4	68	2.5	-0.3
69	Salyan	20.3	18.7	67	21.5	57	21.4	69	2.7	-0.1
70	Rolpa	20.2	20.3	48	20.4	74	21.3	70	1.0	0.9
71	Bajhang	20.1	19.0	63	19.8	75	21.2	71	2.2	1.4
72	Dolpa	20.6	23.0	12	22.0	50	21.0	72	-2.0	-0.9
73	Humla	20.0	23.4	8	22.6	36	21.0	73	-2.4	-1.6
74	Mugu	19.8	21.1	40	20.9	69	20.9	74	-0.2	0.0
75	Jumla	19.6	19.6	56	20.6	73	20.8	75	1.2	0.2

Source: CBS 1984 Vol. II, Table 15

CBS 2002 National Report Vol. II, Table 17

CBS 2012 National Report Vol I, Table 19

Annex 4.5: Singulate mean age at marriage and rank-order for female by districts, Nepal, 1981-2011

S.N.	District	Both sexes 2011	1981		2001		2011		Difference (Female)	
			Female	Rank-order	Female	Rank-order	Female	Rank-order	1981-2011	2001-2011
1	Mustang	24.6	22.7	2	23.9	2	24.1	1	1.4	0.2
2	Manang	24.5	24.5	1	25.4	1	23.3	2	-1.2	-2.1
3	Lalitpur	24.6	18.7	19	21.9	4	23.0	3	4.3	1.1
4	Kathmandu	24.8	18.9	17	21.7	6	22.9	4	4.0	1.2
5	Bhaktapur	24.2	18.3	23	21.6	9	22.8	5	4.5	1.2
6	Ilam	23.6	NA	NA	21.7	7	22.2	6		0.4
7	Solukhumbu	23.2	20.9	3	22.4	3	22.1	7	1.2	-0.3
8	Panchthar	23.1	20.1	6	21.3	12	21.9	8	1.8	0.6
9	Kavre	22.7	17.7	36	20.6	17	21.8	9	4.1	1.2
10	Jhapa	23.3	18.2	26	21.4	11	21.7	10	3.5	0.3
11	Ramechhap	22.3	18.7	20	19.8	31	21.4	11	2.7	1.7
12	Dhankuta	22.5	20.2	5	21.5	10	21.4	12	1.2	-0.1
13	Chitawan	22.8	17.5	38	20.2	22	21.3	13	3.8	1.1
14	Kaski	23.2	18.4	21	20.0	26	21.3	14	2.9	1.3
15	Bhojpur	22.4	20.0	8	21.2	13	21.2	15	1.2	0.1
16	Dolakha	22.2	19.3	13	20.0	28	21.2	16	1.9	1.3
17	Taplejung	22.6	19.6	10	21.9	5	21.1	17	1.5	-0.7
18	Morang	22.8	17.8	31	20.3	20	21.1	18	3.3	0.9
19	Terhathum	22.5	19.7	9	21.7	8	21.1	19	1.4	-0.6
20	Sunsari	22.7	17.4	40	20.2	23	21.1	20	3.7	0.9
21	Makawanpur	22.2	17.3	44	20.6	18	21.1	21	3.8	0.5
22	Sindhupalchok	21.9	18.0	28	19.3	43	21.0	22	3.0	1.7
23	Khotang	22.3	19.5	11	20.6	16	21.0	23	1.5	0.4
24	Nuwakot	22.0	18.0	29	19.9	30	21.0	24	3.0	1.1
25	Okhaldhunga	22.0	18.9	18	20.3	21	21.0	25	2.1	0.7
26	Rasuwa	21.8	19.3	14	19.4	41	20.8	26	1.5	1.4
27	Udaypur	21.9	18.1	27	19.7	32	20.8	27	2.7	1.1
28	Sankhuwasabha	21.9	20.1	7	20.8	14	20.7	28	0.6	-0.1
29	Syangja	22.2	17.4	41	20.1	25	20.6	29	3.2	0.5
30	Palpa	21.8	17.8	32	20.5	19	20.6	30	2.8	0.2
31	Dhading	21.5	17.5	39	19.4	40	20.6	31	3.1	1.2
32	Kanchanpur	21.9	14.2	72	18.9	48	20.6	32	6.4	1.7
33	Nawalparasi	21.8	16.2	53	18.5	58	20.6	33	4.4	2.1
34	Kailali	21.7	16.1	56	18.9	49	20.5	34	4.4	1.6
35	Sindhuli	21.5	18.0	30	19.5	37	20.5	35	2.5	1.0
36	Gorkha	21.6	17.8	33	20.1	24	20.5	36	2.7	0.3
37	Rupandehi	21.8	15.1	64	19.7	33	20.5	37	5.4	0.8
38	Baglung	21.5	18.4	22	19.6	35	20.4	38	2.0	0.8

S.N.	District	Both sexes 2011	1981		2001		2011		Difference (Female)	
			Female	Rank-order	Female	Rank-order	Female	Rank-order	1981-2011	2001-2011
39	Dolpa	20.6	20.7	4	20.7	15	20.3	39	-0.4	-0.3
40	Bardiya	21.3	15.5	62	18.5	57	20.3	40	4.8	1.7
41	Parbat	21.7	18.3	24	19.7	34	20.2	41	1.9	0.5
42	Gulmi	21.4	17.4	42	19.4	38	20.2	42	2.8	0.7
43	Tanahun	21.5	17.8	34	19.4	39	20.0	43	2.2	0.6
44	Myagdi	21.2	19.5	12	20.0	27	20.0	44	0.5	0.0
45	Banke	21.3	16.2	54	19.6	36	19.9	45	3.7	0.4
46	Dadeldhura	21.1	15.6	60	18.6	56	19.9	46	4.3	1.3
47	Arghakhanchi	21.1	16.9	47	19.2	45	19.9	47	3.0	0.7
48	Dang	20.9	17.4	43	19.0	46	19.9	48	2.5	0.8
49	Lamjung	21.4	19.2	16	19.9	29	19.8	49	0.6	-0.1
50	Achham	20.8	16.7	50	18.3	59	19.8	50	3.1	1.5
51	Saptari	21.5	14.3	70	18.7	54	19.8	51	5.5	1.1
52	Rukum	20.5	17.8	35	19.3	42	19.8	52	2.0	0.4
53	Bajura	20.7	17.1	46	18.3	60	19.7	53	2.6	1.4
54	Kapilbastu	20.9	14.6	67	17.7	67	19.6	54	5.0	2.0
55	Doti	20.8	16.3	51	17.7	66	19.6	55	3.3	1.9
56	Baitadi	20.8	14.9	65	18.8	52	19.6	56	4.7	0.8
57	Pyuthan	20.6	17.3	45	18.8	51	19.6	57	2.3	0.7
58	Salyan	20.3	15.6	61	18.9	50	19.5	58	3.9	0.6
59	Darchula	20.7	16.2	55	18.2	61	19.5	59	3.3	1.2
60	Rolpa	20.2	18.3	25	18.7	55	19.4	60	1.1	0.7
61	Surkhet	20.5	16.8	49	18.8	53	19.4	61	2.6	0.6
62	Kalikot	20.5	16.0	57	17.6	69	19.4	62	3.4	1.7
63	Dailekh	20.3	16.0	58	18.1	62	19.3	63	3.3	1.1
64	Sarlahi	21.1	15.4	63	17.5	70	19.2	64	3.8	1.7
65	Jajarkot	20.2	16.9	48	18.9	47	19.2	65	2.3	0.3
66	Bajhang	20.1	15.7	59	17.4	72	19.1	66	3.4	1.7
67	Parsa	21.1	13.7	73	17.2	74	19.1	67	5.4	1.9
68	Siraha	21.1	14.3	71	17.6	68	19.1	68	4.8	1.4
69	Dhanusa	21.5	14.6	68	18.1	63	19.1	69	4.5	1.0
70	Humla	20.0	19.3	15	19.2	44	19.0	70	-0.3	-0.2
71	Bara	20.7	14.9	66	17.3	73	19.0	71	4.1	1.7
72	Mahottari	21.2	13.7	74	17.5	71	19.0	72	5.3	1.5
73	Mugu	19.8	17.6	37	18.0	64	18.7	73	1.1	0.7
74	Rautahat	20.3	14.5	69	17.2	75	18.6	74	4.1	1.4
75	Jumla	19.6	16.3	52	17.8	65	18.5	75	2.2	0.8

CHAPTER 5

FERTILITY LEVELS, PATTERNS AND TREND

Bishnu Das Singh Dangol *

Abstract

An assessment of fertility levels, pattern and trends is essential as the fertility level is one of the parameters that determines the size, composition and age/sex structure of the population of a country. Although a vital registration system was established in Nepal in 1971, data from censuses and surveys have been used to calculate fertility levels. However, census data itself is limited due to an under enumeration of current births and children ever born, therefore direct estimates cannot be applied. An indirect technique, the Brass/Trussel technique, has been used to calculate fertility levels. This method was used in the 1981 and 1991 censuses. Since 1990, fertility levels have begun to decline in the country. The revised Brass and Arriaga technique has been applied to record fertility levels in the country and other spatial levels. The fertility levels of urban areas, made up of 58 municipalities already defined at the time of field operations, and rural areas have been recorded. Urban areas reported fertility levels of 2.1 children per woman in 2011. If the recently observed declining trend of fertility continues in coming years, the country will achieve replacement levels of fertility in the near future. The high decline in fertility levels, particularly during the period 2001 to 2006, has been a large contributing factor to the current situation.

5.1 Introduction

Nepal completed a 100 year cycle in implementing population census in 2011; the census of 1911 is the first population census in the history of census taking according to the government's statistical records. Since then a census has been conducted every ten years from 1911 to 1941. The quality of enumeration of these censuses was questionable in terms of quality of coverage and contents, as tools and moreover the concept of implementing a census did not comply with international standards up to 1941. The census of 1952/54 was the first scientific census, although enumeration took place in two years; the eastern part of the country was enumerated in 1952 and the remainder in 1954. The census of 1961 was carried out according to the modern concept of census taking. The population census of 1961, therefore, is the first scientific census in Nepal.

Fertility is one of the principal components of population dynamics that determines size, structure and composition of a population in a country. In terms of demography, the definition of the fertility levels of a woman is the total number of live births that take place if the woman were to live to the end of her childbearing years (15 to 49 years of age). Technically fertility levels are called Total Fertility Rate (TFR)¹. A major objective of this chapter is to examine fertility levels, its trends and spatial differentials in Nepal. Moreover an analysis of the trends of fertility levels will be reviewed to determine if the country will achieve replacement of fertility by the end of 2017 (which is one of the targets of the planning commission in the area of population).

* Mr. Dangol is a freelance Demographer.

1 (Total Fertility Rate): the average number of children that would be born per woman if all women lived to the end of their childbearing years and bore children according to a given set of "age specific fertility rates": also referred to as total fertility rate.²

5.2 Sources of data

A vital registration system should be the principle source of data to calculate fertility levels. In Nepal, registering vital events, including births, was established in 1978. However the data collected by the system is of little value because of the low coverage of births². Therefore, censuses have become the principle source of data. Since 1961, population censuses have been carried out at ten yearly intervals. Examining available data from all population censuses to date, indicates that the quality of data is poor, particularly due to the fact that the number of live births is grossly under reported.

In addition to censuses, other surveys are conducted occasionally, including the Nepal Fertility Survey of 1976, the Demographic Sample Surveys of 1974/1975, 1976 and 1977/1978 as well as periodic sample surveys, including the Family Planning and Health Survey of 1991 and the Demographic and Health Surveys of 1996, 2001, 2006, 2011, which could be important sources of determining fertility rates in the country. The Nepal Living Standard Survey is another source of data for calculating fertility levels, however because of the limited sample size of these surveys, data is only captured for fertility levels at certain spatial levels.

5.3 Age at first marriage

Age at first marriage is the age-entry of a woman which marks the initiation of pregnancy and subsequently giving birth. Early age at marriage increases the likely incidence of childbirth and elongates a woman's reproductive period, which could result in higher fertility levels. However socio-economical and cultural norms are other factors that also determine when a woman first gives birth.

Table 5.1 presents the age at first marriage of males and females, from 15-49 by rural and urban areas, and ecological zones. Overall, data shows that men marry approximately two years later than women.

Women from Mountain and Hill Zones marry one year later than women from the Tarai. Men from the Hill Zone marry less than one year later than men from the Tarai and Mountain Zones.

Similarly women from urban areas marry less than one year later than women from rural areas. Whereas men from urban areas marry less than two years later than men from rural areas. Comparing the data from 2011 with that of 2001, there is little difference on age at first marriage in the country along sub-regions.

Table 5.1: Mean age at first marriage of ever married men and women, 15-49 years by sex and region.

Census year	Mountain		Hill		Tarai		Urban		Rural		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
2001	21.73	19.82	22.11	19.70	21.40	19.34	22.92	19.93	21.50	19.47	21.73	19.54
2011	21.83	19.67	22.57	19.72	21.44	19.03	23.60	20.17	21.56	19.22	21.94	19.38

5.4 Child Woman Ratio (CWR)

Child Woman ratio is one of the proxy indicators of fertility levels. This ratio is particularly useful in a country where there is no fertility related information either from censuses/surveys or a vital registration system. This ratio is normally calculated by dividing the total observed number of children below five years by the number

² U.S. Bureau of the census, 1979, country profile,

of women aged 15 to 49 years. As this ratio is only based on children who have survived above five years of age, it is affected by infant and child mortality. In a country where infant and child mortality levels are high the subsequent Child Woman ratio should be considered with care. In addition, if the extent of under enumeration of children varies from census to census, the timeline data will be misleading to users. If the extent of under reporting is almost the same from census to census, although this ratio only gives a rough indicator of fertility levels, the timeline data will indicate changes in fertility levels over various periods.

Table 5.2: Child-woman ratio by ecological zones, rural and urban, Nepal, 1981-2011

Region	Years			
	1981	1991	2001	2011
Mountain	0.617	0.632	0.528	0.463
Hill	0.643	0.610	0.464	0.332
Tarai	0.680	0.617	0.514	0.374
Rural	0.660	0.630	0.517	0.380
Urban	0.606	0.478	0.353	0.248
Nepal	0.656	0.615	0.492	0.361

Table 5.2 provides the Child Woman ratio at the national level and by ecological zones, and rural and urban areas for the years 1981 to 2011. The data reflects that the TFR did not decline until 1991, after that time it declined dramatically. For example the ratio remained almost constant during 1981 to 1991, after which it fell to 0.49 in 2001 and declined again to 0.36 in 2011 (see national figures only Table 5.2). Figure 5.1 also reflects that the ratio declined nominally during 1981 to 1991, but the decline is pronounced in the years following 1991.

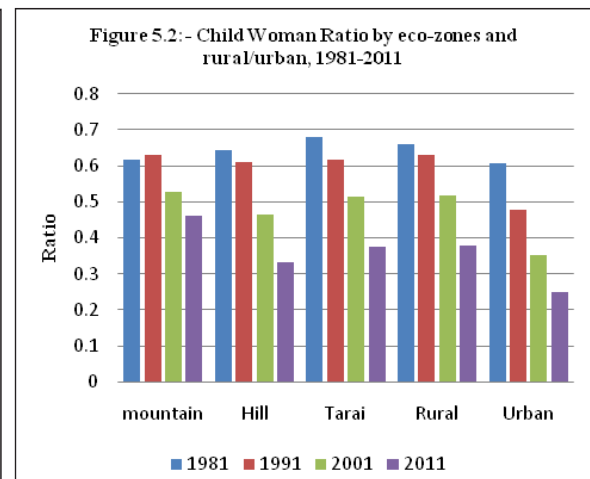
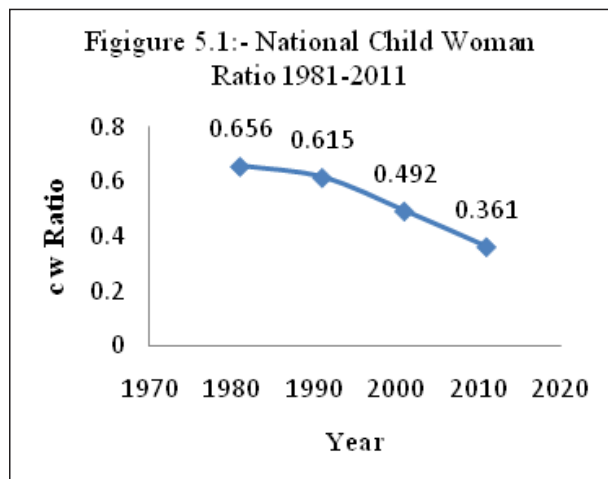


Figure 5.2 indicates that the ratio is highest in Tarai followed by Hill, then Mountain in 1981. In 1991, 2001 and 2011 the ratio is highest in Mountain and lowest in Hill. This implies that fertility levels are highest in Mountain and lowest in Hill in the years 2001 and 2011, except in 1981.

5.5 Methodology adopted in computing fertility level

5.5.1 Periodic censuses data on areas of fertility

Periodic censuses are one of the principle sources of information on fertility levels. Since fertility levels are primarily calculated by reported birth statistics, the extensiveness of reported births is the main factor in the equation because it has a significant impact on the actual fertility levels. To capture all live births as far as possible, each ever married woman was asked detailed questions on the number of sons and daughters living with her, the number living elsewhere and the number who had died, instead of asking about total live births as a single question. A census is a big operation and although measures have been taken to collect this information in censuses, they still fail to capture all births, particularly children who have died. Due to the possibility of under reporting of births in censuses, indirect methods of estimation are used.

A number of indirect methods are available for estimating fertility levels. Some of the commonly used methods are the Brass method, Trussel's method, Palmore's method, Rele's method, Arriaga's method as well as others. Since fertility levels were almost static in the country prior to the 2001 population census, the Brass P/F technique has been used to estimate total fertility rate.

Basic data required are:

- Children ever born prior to the enumeration and surveys that classify women by age at the time of enumeration and;
- Births during the last twelve months prior to the enumeration and surveys that classify women by age at the time of enumeration.

Required data for computing fertility levels was collected through the administration of questionnaire Schedule 2 on a sample basis in the 2001 and 2011 censuses. (The sample covered national total households selected in the ratio of 1 in 8 households). Prior to 2001, data had been collected covering all households.

Table 5.3: Trend in adjusted age specific fertility rates and total fertility rates for Nepal, Census 1971 – 2011

Census year	Age group							Total	TFR
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
1971	0.074	0.267	0.310	0.261	0.196	0.109	0.043	1.260	6.30
1981	0.066	0.230	0.266	0.245	0.206	0.142	0.099	1.254	6.27
1991	0.089	0.261	0.248	0.195	0.141	0.073	0.027	1.034	5.16
2001*	0.071	0.203	0.160	0.104	0.066	0.033	0.011	0.648	3.25
2011*	0.054	0.172	0.137	0.075	0.041	0.019	0.006	0.504	2.52

* Arriaga's estimation based on ASFR for two points in time.

The Brass indirect technique has been applied to the census data of 1971, 1981 and 1991. Census data from 1991 indicates declining fertility levels, so the methods above are not appropriate for computing fertility levels after 1991. Hence Arraiga's method has been applied to calculate fertility levels in 2001 and 2011.

Table 5.3 provides indirect estimates of the TFR calculated using Arraiga's method in 2001 and 2011. The TFR is approximately 3.25 in 2001, which declines to 2.52 in 2011, a decline of slightly less than one child per woman over a decade. The value of the TFR recorded by the Population and Housing Census of 2011 at 2.52, is much closer to the value of the TFR obtained by the Demographic and Health Survey of 2011 of 2.6 in 2009, that is during the period 2008 to 2010.

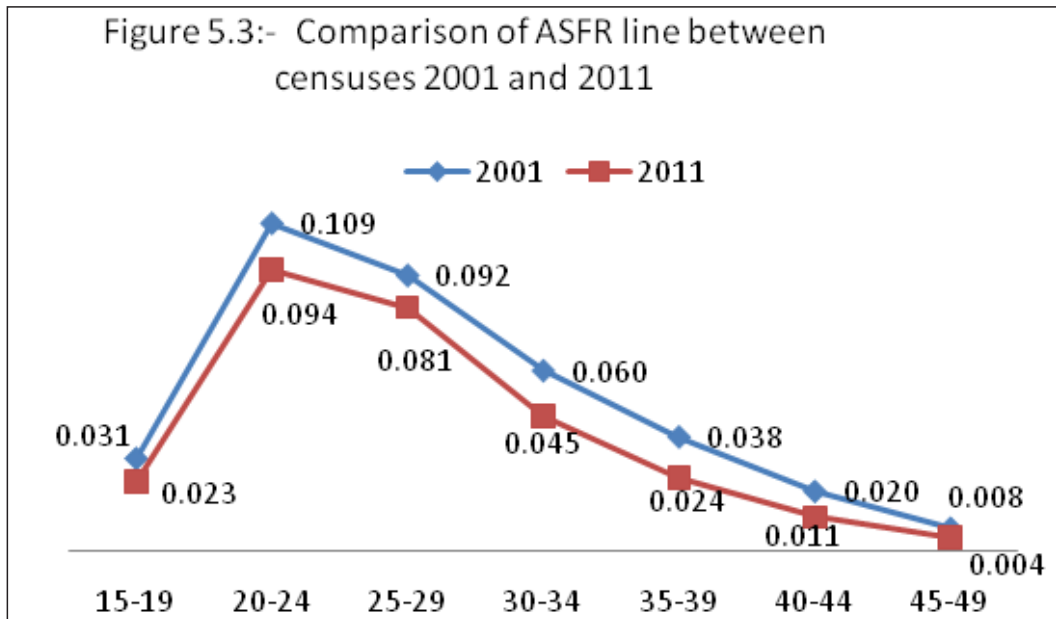


Figure 5.3 shows age specific fertility differentials between 2001 and 2011. The age specific fertility rate follows a similar pattern with decreased rates in 2011 compared to 2001. The rates peak at the age group 20 to 24 both in the 2001 and 2011 censuses.

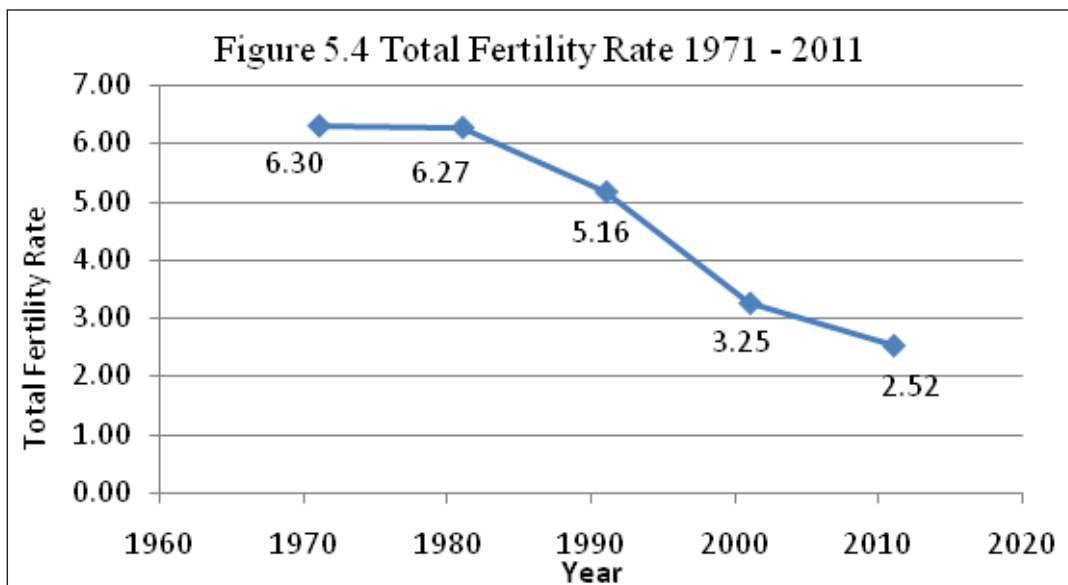


Figure 5.4 shows that there is no significant difference in fertility levels from 1971 to 1981. However, from 1981 to 1991, there is a decline in fertility of approximately more than one child per woman. This decline doubles from 1991 to 2001 but from 2001 to 2011 the decline is approximately more than one child per woman as in 1981 to 1991.

5.5.2 Use of occasionally conducted surveys

As the censuses are only one of the important sources of fertility levels in the country, occasional surveys have been conducted. The first survey was the Nepal Fertility Survey of 1976 (World Fertility Survey of 1976). The Demographic Survey of Nepal was conducted in 1986 and the Nepal Fertility, Family Planning and Health Survey (NFFPHS) in 1991.

The Nepal Fertility Survey of 1976 and NFFPHS of 1991 estimated fertility levels at 6.3 in 1996 and 5.1 in 1991. The Nepal Family Health Survey of 1996, and the Nepal Demographic and Health Surveys of 2001, 2006 and 2011 are the succeeding surveys which have been conducted at intervals of five years. These surveys provide data which is more reliable for calculating fertility levels for several reasons. In addition, ever married women have been asked about their pregnancy history to confirm the quality of data on births. Therefore fertility levels have been calculated directly.

Data required

- Births during the last twelve months prior to the survey by age of women at the time of enumeration.

Table 5.4 explains fertility levels and trends calculated on the basis of the surveys from 1996 to 2011. These figures refer to the thirty six months prior to the field work of the 2011 census. Fertility declines from 4.6 births per woman to 2.6 births per woman during the period from 1996 to 2011, a drop of 2 children per woman in 15 years. Fertility levels estimated on the survey data indicate that women aged 20-24 have the highest fertility levels followed by women in the age groups 25 to 29 and 30 to 34, as supported by census data. Fertility levels for women in other age groups is diminishing over the period 1996 to 2011. It is noted that there is an unexpected decline of total fertility rates by one child per woman in the five year period, 2001 to 2006. The Ministry of Health attributed this to the outflow of people, primarily men, from the country seeking work overseas. This is supported on data on the outflow of the population which increased from 762,181 in 2001 to 1,921,494 in 2011.

Table 5.4. Age specific and total fertility rates, Nepal 1996, 2001, 2006 and 2011

Age group	NFHS 1996	NDHS 2001	NDHS 2006	NDHS 2011
	(1993-1995)	(1998-2000)	(2003-2005)	(2008-2010)
15-19	0.127	0.110	0.098	0.081
20-24	0.266	0.248	0.234	0.187
25-29	0.229	0.205	0.144	0.126
30-34	0.160	0.136	0.084	0.071
35-39	0.094	0.081	0.048	0.036
40-44	0.037	0.034	0.016	0.014
45-49	0.015	0.007	0.002	0.005
TFR	4.64	4.11	3.13	2.60

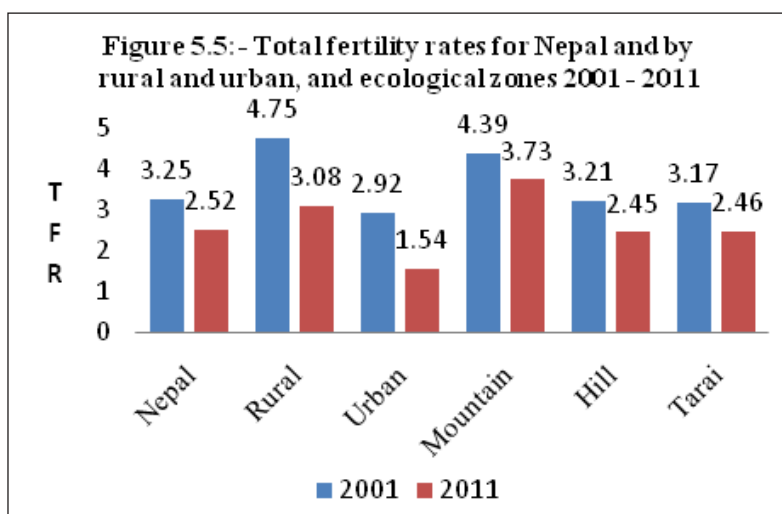
Source:- Ministry of Health and Population (Demographic Health Survey, 2011)

5.6 Spatial fertility levels

Table 5.5 and figure 5.5 examine the difference in fertility levels and patterns and trends among urban and rural areas, and Mountain, Hill and Tarai ecological zones. There is a considerable difference in fertility rates between the three ecological zones, with more than one child per woman in Mountain than Hill and Tarai recorded in the censuses of 2001 and 2011. Total fertility levels have dropped below the replacement level⁶. The fertility level is 1.54 in urban areas in 2011. The Nepal Demographic and Health Survey, 2001, has already indicated that urban areas reported a replacement of fertility in 2001. Trends from these tables clearly show that by the next population census of 2021 the Hill and Tarai will probably record a replacement of fertility providing norms affecting fertility continue at the same pace.

Table 5.5: Fertility levels by urban/rural and ecological zones

Year	Urban/rural		Ecological zones			
	Urban ⁵	Rural	Mountain	Hill	Tarai	Nepal
2001	2.92	4.75	4.39	3.21	3.17	3.25
2011	1.54	3.08	3.73	2.45	2.46	2.52



5.7 Crude Birth Rate (CBR)

Crude birth rate indicates the number of live births occurring during the year, per 1,000 population, estimated at midyear.⁷ This is a simple measure of information on birth statistics. In a country where the vital registration system is effective in collecting accurate birth statistics, a direct measure of crude birth rate (CBR) can be calculated. Although the vital registration system was established in Nepal in 1978, it is not still effective and its coverage is as low as 20 to 25%⁸. Therefore the CBR has to be calculated from census and survey data.

Table 5.6 gives some information on birth rates in Nepal. It is to be noted that the results depend upon the source of data and the method of estimation. Using the same set of data, calculated rates may be different because of

⁵ Urban areas only include 58 municipalities

⁶ 2.1 child per woman is the total replacement fertility rate

⁷ Shryock 197 Methods and materials of demography 1976

⁸ Unpublished estimate based on data from Vital Registration System of Ministry of Local Development, completed by Bishnu Dass Singh Dangol in 1998.

the use of different or indirect techniques. However the data reveals that the CBR up to 1981 does not show any definite trends. Data since 1981 reveals that the CBR is a declining trend. (see Figure 5.7). CBR was as high as 47 births per thousand population prior to 1981. It declined to 22 births per thousand population by 2011.

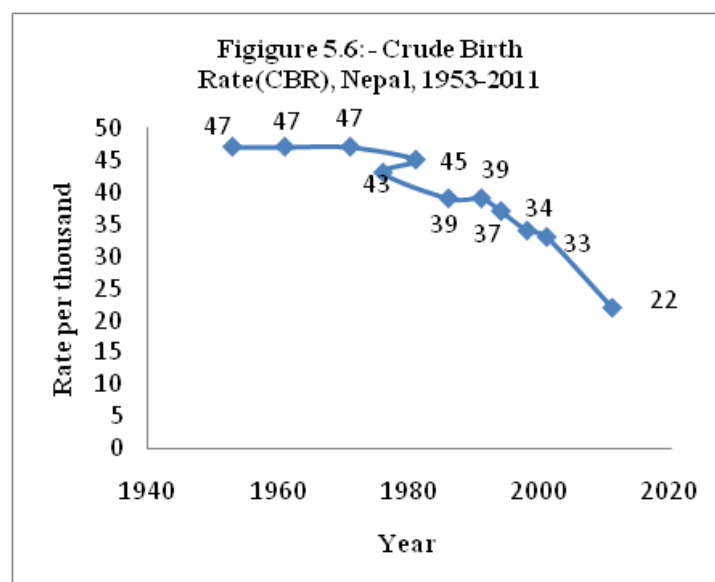


Table 5.6:- Estimates of crude birth rate (CBR)

Reference year	CBR	Method	Source
1952/54	45-50	Stable population analysis	Vaidyanathan and Gaige (1973)
1961	47*	Stable population analysis	Krotki and Thakur (1971)
1961	42.0**	Stable population analysis	CBS, 1987
1971	43	Brass's P/F Ratio method	Karki (1984)
1971	42**	Stable population analysis	CBS, 1987
1976	46.8	Direct estimate	Goldman, et al (1980)
1981	45	Brass's P/F Ratio method	Karki (1984)
1981	39.7**	Stable population analysis	CBS, 1987
1986	39+	Brass's P/F Ratio method	MOH (1987)
1991	39@	Arriaga modified P/F Ratio	Karki (2003)
1993-95	37++	Direct estimate	MOH, New Era and Macro International (1997)
1998	33.5	Direct estimate	MOH, New Era and ORC, Macro (2002)
2001	33.3	Population Projection, 2001-021,	CBS, 2003
2011	22.4	Population Projection, 2011-031,	CBS, 2014

* GRR converted to TFR using sex ratio.

** Population Monograph, Central Bureau of Statistics, CBS

+ MOH 1986 survey data corrected for under-reporting.

++ Based on direct estimate.

@ 1991 Census data corrected for under-reporting. This estimate is quite robust in that the estimated TFR matches well with Retherford and Thapa (August 1999) estimate of 5.16 for 1990/91.

5.8 Fertility levels and trends

In the absence of a reliable vital registration system, fertility levels at the national level have been calculated directly from survey data and indirectly from census data. The use of different techniques on the same set of census data has resulted in different fertility levels.

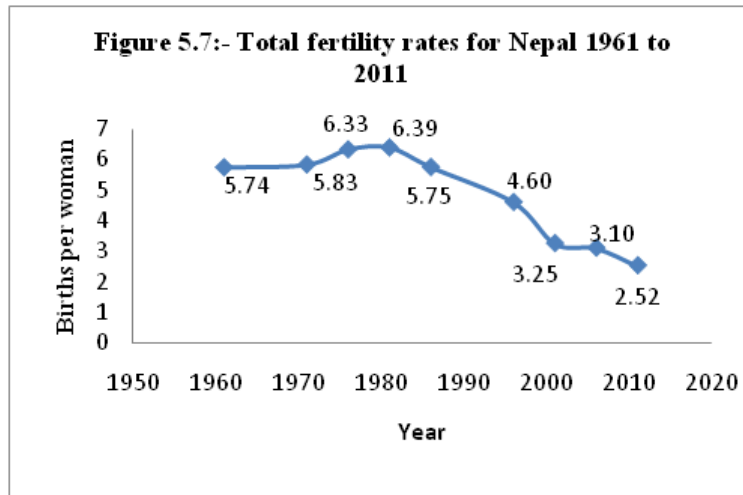


Table 5.7 summarises fertility levels obtained from censuses and surveys conducted in the country to date. Fertility levels persist at high levels, fluctuating between 5 children per woman and 6 children per woman until 1991. The data from Table 5.7 clearly shows that fertility levels have started to decline since 1991. Experience from other countries indicate that once fertility levels have started to decline, they continue to decline. Trends in fertility levels reveal that the country will achieve replacement of fertility in the years to come.

Table 5.7: Summary of Total Fertility Rate (TFR) for various years, Nepal

Reference year	TFR	Method	Source
1961	5.74*	Stable population analysis	Krotki and Thakur (1971)
1971	5.83	Brass's P/F Ratio method	Karki (1984)
1976	6.33	Direct estimate	Goldman, et al (1980)
1981	6.39	Brass's P/F Ratio method	Karki (1984)
1986	5.75+	Brass's P/F Ratio method	MOH (1987)
1991	5.6	Brass P/F method	CBS
1991	5.16@	Arriaga modified P/F Ratio method	Karki (2003)
1991	5.12**	Arriaga modified P/F Ratio method	MOH (1993)
1993-95	4.64++	Direct estimate	MOH, New Era and MacroInternational (1997)
1996	4.6	Direct estimate	NFHS 1996, MOH
2001	4.1	Direct estimate	MOH, New Era and ORC,Macro (2002)
2001	3.8	Arriaga modified P/F Ratio method	Karki (2003)
2001	3.25	Arriaga modified P/F Ratio method	Present study (Dangol, BDS)
2006	3.1	Direct estimate	MOH, New Era and ORC,Macro (2006)
2011	2.52	Arriaga modified P/F Ratio method	Present study (Dangol, BDS)
2011	2.6	Direct estimate	MOH, New Era and ORC, Macro (2006)

NA Not Available

* GRR converted to TFR using sex ratio.

** 1991 Survey data corrected for under-reporting

+ MOH 1986 survey data corrected for under-reporting.

++ Based on direct estimate.

@ 1991 Census data corrected for under-reporting. This estimate is quite robust in that the estimated TFR matches well with Retherford and Thapa (August 1999) estimate of 5.16 for 1990/91.

5.9 Conclusion

Fertility levels are one of the most important factors that determine the size and structure of the population of a country. The Government of Nepal has given local level offices, Village Development Committees/municipalities full authorisation to register all vital events, including annual births. To date, vital events are still undercounted. The fertility level obtained from the vital registration system is far below the true fertility level. Crude birth rates and fertility levels are estimated in the country based on information collected by censuses and surveys.

The Population dynamics of Nepal shows a high proportion of the population at the bottom of the population pyramid which tapers off upward from 1961 to 1981⁹. A low concentration of the population has been noted in 1991, 2001 and 2011 at the bottom of the population pyramid. This is particularly due to a considerable fall in fertility since 1991.

Fertility levels persisted at a high level of 6.3 children per woman up to 1981. A decline in fertility levels has been noted only in 1991. Since then it has started to decline by 0.5 children per woman per decade, except during the period 2001 to 2006, when it dropped from 4.1 children per woman in 2001 to 3.1 children per woman in 2006, a drop of one child per woman during a five year period. Griffith Feeny, Phd¹⁰. states that the rate of decline by

9 CBS 1995: Population Monograph of Nepal, HMG

10 Population Projection for Nepal 1996-2016, Volume I, National and Urban Projections, MOPE, 1998.

0.77 children per woman per decade is a plausible rate of decline in developing countries. From this point of view the drop in fertility levels during 2001 to 2006 is high. The Demographic and health survey of 2001 reveals a replacement of fertility levels in urban areas, however census data indicated that replacement of fertility was not attained in urban areas until 2011.

5.10 Policy recommendation

In addition to increased family planning, a reduction in crude birth rates should be made through reforms in social, economic, culture and educational development. A concept of two children per family should be encouraged and the vital registration system should be strengthened through proper management.

Fertility levels are declining consistently, although the proportion of people using contraception is not increasing accordingly. The Ministry of Health has attributed a main reason in the decline in fertility rates to extended spousal separation. This separation is due to increased migrants seeking employment overseas. If this is the case then there could be challenges if the trend in migration is reversed. Concerned agencies should be ready to address any challenges that do arise if the flow of migrants is reversed.

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CHAPTER 6

MORTALITY LEVELS AND PATTERNS IN NEPAL

- Dr. P.L. Joshi*

Abstract

This chapter looks at census estimates of the Crude Death Rate (CDR), Infant Mortality Rate (IMR), Child Mortality Rate (CMR), Under five mortality rates (U5 mortality rates) and the estimates of expectations of life at birth by age, sex, urban/rural areas, Ecological, Development, Eco-development and District levels for the year 2011. Patterns of mortality by age and sex are calculated by Age Specific Mortality Rates (ASMR), from the census data of 2011, as well as calculating expectations of life at birth at various levels. The estimates of CDR, IMR, CMR and U5 mortality rates are obtained by applying various methodologies to census data. The estimates of ASMR are not reliable enough to estimate Expectation of life at birth at various levels. These are estimated by applying various methodologies to census and Department of Health Survey data. ASMR are calculated by adjusting not reported age and sex data. The estimate of expectation of life at birth at the national level is 66.6 years, with 68.0 years for females and 65.4 years for males in 2011. The value is lowest in Mountain with almost equal values for Tarai and Hill. The estimates of IMR for Tarai and Hill are also almost equal in 2011. The expectation of life in Bhaktapur district is the highest. The estimates of IMR for females are higher than males in 22 districts. Mortality indicators are one of the major components of population change. They are essential for making population projections and construction of life tables. In this chapter the following indicators are used to measure mortality levels and patterns: (i) Crude death rate; (ii) Age specific mortality rate; (iii) Infant mortality rate; (iv) Child mortality rate; (v) Under five-mortality rate; and (vi) Expectation of life at birth.

6.1 Crude death rates (CDR)

Crude death rates (CDR) give the number of deaths per 1000 population during a specified period. Direct estimates of CDR given by censuses are usually underestimated, as deaths are usually under reported. Estimates of CDR based on census analysis and direct estimates from 1981 to 2011 are shown in Table 6.1.

Table 6.1: Estimates of CDR based on census analysis and direct estimates from 1981 to 2011 (Deaths per 1000 Population)

Methods	Years			
	1981	1991	2001	2011
Census analysis	13.5	13.3	10.3	7.3
Direct estimates	Grossly under reported ⁴	<6 ³	4.7 ²	4.9 ¹

Source: 1. Central Bureau of Statistics, 2014. 2. Central Bureau of Statistics, 2003, p.181. 3. Central Bureau of Statistics, 1995, p.85. 4. Central Bureau of Statistics, 1987, p.298.

* Dr. Joshi is a well known Demographer of the country.

It can be seen from the above table that direct estimates of CDR are grossly under reported compared to corresponding estimates based on census analysis. The CDR level decreases very slowly in the first ten years from 13.5 to 13.3 deaths per 1000 population up to 1991, and then begins to decrease more rapidly in the following twenty years. The level decreases by almost half from 13.3 to 7.3 deaths per 1000 population during the period 1991 to 2011. This table shows that direct estimates of CDR based on censuses are grossly under reported in all census years.

The estimates of CDR based on 2011 census analysis by various areas have been completed by the Central Bureau of Statistics (CBS 2014) and are shown in Appendix 6.1.

6.1.1 Patterns of CDR

The estimate of CDR for Nepal in 2011, as shown in Appendix 6.1, is 7.30 deaths per 1000 population. The estimates of CDR for urban and rural areas are almost equal, 7.19 and 7.32 respectively indicating that variables affecting CDR produced the same net effect in these areas. Certain variables, for example, availability of health facilities, higher per capita income and high literacy rate tend to decrease CDR whereas some variables, for example high population density, lack of water supply and poor sanitation tend to increase CDR.

In regard to ecological regions, the CDR is highest in Mountain followed by Hill and Tarai. It is to be noted that this is not the standardised death rate which takes into account the age structure of the population. In regard to Development Regions, the estimate of CDR is highest in Western Development Region and lowest in Central Development Region. The estimates are almost the same in the remaining three regions.

In regard to eco-development regions, the highest CDR is in Mid-Western Mountain and the lowest is in Eastern Tarai. The values are almost the same in other regions with a maximum of 1.5 difference in the CDR.

In districts, the highest estimates of CDR are found in Taplejung and Terhathum, the districts of Eastern Mountain. The lowest CDR are found in central parts of Tarai districts including Saptari, Siraha, Rautahat, Bara and Parsa most probably, due to severe under reporting of deaths in the census.

6.2 Age Specific Mortality Rate (ASMR)

ASMR gives the number of deaths per 1000 population of a specific age or age group during a specified period. As deaths are under reported in censuses, the direct estimates of age specific mortality rates are expected to be under estimated and will not give true levels of age specific mortality rates, which need to be corrected.

Methodologies developed to date to obtain adult mortality rates need either the population to be stable or at least closed (UN, 1983, p.129 and 212), which is far from true in the case of Nepal at present. Therefore the estimates are not correct. However, various other data are used in addition to data from censuses in developing countries to estimate ASMR. For example, in India they are estimated based on Sample Registration Systems (Census, 2010, p. 167). In Sri Lanka, they are estimated by using census data and registered births and deaths (Department, 2008, p.7). In Bangladesh, estimates of ASMR are obtained by the Bangladesh Maternal Health Services and Maternal Mortality Survey, 2001 (National., 2003, p.31 and 34). As such, the direct estimates of ASMR from census data might not be reliable. However, age specific mortality rates for various age groups by sex will show the pattern of mortality variation by age and sex. The direct estimates of age specific mortality rates are made based on data from the census of 2011. Not stated deceased by sex are adjusted to get adjusted deceased by sex. Then not stated deceased by age are adjusted to get adjusted deceased by age and sex. This process gives a total of 129,978 deaths in the last 12 months prior to the date of enumeration by age and sex groups.

Age specific mortality rates are obtained by dividing the number of adjusted deaths by mid year population of that age group multiplied by 1000. Mid-year populations are estimated based on intercensal population growth rates between the 2001 and 2011 censuses. Mortality rates are higher in younger ages, become lower in adult ages and then higher in old age. In fact, age specific mortality rates follow a U-shaped curve of distribution in developing countries. When mortality levels improve, the effect is seen more in younger than in older ages. Then the U-shaped curve will tend to become J-shaped. Table 6.2 shows age specific mortality rates calculated from the census of 2011.

Table 6.2: Age specific mortality rates by age and sex (deaths per 1000 population)⁵

Age (Yrs)	Total	Male	Female
<1	22.24	25.39	18.89
1-4	2.52	2.55	2.49
5-9	.78	.90	.65
10-14	.61	.69	.53
15-19	1.02	1.11	.94
20-24	1.46	1.90	1.11
25-29	1.60	2.20	1.12
30-34	1.77	2.51	1.18
35-39	2.46	3.35	1.69
40-44	3.03	4.05	2.09
45-49	4.35	5.35	3.39
50-54	6.11	7.42	4.77
55-59	8.34	10.00	6.65
60-64	14.47	16.97	12.09
65-69	20.58	23.52	17.63
70-74	33.81	38.39	29.13
75-79	47.98	54.45	41.53
80+	114.86	129.62	101.35

Source: 5. Based on 2001 and 2011 censuses.

It can be seen from the above table that the mortality rate decreases drastically after one year, decreases continuously up to 15 years, slowly rises up to 60 years, increases at a faster rate up to 70 years and then at a very faster rate in older ages. This trend is seen in both male and female mortality rates. However, mortality rates for males are higher than corresponding figures for females in all age groups. The curves are both J shaped.

6.3 Infant mortality rate (IMR)

The infant mortality rate (IMR) is the number of deaths of infants under one year old per 1,000 live births. The direct estimate of IMR based on the 2011 census is 31 infant deaths per 1000 live births. If the Coale-Demeny west model life tables are used, the estimate is 40.5. The estimate of IMR according to DHS 2011 (MOHP 2012, p. 113) is 46 for the time period 2008. The estimates of IMR for total males and females by census years are shown below in Table 6.3.

Table 6.3: Estimates of IMR for various census years (infant deaths per 1000 live births)

Sex	Year			
	1981 ⁹	1991 ⁸	2001 ⁷	2011 ⁶
Total	117	97	64	40.5
Male	136	94		44.3
Female	111	101		38.9

Source: 6. CBS, 2014, 7. CBS, 2003, p.61, 8. CBS,1995, p.106, 9. CBS, 1995, p.106

It can be seen from the above table that the IMR decreases continuously from 1981 to 2011. It decreases by 76 deaths during a 30-year period. IMR for males decreases more drastically than the corresponding figure for females during the period 1981 to 1991. However, IMR for males as well as for females, decrease almost equally during the 30-year period.

6.3.1 Patterns of infant mortality rates (IMR)

The estimates of IMR for males and females by urban/rural residence, Ecological Region Development Region, Eco-Development Region and Districts for 2011 by using spectrum soft ware with the Coale-Demeny west model life tables are available from the Central Bureau Statistics, 2014, and detailed in Appendix 6.2.

It can be seen that the IMR is higher for males than females in 2011 by 5.4 deaths per 1000 live births. The estimates of IMR for urban and rural areas stand at 24.1 and 42.9 respectively. The estimate in urban areas is lower by 18.8 deaths per 1000 live births than the corresponding estimate for rural areas, which is also supported by the figures of DHS 2011(MOHP, 2012, p. 116).

In the ecological regions, the highest IMR is in Mountain Region followed by Tarai and Hill Regions. There is a difference of 18.2 deaths per 1000 live births between Tarai and Hill values. However, according to DHS 2011 (MOHP, 2012, p.115), there is a difference of 3 deaths per 1000 live births for the period 2008. The corresponding figure according to DHS 2006 (MOHP, 2007, p.126) is 18 deaths per 1000 live births. which means that the difference is decreasing and should be about equal in 2011. Hence, the estimates of IMR for Tarai and Hill regions should be more or less the same in 2011. This is supported by the fact that the estimates of expectation of life at birth in 2011 for Tarai and Hill regions are 67.0 and 67.3 respectively (See Appendix 6.2).

In the development regions, the estimate of IMR is highest in Mid-Western followed by Far-Western, with almost equal values for Eastern and Central Regions. The lowest value is in Western Region.

In the eco-development Regions, the highest IMR is found in Far Western Mountain and the lowest in Mid-Western Mountain with a difference of 45 deaths per 1000 live births.

The census analysis (see Appendix 2) shows that the estimate of IMR for Rautahat district is the highest with 80.9 and the lowest for Bhaktapur district with 11 infant deaths per 1000 live births. Therefore it can be expected that the expectation of life at birth (eo) for Bhaktapur district might be the highest of all the districts. However, eo for Rautahat district is not the lowest but an average level. It should be noted that the estimates given by census analysis might not be accurate. The estimates of IMR for females are higher than males in 22 districts.

6.4 Child mortality rate (CMR)

The Child mortality rate (CMR) is the number of children dying between the age of one and five years out of 1000 children of one year. The estimates of child mortality rates for 2011 are made by the Central Bureau of Statistics

based on the total number of males and females for urban/rural areas, Ecological Regions, Development Regions, Eco-Development Regions and Districts (CBS, 2014). The values can be seen in CBS, 2014. The estimates for CMR can be obtained by the relationship that $CMR = (U5MR - IMR) / (1 - IMR)$ where U5MR is the under 5 mortality rate. The following table shows child mortality for the census years 2001 and 2011.

Table 6.4: Estimates of child mortality rates for census years 2001 and 2011 (Deaths under 5 years per 1000 one year children).

Sex	Year	
	2001 ¹¹	2011 ¹⁰
Total	28.612	12.9
Male	27.813	11.0
Female	40.2	12.3

Source: 10. CBS, 2014, 11. CBS, 2003, p.63., 12. 5 years preceding DHS survey 2001, 13. 10 years preceding DHS survey 2001

According to analysis of the 2011 census, the estimate of child mortality is 12.9, deaths under 5 years divided by 1000 one year old children (CBS, 2014). The estimate for females is slightly higher than for males. However, the difference is greater in 2001. In the case of 2001 the estimates are taken from the Demographic Health Survey 2001.

The estimates for urban areas are lower than for rural areas for the total number of males and females.

In Ecological Regions, the child mortality rate is highest in Mountain Region followed by Tarai and Hill Regions for males and females. In Development Regions, CMR is highest in Mid Western Development Region and lowest in Western Development Region with a difference of 5 deaths.

In Eco-Development Regions, the highest CMR is in Mid Western Mountain and the lowest is in Western Hill with a difference of 26.9 deaths.

In the Districts, the highest CMR is in Kalikot with 38.8 deaths and the lowest rate is in Myagdi district with 3.1 deaths for children under 5 years per 1000 one-year-old children.

6.5 Under 5 Mortality Rate (U5MR)

Under 5 mortality rates are the number of deaths that would occur under five years of age to a 1000 birth cohort. Estimates of under 5 mortality rates for the census years 2001 and 2011 are shown in Table 6.5.

Table 6.5: Estimates of Under 5 mortality rates for census years 2001 and 2011 (Deaths under 5 years per 1000 births).

Sex	Year	
	2001 ¹⁵	2011 ¹⁴
Total	91.2 ¹⁶	52.9
Male	104.8 ¹⁷	54.8
Female	112.4	50.7

Source: 14. CBS, 2014, 15. CBS, 2003, p.63., 16. 5 years preceding DHS survey 2001, 17. 10 years preceding DHS survey 2001

The estimates for 2011 are from census analysis while the estimates for 2001 are obtained from the DHS survey 2001.

The estimates of under 5 mortality rates (U5MR) by males and females for urban/rural areas, Ecological Regions, Development Regions, Eco-Development Regions and Districts in 2011 are from the Central Bureau of Statistics (CBS, 2014). The U5MR is 52.9 deaths under 5 years per 1000 live births. The rate is higher for males than for females. As expected, the rates are lower in urban areas than in rural areas for both males and females.

In the Ecological Regions, the highest U5MR is found in Mountain followed by Tarai and Hill. In Development Regions the highest U5MR is in Mid Western and the lowest in Western Development Region with a difference of 25.3 deaths. In the Eco-Development Regions, the highest U5MR is in Mid Western Mountain and the lowest in Western Mountain with a difference of 65.1 deaths. At the district level, the highest U5MR is in Dolpa district with 114.7 and the lowest is in Bhaktapur district with 17.1 deaths under 5 years per 1 000 live births.

6.6 Expectation of life at birth

The estimates of expectation of life at birth for 2011 are based on various methods and using various data. The results are detailed in Table 6.6 below.

Table 6.6 : Estimates of expectation of life at birth in 2011 by various methods

S. No.	Methods	Data	Estimates in 2011 (Years)
1	Life tables (ASMR) (Siegel 2002, p.20)	Census 2011	72.1
2	CEBCS (UN General Models)(UN 1988,p.47)	DHS 2011 @ 2006	68.8
3	CEBCS (CD West Models)	DHS 2011 @ 2006	66.6
4	Based on estimates of IMR	DHS 2011 @ 2006	67.7
5	Downloaded for India		65.96
6	CEBCS (CD West Models)	Census 2011	69.36 (2008.1)
7	CEBCS (UN General Models)	Census 2011	72.2 (2008.4)

The estimate of 66.6 years was calculated using the Children ever born and children surviving (CEBCS) method (based on DHS data using Coale Demeny West Model Life Tables) and seems to be plausible. It is slightly high than the corresponding value in India in 2011. The estimate of the expectation of life at birth was 60.39 years in Nepal compared to a corresponding value of 62.95 years in India in 2001. Moreover, the estimates were 61.6 and 60 years in Bihar and Uttar Pradesh respectively in 2004.

It has been estimated above that the expectation of life at birth for both males and females is 66.6 years and the sex ratio at birth is 1.07. The census of Nepal in 2011 gives information about children ever born and still alive by sex. When the CEBCS programme is used for both females and males separately, the difference in expectation of life at birth for females and males is estimated to be 2.6 years. Using this difference of 2.6 years and a sex ratio at birth of 1.07, the expectation of life at birth for females and males are estimated to be 68 years and 65.4 years respectively.

The estimates of expectation of life at birth for various census years are shown below.

Table 6.7: Estimates of expectation of life at birth for various census years.

Sex	Year			
	1981 ²¹	1991 ²⁰	2001 ¹⁹	2011 ¹⁸
Total	49.8	54.3	60.4	66.6
Male	50.9	55.0	61.1	65.4
Female	48.1	53.5	61.6	68.0

Source: 18. CBS, 2014-6, 19. CBS, 2003, p.72, 20. CBS, 1995, p.111, 21. CBS, 1987, p.313

The expectation of life at birth increased by about 6 years during the 10 years period from 2001 and 2011 and increased by 16.8 years from 1981 to 2011. The corresponding values for males increased by 14.5 years and for females by 19.9 years. The expectation of life at birth was more for males than for females up to 1991 and then began to reverse in 2001. At present, the expectation of life at birth for females is higher than for males.

The estimate of expectation of life at birth is 66.6 years in Nepal in 2011. As noted above, applying various demographic techniques to various data, including the census of 2011, the DHS 2011 and 2006, and comparing the estimate with corresponding estimates of other countries provide this figure. The estimate based on data from the census of 2011, using the programme QFIVE (UN, 2013), is 71.27 years. This shows that the estimate of expectation of life at birth is lower than the census estimate by 4.67 (71.27- 66.6=4.67) for a total population of 26,494,504 in 2011.

In order to obtain an estimate of expectation of life at birth for urban areas of Nepal in 2011, data on children ever born, children surviving and the number of women in urban areas is estimated by the QFIVE programme. The estimate of expectation of life at birth based on this data is 73.06 years. The urban population in 2011 is 4,523,820. Hence, the estimate of expectation of life at birth (e_0) for urban areas in 2011 is obtained by $73.06 - 4.67 * 4,523,820 / 26,494,504$. The estimates for males and females are obtained by solving the following two equations.

$$\begin{aligned} \text{Expectation of life at birth for males } (e_{0m}) &= (\text{Exp for total} * 2.07 - 2.6) / 2.07 && \text{-----} && 1 \\ \text{Expectation of life at birth for females } (e_{0f}) &= e_{0m} + 2.6 && \text{-----} && 2 \end{aligned}$$

The assumptions are that the sex ratio at birth is 1.07 and the difference between the expectation of life at birth for females compared to males is 2.6 (CBS, 2014-6)

In this way, the estimates of expectation of life at birth by total males and females for urban/rural areas, Ecological Regions, Development Regions, Eco-Development regions and District can be obtained. These are shown in Appendix 6.3.

In urban/rural areas, the estimate of expectation of life at birth for urban areas is higher than for rural areas for both males and females. There is about 4 years difference between the estimates of expectation of life at birth between urban and rural areas.

In Ecological Regions, the estimates of expectation of life at birth in 2011 for Hill and Tarai are almost equal for males and females. The lowest value is in Mountain Region.

In Development Regions, the highest estimates of expectation of life at birth are found in Eastern and Central regions with almost equal values, followed by Western, then Mid-Western and Far Western Development Regions for males and females.

In Eco-Development regions, the highest expectation of life at birth is found in Central Hill at 71.0 years and the lowest is in Mid- Western Mountain at 58.0.

In District, the highest estimate of expectation of life at birth is 79.2 years in Bhaktapur district, while the lowest is 54.5 years in Humla district.

6.7 Conclusion

Mortality levels and patterns are measured by the Crude Death Rate, Age specific mortality rates, Infant Mortality Rates, Child Mortality rates, Under five Mortality Rates and Expectation of life at Birth. The reported deaths recorded from the census 2011 are under estimated. If demographic techniques are applied to census data, more reliable estimates are obtained and more reliable estimates can be made for Crude Death Rates, Age specific mortality rates, Infant Mortality Rates (IMR), Child Mortality Rates and Under five Mortality Rates. However, these estimates need to be further analysed by applying various demographic techniques to available data such as the 2001 and 2011 censuses and the DHS of 2011 and 2006. In this way, a series of estimates can be made. The estimate, which is selected as the most accurate one, is when the majority of estimates point to it and it is consistent with corresponding estimates of other areas or countries. Here, the estimates of expectation of life at birth are plausible as applying various demographic techniques to various available data and comparing these with corresponding estimates of other countries obtain the estimates.

The estimates of expectation of life at birth and IMR are highly correlated in a negative direction. As such, in the areas where the IMR are lower, expectation of life at birth values are expected to be higher and vice versa. For example, the estimate of expectation of life at birth for females is higher than the corresponding value for males, and the value of IMR for females is lower than the corresponding value for males. The estimate of expectation of life at birth for urban areas is higher and the estimate of IMR is lower than the corresponding values for rural areas. The estimate of IMR is highest in Mountain followed by Tarai and Hill. The estimate of expectation of life at birth is lowest in Mountain followed by almost equal values for Hill and Tarai which seems tenable. Bhaktapur district has the lowest IMR of 11.0 infant deaths per 1000 live births and the highest expectation of life at birth value of 79.2 years.

6.8 Policy recommendations

The values of demographic parameters at a particular time are fixed but unknown. The estimation of these parameters is obtained by applying various methodologies to various sources of data, such as censuses, surveys, etc. In this way, a series of estimates are available for the estimation of a particular demographic parametre. Only one plausible estimate must be identified out of these series of estimates. A Technical Committee should be formed which will give only one estimate at the national level for each variable that should be considered. Research should be completed to determine why expectation of life in Bhaktapur district is the highest and why estimates of IMR for females are higher than males in 22 districts.

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Appendices :

Appendix 6.1 : Crude death rate (CDR)

CDR is the number of deaths over a given period divided by the person-years lived by the population over that period. It is expressed as number of deaths per 1,000 population. $CDR = \frac{\text{No of annual deaths}}{\text{mid-year population}} \times 1000$. Here CDR is calculated by a direct method that gives a low rate. After adjusting annual deaths a final value is calculated. The adjustment factor is determined using national values obtained from spectrum.

Area	CDR (per 1000 population)	Area	CDR (per 1000 population)	Area	CDR (per 1000 population)
Nepal	7.30	<u>District</u>		<u>District</u>	
<u>Urban/Rural</u>		Taplejung	10.14	Tanahu	7.81
Urban	7.19	Panchthar	8.36	Syangja	9.52
Rural	7.32	Ilam	8.37	Kaski	7.46
<u>Ecological Region</u>		Jhapa	9.07	Manang	8.19
Mountain	8.51	Morang	7.39	Mustang	7.74
Hill	7.75	Sunsari	7.35	Myagdi	8.34
Tarai	6.75	Dhankuta	8.57	Parbat	8.29
		Terhathum	10.03	Baglung	8.49
<u>Development Region</u>		Sankhuwasabha	8.62	Gulmi	9.78
Eastern Dev. Region	7.45	Bhojpur	8.97	Palpa	9.14
Central Dev. Region	6.62	Solukhumbu	7.59	Nawalparasi	8.27
Western Dev. Region	8.15	Okhaldhunga	7.74	Rupandehi	7.40
Mid-Western Dev. Region	7.32	Khotang	7.63	Kapilbastu	7.43
Far-Western Dev. Region	7.85	Udayapur	7.02	Arghakhanchi	9.22
		Saptari	5.30	Pyuthan	9.96
<u>Eco-Dev. Region</u>		Siraha	5.14	Rolpa	8.11
Eastern Mountain	8.84	Dhanusa	5.92	Rukum	6.11
Eastern Hill	8.14	Mahottari	6.23	Salyan	6.10
Eastern Tarai	7.02	Sarlahi	5.90	Dang	7.27
Central Mountain	7.86	Sindhuli	6.62	Banke	6.48
Central Hill	7.31	Ramechhap	6.42	Bardiya	7.11
Central Tarai	5.84	Dolakha	7.72	Surkhet	6.87
Western Mountain	7.89	Sindhupalchok	8.17	Dailekh	6.79
Western Hill	8.51	Kavrepalanchok	7.30	Jajarkot	7.22
Western Tarai	7.68	Lalitpur	7.24	Dolpa	9.89
Mid-Western Mountain	8.95	Bhaktapur	7.07	Jumla	8.61
Mid-Western Hill	7.27	Kathmandu	7.41	Kalikot	9.19
Mid-Western Tarai	6.96	Nuwakot	7.62	Mugu	7.89
Far-Western Mountain	8.62	Rasuwa	6.36	Humla	9.48
Far-Western Hill	7.76	Dhading	7.26	Bajura	9.69
Far-Western Tarai	7.62	Makwanpur	7.93	Bajhang	8.81
		Rautahat	5.16	Achham	7.82
		Bara	5.22	Doti	8.12
		Parsa	5.22	Kailali	7.64
		Chitawan	7.41	Kanchanpur	7.57
		Gorkha	7.86	Dadeldhura	7.62
		Lamjung	8.58	Baitadi	7.48
				Darchula	7.26

Source: National Population Census 2011

Appendix 6.2: Infant Mortality Rate (IMR)

IMR is the probability of dying between birth and age 1. It is expressed as deaths per 1,000 births.

IMR [= {Infant (children below 1 year) deaths/Annual live births} * 1000]. Indirect estimates using MORTPACK-QFIVE, give an IMR of 40.26. The sex ratio at birth is 1.07, and the mean age at childbirth is 26.2; these are used as input data to calculate the average number of children ever born and the average number of children surviving.

Area	IMR (Per1000 live birth)			Area	IMR (Per1000 live birth)		
	Both	Male	Female		Both	Male	Female
Nepal	40.50	44.30	38.90	District			
Urban/Rural				Taplejung	54.12	58.21	51.40
Urban	24.06	23.89	25.84	Panchthar	49.58	60.87	39.79
Rural	42.90	46.83	40.72	Ilam	34.51	34.52	36.70
Ecological Region				Jhapa	37.98	38.55	39.65
Mountain	50.19	56.78	45.25	Morang	36.53	41.19	33.40
Hill	30.65	33.66	28.80	Sunsari	40.51	37.99	46.80
Tarai	48.83	51.78	48.20	Dhankuta	20.62	23.73	17.68
				Terhathum	24.88	33.15	16.00
Development Region				Sankhuwasabha	28.61	29.17	29.88
Eastern Dev. Region	38.77	41.18	38.21	Bhojpur	35.17	42.24	29.08
Central Dev. Region	38.72	41.43	37.74	Solukhumbu	42.24	46.78	39.75
Western Dev. Region	32.15	32.91	33.23	Okhaldhunga	24.72	22.27	29.77
Mid-Western Dev. Region	50.73	57.54	45.72	Khotang	34.56	42.59	27.85
Far-Western Dev. Region	46.74	52.60	42.13	Udayapur	33.90	36.35	33.02
				Saptari	49.24	50.09	51.23
Eco-Dev. Region				Siraha	50.31	52.69	50.61
Eastern Mountain	40.02	43.50	38.43	Dhanusa	78.35	81.02	79.45
Eastern Hill	33.10	37.31	30.03	Mahottari	61.83	64.19	62.91
Eastern Tarai	41.57	42.83	42.59	Sarlahi	61.31	69.23	55.48
Central Mountain	27.13	30.45	24.60	Sindhuli	35.10	42.74	27.99
Central Hill	21.40	22.14	21.80	Ramechhap	24.52	31.28	19.39
Central Tarai	57.16	62.11	54.63	Dolakha	25.83	31.02	21.06
Western Mountain	18.66	28.40	11.77	Sindhupalchok	27.49	28.05	28.51
Western Hill	23.13	24.08	23.38	Kavrepalanchok	24.14	20.04	31.42
Western Tarai	46.61	47.19	48.87	Lalitpur	13.75	12.83	15.83
Mid-Western Mountain	60.35	69.91	52.34	Bhaktapur	10.97	10.69	12.14
Mid-Western Hill	49.05	56.79	43.14	Kathmandu	14.62	15.44	14.41
Mid-Western Tarai	48.53	52.44	46.72	Nuwakot	23.19	29.81	16.59
Far-Western Mountain	63.65	71.60	57.86	Rasuwa	30.79	45.01	16.82
Far-Western Hill	38.84	44.96	33.21	Dhading	27.57	26.70	30.55
Far-Western Tarai	45.73	50.26	42.76	Makwanpur	32.38	32.06	34.79

Area	IMR (Per1000 live birth)			Area	IMR (Per1000 live birth)		
	Both	Male	Female		Both	Male	Female
<u>District</u>				<u>District</u>			
Rautahat	80.88	99.30	65.99	Rukum	34.23	42.22	27.57
Bara	48.95	52.92	47.21	Salyan	52.30	58.72	47.60
Parsa	36.34	35.34	39.99	Dang	41.04	43.61	40.62
Chitawan	30.09	30.54	31.44	Banke	48.52	52.55	46.31
Gorkha	21.01	20.68	22.73	Bardiya	58.05	63.03	55.29
Lamjung	17.02	22.27	11.61	Surkhet	46.95	51.25	44.07
Tanahu	29.23	31.01	29.02	Dailekh	39.83	47.81	33.80
Syangja	21.99	28.19	16.54	Jajarkot	63.45	72.23	57.43
Kaski	13.06	12.13	15.22	Dolpa	70.85	73.19	72.66
Manang	0.00	0.00	0.00	Jumla	64.01	76.28	53.11
Mustang	26.30	40.50	16.45	Kalikot	63.01	70.11	57.47
Myagdi	29.11	34.03	24.65	Mugu	41.18	54.61	28.67
Parbat	15.37	12.96	19.75	Humla	61.13	72.85	51.73
Baglung	31.97	31.98	34.00	Bajura	72.85	79.88	68.28
Gulmi	28.40	28.84	29.58	Bajhang	70.75	83.28	61.29
Palpa	19.29	21.65	17.44	Achham	37.83	41.50	35.13
Nawalparasi	37.81	36.35	42.21	Doti	42.18	45.13	40.70
Rupandehi	38.06	39.39	38.90	Kailali	49.20	52.87	47.79
Kapilbastu	66.83	68.54	68.94	Kanchanpur	40.34	46.38	34.42
Arghakhanchi	30.00	27.41	36.48	Dadeldhura	42.83	53.06	34.31
Pyuthan	54.43	60.66	49.89	Baitadi	34.91	45.41	23.76
Rolpa	51.96	65.33	42.20	Darchula	39.82	43.29	37.57

Source: National Population Census 2011

Appendix 6.3: Calculation of expectation of life at birth for total (e_0), female (e_0^f) and male (e_0^m).

Area	Expectation of life at birth			Area	Expectation of life at birth		
	Total (e_0)	Females (e_0^f)	Males (e_0^m)		Total (e_0)	Females (e_0^f)	Males (e_0^m)
Nepal	66.6	65.5	67.9	<u>District</u>			
<u>Urban/Rural</u>				Taplejung	65.1	64.1	66.2
Urban	70.5	70.1	71.0	Panchthar	66.2	64.6	67.9
Rural	66.6	65.8	67.6	Ilam	67.5	66.5	68.5
<u>Ecological Region</u>				Jhapa	67.3	66.6	68.1
Mountain	64.1	62.8	65.5	Morang	67.3	65.9	68.8
Hill	68.9	67.6	70.3	Sunsari	67.2	67.0	67.4
Tarai	65.1	64.0	66.3	Dhankuta	69.1	67.8	70.5
				Terhathum	68.7	67.8	69.7
<u>Development Region</u>				Sankhuwasabha	69.3	69.2	69.5
Eastern Dev. Region	67.2	66.1	68.5	Bhojpur	68.8	67.8	69.9
Central Dev. Region	67.3	66.6	68.0	Solukhumbu	66.7	65.0	68.4
Western Dev. Region	68.6	67.9	69.4	Okhaldhunga	66.8	65.1	68.7
Mid-Western Dev. Region	64.5	62.9	66.3	Khotang	67.0	65.2	68.8
Far-Western Dev. Region	65.5	63.8	67.3	Udayapur	68.3	66.6	70.1
				Saptari	64.8	64.0	65.6
<u>Eco-Dev. Region</u>				Siraha	65.6	64.6	66.7
Eastern Mountain	67.2	66.2	68.2	Dhanusa	62.9	61.7	64.2
Eastern Hill	68.4	66.6	70.4	Mahottari	63.5	62.3	64.7
Eastern Tarai	66.7	65.8	67.6	Sarlahi	62.9	61.6	64.3
Central Mountain	69.5	68.3	70.7	Sindhuli	67.8	66.5	69.3
Central Hill	70.9	70.2	71.7	Ramechhap	68.8	67.4	70.1
Central Tarai	63.5	62.3	64.8	Dolakha	69.8	68.7	70.9
Western Mountain	71.9	71.4	72.2	Sindhupalchok	69.3	68.4	70.2
Western Hill	71.1	70.2	72.1	Kavrepalanchok	70.7	70.5	70.9
Western Tarai	65.4	64.8	66.1	Lalitpur	73.2	72.9	73.6
Mid-Western Mountain	60.8	59.4	62.3	Bhaktapur	74.2	74.0	74.5
Mid-Western Hill	65.2	63.4	67.1	Kathmandu	73.0	72.5	73.6
Mid-Western Tarai	65.0	63.9	66.1	Nuwakot	69.1	67.8	70.5
Far-Western Mountain	62.1	60.6	63.6	Rasuwa	67.4	65.8	69.1
Far-Western Hill	67.2	65.4	69.1	Dhading	68.8	67.9	69.7
Far-Western Tarai	67.2	66.9	67.6	Makwanpur	68.0	67.3	68.7

Area	Expectation of life at birth			Area	Expectation of life at birth		
	Total (e_0)	Females (e_0^f)	Males (e_0^m)		Total (e_0)	Females (e_0^f)	Males (e_0^m)
District				District			
Rautahat	59.6	58.4	60.9	Rukum	64.9	63.7	66.2
Bara	64.6	63.5	65.7	Salyan	65.3	64.0	66.7
Parsa	67.3	66.6	68.0	Dang	66.3	65.1	67.6
Chitawan	69.2	68.9	69.5	Banke	63.8	63.5	64.1
Gorkha	68.9	68.0	69.9	Bardiya	64.6	63.4	65.9
Lamjung	69.5	68.3	70.9	Surkhet	66.5	65.2	67.8
Tanahu	69.8	69.2	70.4	Dailekh	65.2	64.4	66.0
Syangja	70.1	69.0	71.3	Jajarkot	61.7	60.5	63.0
Kaski	73.5	73.2	73.9	Dolpa	57.7	56.7	58.7
Manang	69.9	68.4	71.2	Jumla	62.7	61.6	63.8
Mustang	69.6	69.1	69.9	Kalikot	59.7	59.2	60.3
Myagdi	69.6	69.1	70.2	Mugu	59.5	58.9	60.2
Parbat	72.7	72.2	73.2	Humla	58.9	57.9	60.0
Baglung	68.3	67.6	69.1	Bajura	59.5	58.3	60.8
Gulmi	70.6	69.7	71.6	Bajhang	60.4	59.2	61.7
Palpa	71.3	71.0	71.7	Achham	65.0	63.9	66.2
Nawalparasi	67.8	67.2	68.4	Doti	65.0	64.1	65.9
Rupandehi	68.0	67.4	68.6	Kailali	66.2	65.0	67.4
Kapilbastu	61.3	60.9	61.7	Kanchanpur	66.1	65.0	67.3
Arghakhanchi	69.4	69.5	69.3	Dadeldhura	64.4	63.1	65.7
Pyuthan	65.8	64.6	67.1	Baitadi	64.2	63.0	65.5
Rolpa	64.8	63.5	66.1	Darchula	64.6	63.3	65.8

Source: Estimates based on censuses of 2001 and 2011 with the plausible estimates of e_0 at the national level for total, males and females.

CHAPTER 7

MATERNAL MORTALITY

Ajit Pradhan*

Abstract

Nepal, since almost past two decades is committed to the Millennium Development Goal of 75% reduction in maternal mortality ratio by 2015 and working to increasing the access to and utilization of quality safe motherhood services. It is therefore important to measure and ascertain the level and trend of maternal mortality. For Nepal the DHS surveys and the UN agency have provided estimates of MMR for different points of time in relation to the level and trend. The MMR estimates provided by these two sources have been looked with skepticism due to inherent methodology issues. Moreover, both the sources do not provide information at sub-national level. Nepal's 2011 census collected information on deaths of women during pregnancy, delivery and postpartum, as well as live births in the period 12 months prior to the survey. This data provides the pregnancy related mortality ratio for the country and subgroups of population. Censuses generally suffer from enumeration completeness, problems of under reporting deaths and births and incorrect reporting of date of birth and death. Following methodology both to adjust for mortality and fertility the maternal mortality ratio for the country and the sub-regions were generated. The analysis of Census 2011 provided MMR of 480 for Nepal. The level of MMR for the country and the differential in MMR at the sub-region suggest that Nepal's safe motherhood program should recommit and focus in increasing the availability and access to and utilisation of quality safe motherhood care women across the country particularly women in the mid and far-western mountain and Tarai sub-region.

7.1 Introduction

In response to the International Conference on Population and Development 1994, Nepal endorsed a National Reproductive Health (RH) Strategy in 1998¹. The strategy document has identified an integrated reproductive health package for Nepal, which includes 'safe motherhood' as one of its key components. Following the RH strategy, the National Safe Motherhood Plan (NSMP) 2002-2017 was developed in 2002². The NSMP 2002-2017 includes the goal of reducing the maternal mortality ratio but does not quantify MMR reduction targets. The NSMP 2002-2017 emphasizes on increasing access to and utilization of quality safe motherhood services.

7.2 The millennium development goals and Nepal

The UN global conference of the 1990s drew up a number of key global development goals and targets. In September 2000, Nepal was one of the 191 countries of the world that adopted the Millennium Declaration. The

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1 Family Health Division. 1998. National Reproductive Health Strategy. Department of Health Services, Ministry of Health, [Nepal], Kathmandu.

2 Family Health Division. 2002. National Safe Motherhood Plan 2002-2017. Department of Health Services, Ministry of Health, [Nepal], Kathmandu.

two sets of goals were merged under the ‘Millennium Development Goals’ (MDGs). Millennium Development Goal 5 sets a target of reducing maternal mortality by three-fourths between 1990 and 2015^{3,4,5}. The Government of Nepal in 2006 revised the NSMP 2002-2017 and laid down the National Safe Motherhood and Newborn Health - Long Term Plan (NSMNH-LTP) 2006-2017. In line with the MDGs, the NSMNH-LTP 2006-2017⁶ made explicit the specific goal of reducing the MMR to 134 by 2017.

7.3 Definition of maternal mortality and measurement issues

The international conference for the Tenth Revision of the International Classification of Diseases convened by WHO in 1989⁷ agreed to retain the definition of maternal death as they appeared in the Ninth Revision. In order to improve the quality of maternal mortality data and provide alternative methods of collecting data on deaths due to pregnancy or related to it, as well as encourage the recording of deaths from obstetric causes occurring more than 42 days following termination of pregnancy, two additional definitions for ‘pregnancy related deaths’ and ‘late maternal deaths’ were formulated. The conference also agreed that, since the number of live births was more universally available than the total number births (live births plus fetal deaths) it should be used as the denominator in the ratios related to maternal mortality.

The maternal mortality ratio (MMR) is defined as the number of maternal deaths in a given period per 100,000 live births during the same time period. The number of maternal deaths is necessary to calculate the Maternal Mortality Rate (MMR), which means that deaths should not include deaths due to accidents and incidents such as intentional self harm and assault.

In developing countries the issue of data quality has remained a serious challenge in generating robust and reliable estimates of the MMR. Determining the cause of death becomes complicated in many societies when deaths occur in the community away from a health facility and in the absence of a skilled birth attendant. In 2011, only 35% of deliveries occurred in a health facility, and only 36% of deliveries were attended by a skilled birth attendant (doctor, nurse or midwife) in Nepal⁸. A practical approach to assessing the deaths in child birth is to include deaths due to all causes. This approach is followed in the the demographic and health surveys conducted in Nepal in 1996 and 2006. Obviously not all such deaths are related or aggravated by pregnancy, which would have little or no relevance in terms of maternal health programme interventions.

The civil registration system in Nepal, which includes both the birth registration system, which provides data on the number of live births, and the death registration system, which provides data on the number of deaths, is low in terms of coverage. This low coverage, along with the absence of information on maternal deaths, hinders the generation of the MMR in Nepal.

In Nepal, a RAMOS (reproductive age mortality study) approach were undertaken in two studies conducted in 1998 (MMMS 1998) and 2008/09 (MMMS 2008/09) in selected districts of Nepal. In both these studies a one year surveillance of all deaths of women of reproductive age was undertaken in selected districts and information were collected from family members on circumstances surrounding deaths, and the signs/symptoms before death. Verbal autopsy techniques were used to ascertain the cause of death in maternal cases. It should be noted that neither studies were designed to generate national estimates of the MMR. In fact the MMMS 1998 surveillance

3 GoN, UNDP. Progress report 2002. MDG goals Nepal.

4 MoHP. 2010. NHSP II 2010-2015.

5 MoHP, WHO, NHSSP. 2012. M&E Framework Nepal Health Sector Programme II 2010-2015.

6 Family Health Division. 2002. National Safe Motherhood and Newborn Health - Long Term Plan 2006-2017. Department of Health Services, Ministry of Health, [Nepal], Kathmandu.

7 WHO. 2004. International Classification of Disease and Related Problems (Tenth Revision) ICD 10. Vol 1. Second Edition. Geneva.

8 MOHP, New ERA and IFC International. 2012. Nepal Demographic and Health Survey 2011. Kathmandu and Maryland.

study did not collect information on births in the three study districts and therefore did not provide the MMR estimates for these three districts. The MMMS 2008/09 provided estimates of the MMR for eight study districts separately and by aggregate. These studies were conducted to understand the causes of maternal deaths, timing of maternal deaths, bio-social factors of maternal deaths (age, parity, marital status, education, ethnicity, religion). These studies also provided information on both demand and supply factors such as barriers to and quality of care.

Other alternative sources of the MMR estimates for Nepal have been the Demographic and Health Surveys conducted in 1996 and 2006 and estimates provided by international agencies such as WHO, UNICEF, UNFPA and the World Bank. The DHS surveys conducted in Nepal in 1996 and 2006, and information provided by international agencies for various years, have been the source of MMR estimates for Nepal. The levels and trends of the MMR provided by these two sources are presented and discussed in this chapter.

The United Nations recommends that in countries where the accurate registration of deaths is absent, the census should include questions on death in each household by age and sex for a relatively short reference period, such as one year. In view of this, the Census of 2011 was a landmark in Nepal because questions were included to generate maternal mortality indicators. The set of questions included in the Nepal census of 2011 were:

- Did any deaths occur during the last 12 months in the household ?
- If yes, what was the sex, age and cause of death ?
- If the death was of a woman aged 15-49 years did she die during;
 - o Pregnancy
 - o Delivery
 - o Within 6 weeks after delivery
 - o Other cause (not during any of above stated periods)

The cause of death was noted down by the enumerator as reported by the respondent.

The main aim of including these question in the census of 2011 was to obtain a recent estimate of the maternal mortality ratio (MMR). All the households of the country are visited during a census and are free from sampling errors. Given the vast coverage of a census, it can provide the MMR for sub-national area and biosocial sub groups.

Generating the MMR requires two pieces of information:

- The number of maternal deaths for an area or group for a specified time period.
- The number of live births for that area or group for the same specified time period.

In the Nepal Census of 2011, information on death during pregnancy, childbirth and puerperium (the six weeks following child birth) was collected from all households in the country for the 12 months prior to the census. While questions on live births and children ever born twelve months prior to the census were included in the census of 2011, questionnaire schedule 2 was administered to a subset of households at a ratio of at least 8:1. In districts and municipalities where the household size was small all household members were included in the collection of information on fertility. In Nepal ‘maternal deaths’ or ‘the maternal mortality ratio’ are important indicators of safe motherhood programmes (previously known as ‘maternal health programmes’). As there is some confusion between the meaning of maternal mortality or death and the maternal mortality ratio it is important to clarify the definitions of both.

7.4 Maternal and pregnancy related deaths

In many societies, including Nepal, child birth is a memorable event. The death of women during pregnancy or child birth is a tragic, traumatic and unforgettable event for the family. Deaths during pregnancy or child birth are divided into three categories:

- During pregnancy or antepartum (before intrapartum⁹) period.
- During delivery (intrapartum period).
- During puerperium (within 6 weeks after delivery or the postpartum period).

It is important to note that the term 'child birth' covers the childbirth process from pregnancy, delivery to 6 weeks after delivery. In Nepal the term 'childbirth' is often substituted for 'delivery', which creates confusion. The terms 'delivery' or 'intrapartum' period also need to be clarified, as the 'delivery or intrapartum' period does not end with separation of the fetus from the mother. It needs to be understood that these components are essentially distinct periods which are associated with the process of child birth. These divisions provide information on the timing of death. The MMMS of 2008/09¹⁰ revealed that one third of pregnancy related deaths occurred during antepartum, intrapartum and puerperium periods.

7.5 Definitions of maternal deaths and pregnancy related deaths

The WHO, International Classification of Disease, revision 10 (WHO ICD 10), distinguishes pregnancy related and maternal deaths separately and defines them as follows:

Maternal death: *Death of a woman while pregnant or within 42 days of the termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by pregnancy or its management but not from accidental or incidental cause.*

Pregnancy related death: *Death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death. The UN Maternal Mortality Estimation Inter-agency Group¹¹ uses the term 'death in pregnancy, child birth and puerperium' to replace the earlier term 'pregnancy related death'.*

A significant feature of the later definition is that the time of death measure, corresponds to infant mortality rates where the cause of death is avoided or ignored.

Pregnancy related deaths are classified in three categories, which are useful in identifying the necessary interventions to prevent deaths. This classification helps outline what proportion of pregnancy related deaths are due to direct obstetric causes or indirect deaths or fortuitous (accident or incidental). The direct obstetric deaths are further classified by WHO ICD 10 chapter XV 'Pregnancy, Childbirth and Puerperium' in three character codes from O00 to O99¹².

- Direct (obstetric) deaths,
- Indirect (obstetric) deaths.
- Accidental and incidental deaths.

9 Intrapartum period is defined as the period from onset of true labor to the end of the third stage of labor i.e., delivery of placenta. Please note that the intrapartum period is usually called 'during delivery'.

10 A Pradhan, BK Suvedi, S Barnett, S Sharma, M Puri, S Rai Chitrakar, P Poudel, NP KC and L Hulton. 2010. *Nepal Maternal Mortality and Morbidity Study 2008/09; Main Report*. Family Health Division, USAID, DFID, SSMP, Kathmandu

11 MME Info. <http://www.maternalmortalitydata.org/Definitions.html>

12 WHO. 2004. *International Classification of Disease and Related Problems (Tenth Revision) ICD 10*. Vol 1. Second Edition. Geneva

Direct obstetric deaths are deaths resulting from obstetric complications of the pregnancy during pregnancy, delivery (intrapartum) and puerperium, from interventions, omissions and incorrect treatment or from a chain of events resulting from any of the above (WHO ICD 10). Indirect obstetric deaths are deaths resulting from previous existing disease or diseases that developed during pregnancy which was not due to direct obstetric causes but which was aggravated by the physiological effects of pregnancy (WHO ICD 10). Direct and indirect deaths, as classified, when combined provide the number of maternal deaths as defined by WHO ICD 10. Nepal follows the ICD 10 three-character categories in the coding system; however, some individual health institutions also use four character sub-categories.

In countries where the maternal mortality rate is high, the bias introduced into estimates of maternal mortality by the inclusion of accidental and incidental causes is usually very low. For example the Maternal Mortality and Morbidity study 19986 revealed that only 9% of pregnancy related deaths were due to external (accidental and incidental) causes, while the Maternal Mortality and Morbidity Study 2008/092 found that 6% of pregnancy related deaths were due to accidental and incidental causes.

It is practice to use the maternal mortality ratio in assessing maternal health programmes. The maternal mortality ratio (MMR) is defined as the number of maternal deaths in a given period per 100,000 live births during the same time period. In order to obtain the MMR, the number of maternal deaths due to accidents or incidents during antepartum, intrapartum and puerperium period are not included.

In addition to MMR (maternal mortality ratio or MMRatio) other indicators such as Maternal Mortality Rate (MMRate), Life Time Risk (LTR), and the proportion of deaths among women age 15-49 that are reproducing (PMDF) are also used.

Maternal mortality in a population is influenced by the risk of death in a single pregnancy or a single live birth and the number of pregnancies or births that are experienced by women of reproductive age. The maternal mortality ratio (MMR) indicates the risk of maternal death relative to the number of live births. The maternal mortality rate (MM Rate) is defined as the number of maternal deaths in a population divided by the number of women aged 15–49 years. The MM Rate captures both the risk of maternal death per pregnancy and per birth (live birth or stillbirth) and the level of fertility in the population. In addition to the MMR and the MMRate, it is possible to calculate the adult lifetime risk of maternal mortality (LTR¹³) for women in the population. The LTR is the probability that a 15-year-old woman will die eventually from a maternal cause. An alternate measure of maternal mortality, the proportion maternal deaths of females of reproductive age (PMDF), is calculated as the number of maternal deaths divided by the total deaths among women aged 15–49 years.

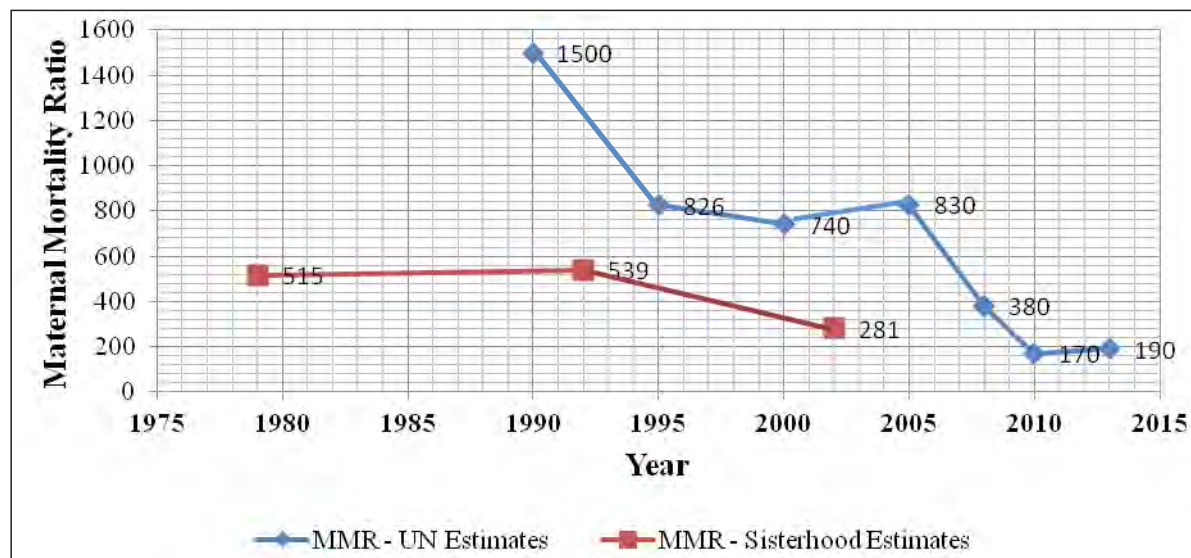
7.6 Level and trend of maternal mortality in past in Nepal

Various estimates of the maternal mortality ratio (MMR) in Nepal are available from different sources. Primarily the national MMR estimates for Nepal have been from the WHO and UNICEF (in later years WHO, UNICEF, UNFPA and the World bank) and the Nepal Demographic and Health Surveys (see Table 7.1). The level of maternal mortality ratio estimated by UN agencies for Nepal in 1990 was 1500, in 1995 it was 826, for 2000 it was 740, for 2005 it was 830, for 2008 it was 380, for 2010 it was 170 and for 2013 it remained at 170 (see Figure 7.1 and Table 7.1). The three nationally representative surveys, NFFPHS 1991, NFHS 1996 and NDHS 2006 provide MMR estimates of 515 for the reference period 1977-81 (sisterhood direct method), 539 for the reference period

13 $LTR = \text{Adult lifetime risk of maternal mortality} = [(T_{15} - T_{50}) / l_{15}] \times \text{MMRate}$. Where l_{15} equals the probability of survival from birth until age 15 years, and $(T_{15} - T_{50}) / l_{15}$ equals the average number of years lived between ages 15 and 50 years (up to a maximum of 35 years) among survivors to age 15 years. The values for l_{15} , T_{15} and T_{50} are life-table quantities for the female population during the period in question.

1989-95 (sisterhood direct method) and 281 for the reference period 1999-2005 (sisterhood direct) respectively. The MMR estimates from the UN for 2008 and before were higher than the MMR estimates obtained from the three surveys for the comparative reference period. The interagency team (WHO, UNICEF, UNFPA, the World Bank and UNPD) reported the MMR as 790 in 1990, 580 in 1995, 430 in 2000, 310 in 2005 and 190 in 2013. Looking at the trends of the MMR from various sources, it is generally agreed that the MMR has declined in Nepal, however, there is scepticism about the level of the MMR, particularly factors contributing to the drastic decline in the MMR from 539 (NFHS 1996) to 281 (NDHS 2006), and 1500 in 1990 (UN) to 170 in 2010 (UN).

Figure 7.1: Trend in MMR (UN estimates and sisterhood estimates)



The MMR estimates from three surveys; the NFPHSS 1991, the NFHS 1996 and the NDHS 2006 provided MMR estimates of 515 (reference period 10-14 years before the NFPHSS 1991), 539 (reference period 0-6 years before the NFHS 1996) and 281 (reference period 0-6 years before the NDHS 2006) respectively. It should be noted that the MMR estimates provided by NFPHSS 1991 were based on the sisterhood indirect method, while the estimates from the two other surveys were based on the sisterhood direct method and so the MMR estimates from the direct and indirect methods are not strictly comparable.

The MMR estimates provided by international agencies for various years range from 1500 in 1990 to 190 in 2013, all of which were based on statistical (regression) modelling. It should be noted that the modelling underwent revisions in terms of the set of variables used between 1990 and 1993 when various estimates of MMR were generated (Table 7.1). Between 1995 and 2005 the MMR estimates from international agencies does not indicate a decline in the MMR (Figure 7.1). However, MMR trend estimates for 1990-2013, provided by international agencies, revised the MMR for 1990, 1995, 2000, 2005 and 2013 to 790, 580, 430, 310 and 190 respectively, (data not shown in the figure and table), which were based on a revised set of independent variables.

Table 7.1: Maternal mortality indicators for Nepal, WHO and DHS 1990-2005

Source of data	Reference period	Maternal mortality ratio (MMR)	95% Confidence interval or uncertainty bounds	Number of maternal deaths	Life time risk	PMDF	Method
1996 WHO & UNICEF ¹⁴	1990	1538	1121-1989**	11752		41%	Regression model
1996 Revised WHO & UNICEF ¹⁵	1990	1500	-	11000		N/A	Regression model
1991 NFHSS ¹⁶	1977-1981	515	N/A	613		24%	Sisterhood Indirect
1996 NFHS ¹⁷	1989-1995	539	392-686*	87		27%	Sisterhood Direct
2001WHO ¹⁸	1995	826	577-1082**	6332		23.9%	Regression model
2004 WHO, UNICEF & UNFPA ¹⁹	2000	740	440-1100**	6000		24%	Regression model
2006 NDHS ²⁰	1999-2005	281	178-384*	39		18%	Sisterhood Direct
2007 WHO, UNICEF, UNFPA & WB ²¹	2005	830	290-1900**	6500	31	22%	Regression model
2010 WHO, UNICEF, UNFPA & WB ²²	2008	380	210-650**	2800	80	9.3%	Regression model
2012 WHO, UNICEF, UNFPA & WB ²³	2010	170	100-290**	1200	190	7.9%	Regression model
2013 WHO, UNICEF, UNFPA, WB & UNPD ²⁴	2013	190	110-340**	1100	200	6.9%	Regression model

* 95% Confidence Interval

** Uncertainty Bounds

PMDF - the proportion maternal among deaths of females of reproductive age

- 14 Cynthia Stanton, Kenneth Hill, Carla AbouZahr, Tessa Wardlaw. 1995. Modeling Maternal Mortality in the Developing World. WHO and UNICEF.
- 15 WHO and UNICEF. 1996. Revised 1990 Estimates of Maternal Mortality: A new Approach by WHO and UNICEF. WHO/FRH/MSM/96.11. UNICEF/PLN/96.1
- 16 Ministry of Health. 1993. Nepal Fertility Family Planning and Health Status Survey 1991. Kathmandu.
- 17 Pradhan, Ajit, Ram Hari Aryal, Gokarna Regmi, Bharat Ban, and Pavalavalli Govindasamy. 1997. Nepal Family Health Survey 1996. Kathmandu, Nepal and Calverton, Maryland: Ministry of Health [Nepal], New ERA, and Macro International Inc., Kathmandu and Calverton, MD.
- 18 Kenneth Hill, Carla AbouZahr, Tessa Wardlaw. 2001. Estimates of maternal mortality for 1995. Bulletin of World Health Organization, 2001, 79 (3), WHO, Geneva.
- 19 WHO, UNICEF, UNFPA, The World Bank. 2007. Maternal mortality in 2000. Geneva.
- 20 MOHP, New ERA, and Macro Int'l Inc. 2007. Nepal Demographic and Health Survey 2006. Kathmandu and Maryland.
- 21 WHO, UNICEF, UNFPA, The World Bank. 2007. Maternal mortality in 1995. Geneva
- 22 WHO, UNICEF, UNFPA, the World Bank. 2010. Trends in Maternal Mortality: 1990-2008. Geneva.
- 23 WHO, UNICEF, UNFPA, the World Bank. 2012. Trends in Maternal Mortality: 1990-2010. Geneva.
- 24 WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division. 2014. Trends in maternal mortality: 1990 to 2013 Estimates. Geneva.

7.7 Attribution for MMR decline in Nepal

The NDHS 2006 results were published in May 2007, which provided an estimate of the MMR at 281 based on 39 maternal deaths with a 95% interval estimate between 178 and 384. The earlier MMR estimate was provided by NFHS 1996, which estimated the MMR at 539. Both the NFHS 1996 and the NDHS 2006 used the same 'sisterhood direct' methodology. The decline could be attributed to a rapid decline in fertility during the same period and to a lesser extent the legalisation of the termination of a pregnancy up to 12 weeks in 2002, the availability of safe abortion services from 2004, and delivery by skilled birth attendants. The estimates provided by the inter-agency group on maternal mortality, which were based on statistical modelling, were high. These estimates increased confusion and encouraged advocacy to include questions in the census of 2011 to generate the MMR in 2009, when the census of 2011 was at an early planning stage.

The contraception prevalence rate (CPR) increased from 29% in 1996 to 50% in 2011, an average increase of about 1.5% per annum over a 15-year period. However, the increase between 2006 and 2011 was marginal, 48% compared to 49.7%.

Table 7.2: Trend in current use of contraception among currently married women aged 15-49²⁵

Method	NFHS 1996	NDHS 2001	NDHS 2006	NDHS 2011
Any method	28.5	39.3	48	49.7
Any modern method	26.0	35.4	44.2	43.2
Female sterilisation	12.1	15	18	15.2
Male sterilisation	5.4	6.3	6.3	7.8
Pill	1.4	1.6	3.5	4.1
Injectables	4.5	8.4	10.1	9.2
Condoms	1.9	2.9	4.8	4.3
Implants	0.4	0.6	0.8	1.2
IUD	0.3	0.4	0.7	1.3
Any traditional method	2.5	3.9	3.7	6.5

The NFHS 1996 provided an estimate of the total fertility rate (TFR) for the period 1993-1995 of 4.6, while the NDHS 2011 provided an estimate of 2.6 for 2008-2010 (see Table 7.8). The decline in the TFR from 3.1 (NDHS 2006) to 2.6 (NDHS 2011) was mainly influenced by spousal separation²⁶.

Table 7.3: Age-specific and total fertility rates (TFRs), Nepal 1996, 2001, 2006, and 2011²⁶

Age group	NFHS 1996	NDHS 2001	NDHS 2006	NDHS 2011
	1993-1995	1998-2000	2003-2005	2008-2010
15-19	127	110	98	81
20-24	266	248	234	187
25-29	229	205	144	126
30-34	160	136	84	71
35-39	94	81	48	36
40-44	37	34	16	14
45-49	15	7	2	5
TFR	4.6	4.1	3.1	2.6

25 Ministry of Health and Population (MOHP) [Nepal], New ERA, and ICF International Inc. 2012. Nepal Demographic and Health Survey 2011. Kathmandu, Nepal: Ministry of Health and Population, New ERA, and ICF International, Calverton, Maryland.

26 Mukti Nath Khanal, Dirgha Raj Shrestha, Prakash Dev Pant, Suresh Mehata. 2013. Impact of Male Migration on Contraceptive Use, Unmet Need and Fertility in Nepal: Further Analysis of the 2011 Nepal Demographic and Health Survey. Calverton, Maryland, USA: Nepal Ministry of Health and Population, New ERA, and ICF International.

The right to terminate a pregnancy was legalised in Nepal in 2002. Women who were in the first twelve weeks of pregnancy could obtain a termination from a certified site and certified provider. The safe abortion service was started in the fiscal year 2003/04. A total of 497,805 safe terminations were carried out in Nepal from 2003 to July 2011. Since safe abortion services were made available in 2003/04, safe abortions increased dramatically until 2007/08 and then seemed to stabilise in the range of 85 to 100,000 cases each year thereafter.

Table 7.4: Number of safe abortion services by fiscal year in Nepal²⁷

Fiscal Year	No. of provider (listed)	No. of site (listed)	No. of cases
2060/61 (2003/04)	54	12	719
2061/62 (2004/05)	95	57	10,561
2062/63 (2005/06)	111	64	47,451
2063/64 (2006/07)	114	34	73,474
2064/65 (2007/08)	138	39	97,378
2065/66 (2008/09)	192	39	83,978
2066/67 (2009/10)	257	86	88,938
2067/68 (2010/11)	315	156	95,306
Total	1276	487	497,805

The MMM study conducted in three districts in 1998 found that 88% of ‘pregnancy related deaths’ were ‘true’ maternal (direct maternal, 71% and indirect maternal, 17%) deaths and the MMM study conducted in 8 districts in 2008/2009 found that 93% of deaths were ‘true’ maternal deaths (direct maternal, 64% and indirect maternal, 29%) and the remainder were deaths due to fortuitous (accidental and incidental) causes. Of all maternal deaths, a large majority were due to direct maternal (obstetric) causes.

Both the MMM study in 1998 and the MMM study in 2008/09 conducted a surveillance of deaths of women of reproductive age (WRA). Information from households was collected for verbal autopsy for maternal and other causes of death. The cause of death revealed that 84% and 69% of maternal deaths respectively in each study were due to direct maternal (obstetric causes). The major direct maternal (obstetric) causes were haemorrhage (post partum and ante partum), pre/eclampsia, prolonged/obstructed labour, abortion and sepsis. Management of these direct complications requires trained and skilled service providers who not only conduct normal delivery but also perform other procedures such as manual removal of the placenta, forceps/vacuum delivery, and caesarean sections. In addition, personnel are needed who have appropriate equipment, can administer anaesthesia and drugs such as magnesium sulphate, oxytocic’s, misoprostol, antibiotics and carry out blood transfusions. Such services are available in health facilities that are designated to provide basic and/or comprehensive emergency obstetric care.

The four surveys conducted between 1996 and 2011 as a part of the demographic and health survey in Nepal revealed that ‘delivery in health facility’ as well as ‘delivery attended by a skilled birth attendant (SBA)²⁸’ steadily increased but was still low at around 35% (NDHS 2011). Only one-third of deliveries took place in a health facility. The survey also revealed that about 5% of deliveries in 2011 were C-sections. It should be noted that C-sections were only available primarily in district headquarters and urban areas. The establishment of private sector health facilities providing comprehensive emergency obstetric care (CEOC) services is also growing. Anecdotally C-sections were not necessarily conducted to save the lives of the child or the mother. In rural areas these services are not available and a large majority of deliveries take place outside health facilities, and the need for C-sections is not recognised at all.

²⁷ HMIS, DOHS, Personal Communication.

²⁸ The health care providers who have received SBA training are accredited SBAs and in practice doctors, nurses and midwives are considered as SBAs

Table 7.5: Trend in delivery by SBA, delivery in health facility and delivery by caesarean section

Indicators	NFHS 1996 ²⁹	NDHS 2001 ³⁰	NDHS 2006 ³¹	NDHS 2011 ²⁹
% of delivery by SBA	9	10.9	18.7	36.0
% of delivery in health facility*	7.6	9.1	17.7	35.3
C-Section Rate	1.0	0.8	2.7	4.6

7.8 Strengthening of comprehensive emergency obstetric care (CEOC) services

In 1997, a comprehensive emergency obstetric care (CEOC) model, including the improvement of facilities, the provision of equipment and capacity building of hospital staff, was developed and implemented in three hospitals in Kailali, Surkhet and Baglung, with technical and financial support from the Department of International Development, United Kingdom (DFID). In 2003, the programme was scaled up to 13 districts with support from DFID, UNICEF, and the German Organisation for Technical Cooperation (GTZ), now GIS. In the FY 2011/12, fifty-four districts were providing comprehensive emergency obstetric care services through 123 public and private hospitals, and basic emergency obstetric care services were provided at 153 facilities, including public hospitals, primary health care centres (PHCC) and the private sector. A total of 1021 birthing centres (PHCC, health Posts and sub health posts) were providing twenty-four hour safe delivery services.

7.9 Emergency obstetric care (EOC) monitoring

Using the MMR to measure the progress of safe motherhood programmes on a regular basis is not feasible so a guideline document was developed by Columbia University's Mailman School of Public Health, with support from UNICEF, WHO and UNFPA. These guidelines were published in 1997³². The guidelines propose an alternative approach to measure the progress of safe motherhood programmes, which uses output or outcome indicators to measure improvements in accessibility to and use of quality obstetric care. The indicators are:

- Availability of emergency obstetric care (basic and comprehensive care facilities); the minimum acceptable level is set as one comprehensive and four basic emergency obstetric care facilities for every 500,000 population.
- The geographic distribution of emergency obstetric care (EOC) facilities; the minimum acceptable level is one comprehensive and four basic emergency obstetric care facilities for every 500,000 population in sub-national areas.
- The proportion of births in EOC facilities; the minimum level is set locally.

29 Pradhan, Ajit, Ram Hari Aryal, Gokarna Regmi, Bharat Ban, and Pavalavalli Govindasamy. 1997. Nepal Family Health Survey 1996. Kathmandu, Nepal and Calverton, Maryland: Ministry of Health [Nepal], New ERA, and Macro International Inc.

30 Ministry of Health and Population (MOHP) [Nepal], New ERA, and ICF International Inc. 2002. Nepal Demographic and Health Survey 2001. Calverton, Maryland, USA: Family Health Division, Ministry of Health and Population, Kathmandu, Nepal; New ERA; and ICF International.

31 Ministry of Health and Population (MOHP) [Nepal], New ERA, and Macro International Inc. 2007. Nepal Demographic and Health Survey 2006. Kathmandu, Nepal: Ministry of Health and Population, New ERA; and Macro International Inc.

32 UNICEF, WHO, UNFPA, 1997, Guidelines for Monitoring the Availability and Use of Obstetric Services. UNICEF, New York.

- Meeting the need for EOC care: the proportion of women who are treated in EOC facilities: the acceptable level is 100%. The proportion of major direct obstetric complications in antepartum, intrapartum and puerperium is estimated to be 15% of births.
- Caesarean sections as a proportion of all births (C-section rate); The acceptable level is between a low of 5 to a high of 15%.
- Direct Obstetric case fatality rate (CFR): the acceptable level of CFR is less than 1%.

Along with the strengthening of EOC services in 1997, EOC monitoring was also initiated and continues to monitor the safe motherhood programme and specifically the EOC services in the programme districts in Nepal.

7.10 EOC monitoring in Nepal

Nepal with a population of 26.5 million had 123 CEOC facilities in 2011. The availability of CEOC services for the country was adequate but in terms of geographic distribution, only 54 districts out of 75 had at least one CEOC facility. As per the recommended standard, there should be 211 BEOC facilities for Nepal's population in 2011, whereas there were only 153 BEOC facilities in the country.

Table 7.6 details delivery targets for key EOC monitoring indicators. The institutional (EOC and other facilities) delivery target for 2011 was 27%. Delivery in EOC facilities in 2011 was 28% indicating that the target was met but many deliveries are conducted in non-EOC facilities and at home. It is to be noted that there is no specific target set for the deliveries conducted in the EOC (basic and comprehensive) facilities by the Ministry of Health and Population.

It is estimated that 15% of births will have major obstetric complications, also called direct obstetric complications, such as haemorrhaging (post partum and ante partum), pre-eclampsia, prolonged/ obstructed labour, abortion, and sepsis and the target is to treat all cases (100%) and keep the case fatality rate to below 1%. If all the expected direct obstetric complication cases are treated then the met need is 100%. The met need for direct obstetric complication was highest at 31% in 2008/09. The met need for EOC was only 19% in 2011, which means that 81% of women had an unmet need for EOC. EOC monitoring data revealed that the C-section rate was about 6%. The met need for EOC and C-section rates was calculated based on the total population, while expected births were based on the EOC monitored districts. If indicators were calculated based on the population and the expected births of the entire country, the percentage would be much lower than the met need shown in Table 7.6. The case fatality rate remained at less than 1% indicating that the quality of direct obstetric care in EOC facilities is within an acceptable range.

Table 7.6: Percentage of births in EOC facilities, Met need for EOC and C-section rate in EOC districts, Nepal FY 2003/04-2011/12

Fiscal Year	No. of EOC districts	Proportion of births in EOC facilities	Met need for direct obstetric complications	C-section rate	Case fatality rate
2003/04 (2060/61) ³³	13	7.5	14.8	0.5	0.3
2004/05 (2061/62) ³⁴	13	7.2	15.5	0.7	0.7
2005/06 (2062/63) ³⁵	13	11.0	18.2	1.4	0.4
2006/07 (2063/64) ³⁶	19	15.2	18.1	2.0	0.5
2007/08 (2064/65) ³⁷	22	14.9	24.1	2.5	0.3
2008/09 (2065/66) ³⁸	26	22.3	31.2	3.6	0.6
2009/10 (2066/67) ³⁹	38	21.3	28.0	3.3	0.4
2010/11 (2067/68) ⁴⁰	44	19.1	23.0	2.3	Na
2011/12 (2068/69) ⁴¹	54	28.1	19.0	5.9	Na

7.11 Maternal mortality ratio from Population Census 2011

Nepal's 2011 census collected information on deaths of women during pregnancy, delivery and postpartum, as well as live births in the period 12 months prior to the survey. This data provides the pregnancy related mortality ratio for the country and subgroups of population. Censuses generally suffer from enumeration completeness, problems of underreporting deaths and births and incorrect reporting of date of birth and death. Therefore, census data needs to be examined to determine that the death and birth data are free from error.

WHO has developed software to examine issues relating to the reporting of deaths, which adjusts adult mortality and pregnancy related mortality, as well as live births data by examining lifetime fertility (parity) and current fertility and adjusting the fertility by the P/F ratio method. Using this method 'P' is cumulated live time fertility and 'F' is cumulated current fertility. If the fertility rate has remained constant for a long period of time the cohort and period measure of fertility will be identical.

33 DoHS [Nepal]. 2005. Annual Report of Department of Health Services 2061/62 (2003/04). DoHS, MoHP, GoN. Kathmandu.

34 DoHS [Nepal]. 2006. Annual Report of Department of Health Services 2062/63 (2004/05). DoHS, MoHP, GoN. Kathmandu.

35 DoHS [Nepal]. 2007. Annual Report of Department of Health Services 2063/64 (2005/06). DoHS, MoHP, GoN. Kathmandu.

36 DoHS [Nepal]. 2008. Annual Report of Department of Health Services 2064/65 (2006/07). DoHS, MoHP, GoN. Kathmandu.

37 DoHS [Nepal]. 2009. Annual Report of Department of Health Services 2065/66 (2007/08). DoHS, MoHP, GoN. Kathmandu.

38 DoHS [Nepal]. 2010. Annual Report of Department of Health Services 2066/67 (2008/09). DoHS, MoHP, GoN. Kathmandu.

39 DoHS [Nepal]. 2011. Annual Report of Department of Health Services 2067/68 (2009/10). DoHS, MoHP, GoN. Kathmandu.

40 DoHS [Nepal]. 2012. Annual Report of Department of Health Services 2068/69 (2010/11). DoHS, MoHP, GoN. Kathmandu.

41 DoHS [Nepal]. 2013. Annual Report of Department of Health Services 2069/70 (2011/12). DoHS, MoHP, GoN. Kathmandu.

The adjustment of current fertility was first proposed by Brass⁴². The assumption of constant fertility was overcome by a refined method called Synthetic Relational Gompertz Model, which uses parity and fertility data from two censuses and surveys conducted five or ten years apart. The method uses average parity from two censuses and calculates synthetic parity for the period between the two censuses. The survivor of cohort of women in the first census would be 10 years older in the second census and the change in the average parity of the cohort can be calculated. The parity increment for different cohorts is cumulated to obtain an average parity for the hypothetical cohort between the two censuses^{43 44}.

The adjustment in adult mortality is based on the General Growth Balance (GGB) and Synthetic Extinct Generation (SEG) methods, which is a refinement of the Brass Growth Balance (BGB) method⁴⁵. The BGB requires population by age at a single point in time (single census) and is suitable in situations when the population is stable or nearly stable. The GGB, on the other hand, requires population at two points in time and can be used in situations when the population is not stable^{46 47}. The GGB and SEG method examine the completeness of death data and provide an adjustment factor for this data.

The analysis follows the detailed methodology described by Hill et al⁴⁸ and WHO⁴⁹ using the software developed by WHO.

It should be noted that the term MMR (Maternal Mortality Ratio) will be used for the Pregnancy Related Mortality Ratio (PRMR) or Pregnancy, Child Birth and Puerperium Mortality Ratio henceforth in this chapter, and similarly maternal death will be used instead of pregnancy related death or pregnancy, child birth and puerperium death.

7.12 National level MMR

The Nepal 2011 census reported a total of 9,654 deaths of women of reproductive age, of which 2,159 were deaths during pregnancy, childbirth and puerperium in the period 12 months prior to the census, while 325,795 live births were observed in the same period. The distribution of female deaths, deaths during pregnancy, childbirth and puerperium, and live births by age of women is provided in table 7.2. A total of 22.4% of deaths of women in Nepal are due to deaths during pregnancy, childbirth and puerperium. The highest proportion of maternal deaths (31.8%) is found in the age group 20-24 and declines with an increase in the age of women. Based on the observed maternal deaths and the observed female deaths, the MMR for Nepal was 663.

42 Brass W. 1964. Use of Census or Survey data for Estimation of Vital Rate./ Paper prepared for the African Seminar on Vital Statistics. Addis Ababa 14-19 December 1964. Document No. E/CN.14/CAS.4/V57. New York. United Nations.

43 UN Population Division. 1983. Manual X: Indirect Techniques for Demographic Estimation. New York: United Nations. Department of Economic and Social Affairs. ST/ESA/SER.A/81

44 Moultrie TA, RE Dorrington, AG Hill, K Hill, IM Timaeus and B Zaba (eds). 2013. Tools for Demographic Estimation. Paris. International Union for Scientific Study of Population. demographicestimation.iussp.org

45 Brass, W., 1975. Methods for Estimating Fertility and Mortality from Limited and Defective Data. Occasional Publication. Chapel Hill, North Carolina: University of North Carolina, International Program of Laboratories for Population Statistics.

46 Bennett, N. G., and Horiuchi, S. 1981. Estimating the Completeness of Death Registration in a Closed Population. *Population Index* 47(2):207-21.

47 Bennett, N. G. and Horiuchi, S. 1984. Mortality Estimation from Registered Deaths in Less Developed Countries. *Demography* 21 (2):217-233. doi:10.2307/2061041.

48 Hill K, C Stanton, N Gupta. 2001. Measuring Maternal Mortality from Census: A guidelines for Potential Users. Measure Evaluation Manual Series. Chapel Hill, NC, Carolina Population Center, University of North Carolina at Chappel Hill.

49 WHO. 2013. WHO Guidelines for Measuring Maternal Mortality from Census. Geneva.

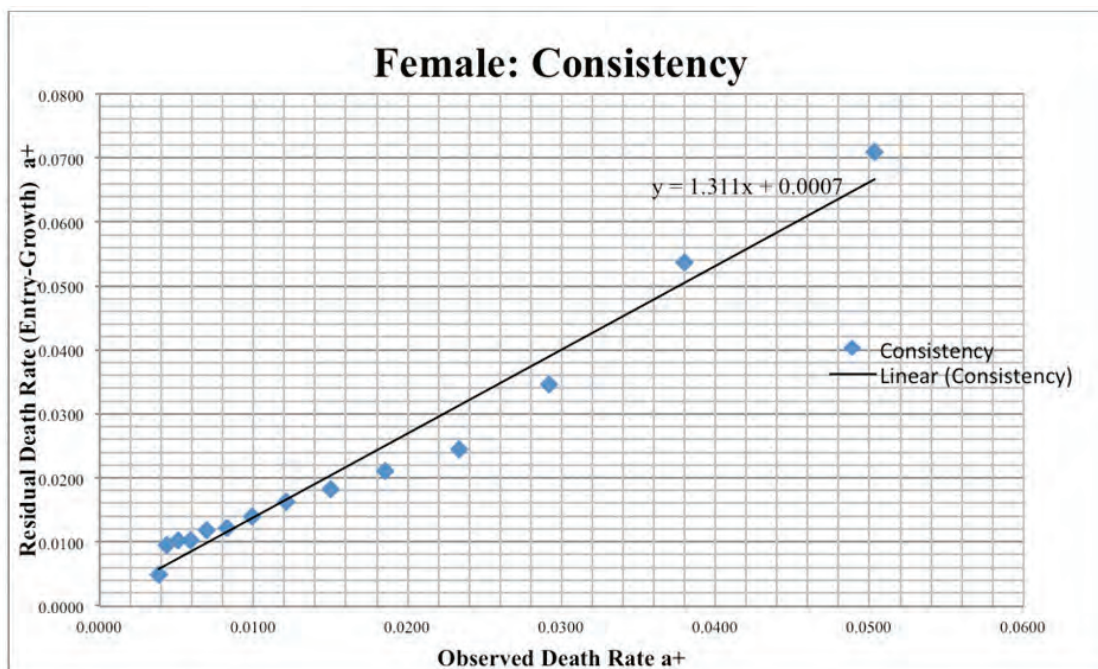
Table 7.7: National level MMR using observed births and observed deaths.

Age group	Observed female deaths	Observed maternal deaths	Observed births	MMR	PMDF
15-19	1,338	312	35,866	870	0.233
20-24	1,402	446	120,000	372	0.318
25-29	1,308	367	88,519	415	0.280
30-34	1,138	286	45,047	635	0.251
35-39	1,357	266	23,514	1,131	0.196
40-44	1,344	225	9,746	2,309	0.167
45-49	1,767	257	3,102	8,285	0.145
Total	9,654	2,159	325,795	663	0.224

Source : National Population and Housing Census, 2011

The set of ‘death rate’ as residual of a difference of ‘entry’ or ‘birth rate’ and ‘growth rate’ and ‘observed death rate’ indicate that all GGB points fall closely along a straight line with a slope of 1,311 and intercept of 0.0007 (see figure 7.2 below). The completeness of death is given by (1/slope). That is $(1/slope) = 1/1.311 = 0.751$ i.e., death completeness was about 75%.

Figure 7.2: General growth balance for consistency of death data



The Adjusted Synthetic Extinct Generation (SEG) i.e., plot of death ‘estimated completeness’ by age suggests an adjustment of observed death rates by a factor of 0.778 (Figure 7.2).

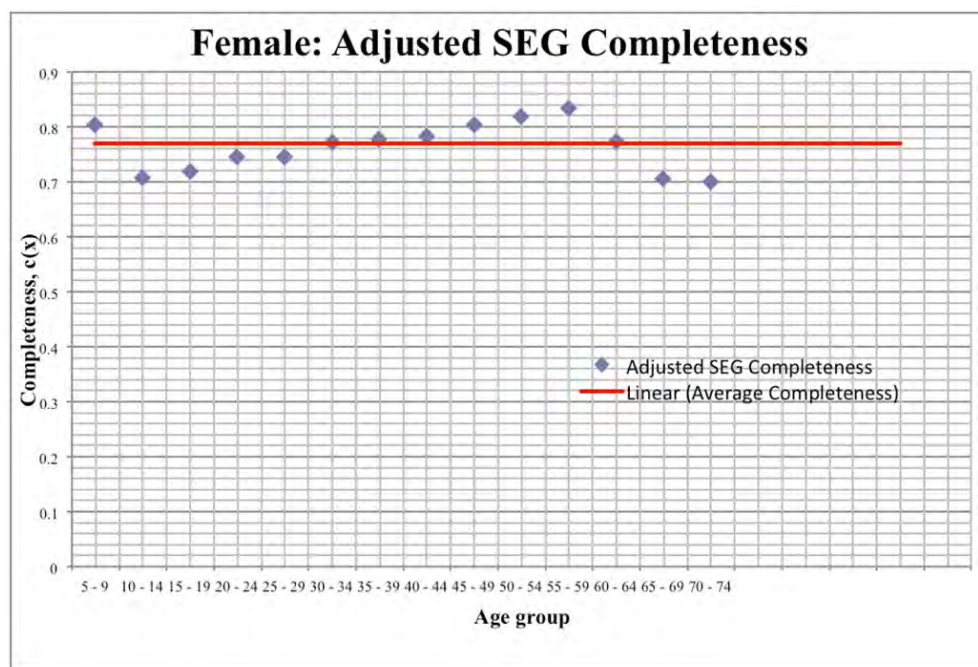
Figure 7.3: Female adjusted synthetic extinct generation completeness

Table 7.8 below presents the MMR using adjusted maternal deaths and observed births. Adjusted female deaths were calculated using the adjustment factor of 0.778 to observed female deaths. Adjusted maternal deaths by age group were obtained using the proportion maternal among females deaths (PMDF) for the same age group. Adjusted deaths and observed live births produces an MMR of 852 that is higher compared to the observed MMR (both death and birth unadjusted).

Table 7.8: National level MMR using adjusted maternal death and observed births

Age group	Adjusted deaths	Adjusted maternal deaths	Observed births	MMR	PMDF
15-19	1,719	401	35,866	1,118	0.233
20-24	1,802	573	120,000	478	0.318
25-29	1,682	472	88,519	533	0.280
30-34	1,463	368	45,047	816	0.251
35-39	1,743	342	23,514	1,454	0.196
40-44	1,727	289	9,746	2,967	0.167
45-49	2,271	330	3,102	10,648	0.145
Total	12,407	2,775	325,795	852	0.224

Source : National Population and Housing Census 2011.

The P/F ratio method yielded a set of P_i/F_i for each of the seven age groups. The average of P_2/F_2 , P_3/F_3 and P_4/F_4 gave an adjustment factor of 1.7734, which was applied to the observed births to obtain adjusted births for each age group. Table 7.9 presents the MMR generated by applying the observed maternal deaths and adjusted births. The MMR was 374 compared to the observed MMR. A comparison of observed live births during the 12 months prior to the census of 2011 was 325,795; compared to the estimated live births for FY 2010/2011, at 689,545 ,

indicating a large discrepancy between the two. It should, however, be noted that the live birth for FY 2010/11 was estimated based on the projected 2001 census population and the level of fertility and mortality reported by the NDHS 2006. The projected population for FY 2010/11 was 27,999,405 while the total population for Nepal reported in the 2011 Census was 26,494,504. The adjusted live births for 2011 based on the P/F ratio method was 577,763. The estimated population for FY 2010/11 is calculated for the year-mid, which is December 2010 when the estimated live births was 689,545.

Table 7.9: National level MMR using observed maternal death and adjusted births

Age group	Observed deaths	Observed maternal deaths	Adjusted births	MMR	PMDF
15-19	1,338	312	63,604	491	0.233
20-24	1,402	446	212,808	210	0.318
25-29	1,308	367	156,980	234	0.280
30-34	1,138	286	79,886	358	0.251
35-39	1,357	266	41,700	638	0.196
40-44	1,344	225	17,284	1,302	0.167
45-49	1,767	257	5,501	4,672	0.145
Total	9,654	2,159	577,763	374	0.224

Source : National Population and Housing Census 2011.

Adjusting both the death and birth by age figures provided an MMR of 480 for Nepal (Table 7.10). The MMR estimates of 539 and 281 deaths per 100,000 live births from the Nepal Family Health Survey 1996 (NFHS 1996) and the Nepal Demographic and Health Survey 2006 (NDHS 2006) respectively were derived by dividing age standardized maternal mortality rate and standardized general fertility rate for 7 year period before survey. The maternal mortality rate by age were obtained by dividing maternal deaths by women years of exposure for same age group. It should be noted that the maternal mortality ratios for these two surveys were based on 87 and 39 maternal deaths respectively during 0-6 years before the survey. It was documented in the NFHS 1996²⁹ (pp 158) that there were 38 female deaths for which information on the time of occurrence in relation to pregnancy was missing.

The various MMR estimates produced by the UN agencies were based on regression technique (Table 1). It should be noted that the regression technique was used to predict MMR as dependent variable based on a number of independent variables. Therefore the choice of a combination of independent variables influences in predicting MMR. The MMR estimates provided by UN agencies for various time ranged from 1500 in 1990 to 190 in 2013 using different set of independent variables.

A further analysis of NDHS 2006 was undertaken in 2008 and notes following on the UN agencies estimates which are presented in Box 1 for the benefit of readers.

Box 1: Quoted from ‘Investigating Recent Improvements in Maternal Health in Nepal: Further Analysis of the 2006 Nepal Demographic and Health Survey’ (Appendix A.2: page 25-26)**

“...International agencies WHO, UNICEF and UNFPA have joined together in producing five yearly maternal mortality estimates across the world that have a consistent approach to monitoring. The first estimated appeared in 1990, but the most complete and thoroughly estimated data sets started to appear in 2000. As part of this approach, countries are grouped into eight categories according to their best evidence on maternal mortality as follows:

- Complete civil registration – good cause of death reporting
- Complete civil registration – poor cause of death reporting
- Direct sisterhood estimates
- Reproductive Age Mortality Surveys
- Sample registration
- Census
- Special studies
- No national data

For each group, the international agencies have applied the same rules about how underestimation and other problems are corrected, in order to arrive at the final estimate for each country. For Group C with sisterhood estimates – the international agencies argue that there is evidence for the need for upward adjustment of the sisterhood data. Instead of using the estimate given by DHS reports for MMR, the agency calculations use the proportion maternal among deaths of females of reproductive age (PMDF). This is then applied to the WHO envelope of female deaths within those age groups – and divided by the UN estimated live births total for the year in question to arrive at the adjusted MMR. It is for this reason that the MMR reported by the agencies can be substantially different from that reported by DHS. It should be noted here that for those countries who have no recent data – group H - the international agency estimate is derived from a regression model – and depends on national levels of fertility, economic status and coverage of skilled birth attendants. It should also be noted that the year allocated to the estimate is distorted somewhat by the availability of data in the 5-year window of estimation for each set of global figures. For example, if there is data from 2006, the estimates will be emerging early 2007, and this will be too late to feed into the 2005 estimates. This is the case for Nepal.

The 2005 Nepali estimate of MMR (830 per 100,000 live births) from the international agencies was based on Nepal’s categorisation as a group H – having no national data. The estimate was consequently high – being based on a low proportion of births attended by skilled personnel. In 2000, Nepal was categorised as Group C from the earlier sisterhood (inflated) estimate of 740 – with confidence limits of 440 to 1100. Clearly these two estimates are not comparable – and the agencies themselves warn against comparisons over time. However it is more reasonable to compare the earlier 2000 estimate with a later rate that has been calculated in the same way. Authors of this report therefore requested WHO to informally estimate the Nepali MMR using the second sisterhood estimate in the same way as the earlier estimate – arriving at 670 – suggesting a 20 percent drop in maternal mortality. However – no new confidence intervals were calculated – so it is not known if the two agency estimates suggest a significant decline....”

The low utilisation maternal health services indicate that a large majority of women have not been reached by the program. In these context, the level MMR of 480 (adjusted both for mortality and fertility) for Nepal for 2011 appears to reflect reality.

** Pant, Prakash Dev, Bal Krishna Suvedi, Ajit Pradhan, Louise Hulton, Zoë Matthews, Mahesh Maskey. 2008. Investigating Recent Improvements in Maternal Health in Nepal: Further Analysis of the 2006 Nepal Demographic and Health Survey. Calverton, Maryland, USA: Macro International Inc.

Table 7.10: National level MMR using adjusted deaths and adjusted births for Nepal

Age group	Adjusted deaths	Adjusted maternal deaths	Adjusted births	MMR	PMDF
15-19	1,719	401	63,604	630	0.233
20-24	1,802	573	212,808	269	0.318
25-29	1,682	472	156,980	300	0.280
30-34	1,463	368	79,886	460	0.251
35-39	1,743	342	41,700	820	0.196
40-44	1,727	289	17,284	1,673	0.167
45-49	2,271	330	5,501	6,004	0.145
Total	12,407	2,775	577,763	480	0.224

Source : National Population and Housing Census 2011.

7.13 Levels of maternal mortality at sub-national level

Within the ecological region the MMR was highest in the Tarai (634) and lowest in the Hill (424) regions. Maternal deaths as a percentage of all deaths of women of reproductive age (PMDF) ranged between 21 to 23% in the 3 ecological regions. The MMR in the five development region ranged from a high of 592 in the Mid-Western Region to a low of 388 in the Eastern Region. Comparatively with the development regions, PMDF ranged from a low of 18% in Eastern Region to a high of 28% in Mid-Western Region.

Within the sub-regions, the MMR was highest in Mid-Western Mountain (1571) and lowest in Western Hill (331). The MMR in Central Mountain (352), Eastern Hill (366) and Eastern Tarai (367) was also low. In the Western, Mid-Western and Far-Western Mountain sub-regions, the MMR was greater than 1000 maternal deaths per 100,000 live births. The MMR of Kathmandu Valley, which includes Kathmandu, Lalitpur and Bhaktapur districts with 5 urban areas namely Kathmandu Metropolitan City, Lalitpur Sub-metropolitan City, Bhaktapur Municipality, Thimi Municipality and Kirtipur Municipality was 462, similar to the national MMR.

The disparities in the MMR by sub-region may be due to differences in access to and utilisation of safe motherhood services. The rugged terrain and limited road network in Mid-Western, Far-Western and Western Mountain districts continue to hinder access to services. Availability of services is not a sufficient condition for increasing use of services. Use of services depends on many factors such as level of awareness of the problem, household economy, the decision making process for accessing services, the level of female education and the status of women.

Table 7.11: Maternal mortality by development regions and Kathmandu Valley

Area	Observed maternal death	Adjusted maternal death	Observed births	Adjusted births	Observed MMR	Adjusted MMR	PMDF
Ecological Region	2,159	2,775	325,795	577,763	663	480	0.224
Mountain	216	271	30,205	48,397	715	561	0.231
Hill	897	1,059	154,574	249,904	580	424	0.213
Tarai	1,046	1,422	140,914	224,339	742	634	0.232
Development Region							
Eastern Region	408	474	71,497	122,277	571	388	0.176
Central Region	700	884	101,314	183,241	691	482	0.235
Western Region	366	462	64,437	107,022	568	432	0.207

Area	Observed maternal death	Adjusted maternal death	Observed births	Adjusted births	Observed MMR	Adjusted MMR	PMDF
Mid-western Region	399	552	48,759	93,167	818	592	0.277
Far-western Region	286	382	39,524	72,011	724	531	0.251
Eco-Dev. Region							
Eastern Mountain	41	47	6,816	9,985	602	467	0.204
Eastern Hill	128	139	24,918	37,987	514	366	0.168
Eastern Tarai	239	268	39,438	73,064	606	367	0.176
Central Mountain	42	40	7,045	11,420	596	352	0.193
Central Hill	287	293	46,894	72,487	612	405	0.212
Central Tarai	371	633	47,351	100,211	784	632	0.265
Western Mountain	2	4	237	338	842	1,158	0.163
Western Hill	178	210	39,767	63,415	448	331	0.173
Western Tarai	186	247	24,445	42,848	761	577	0.256
Mid-western Mountain	72	155	5,591	9,872	1,288	1,571	0.387
Mid-western Hill	197	256	26,168	48,980	753	523	0.297
Mid-western Tarai	197	264	16,676	33,630	1,181	786	0.334
Far-western Mountain	130	152	9,938	15,125	1,308	1,005	0.412
Far-western Hill	107	149	16,520	28,545	648	521	0.283
Far-western Tarai	120	135	13,012	27,745	922	486	0.277
Kathmandu Valley	146	148	19,181	32,072	761	462	0.240

Source : National Population and Housing Census 2011.

7.14 Findings and programme implications

The MMR from the 2011 census shows that the level is high and the health sector needs to continue to place an emphasis on the safe motherhood programme. The differences in the MMR by development, ecological and sub-regions indicate that areas where the MMR is higher need more focus to improve the maternal health situation in these areas but generally, all areas have high levels of MMR compared to international levels. Specific efforts should be directed at the Mid-Western Mountain and the Tarai regions, as well as Far-Western Mountain regions. As the MMR is high among women aged 35+ years, the programme should place more emphasis on reaching out to these women with targeted IEC (information education and communication) and BCC (behaviour change communication) programmes to raise awareness of the need for routine and regular antenatal care check-ups, preparing for birth and learning about the danger signs, and the importance of institutional delivery and delivery by a skilled birth attendant.

The MMR reported from the 2011 census should be compared cautiously with earlier MMR estimates, as the methodologies are different. All the earlier MMR estimates have precision issues. The MMR from the 2011 census is based on the maternal mortality of the entire population, while the data on live births were based on a sample and therefore is subject to sampling errors. The trend in MMR obtained from other approaches suggest a decline in the MMR and a repeat of these approaches in the next census in 2021 will provide information on the decline of the MMR.

It is important that basic/comprehensive emergency obstetric care (B/CEOC) facilities are strategically established/located and are functioning twenty four hours a day to ensure equitable access to these services. In remote areas, a rapid response, with air lifting of women who develop complications in pregnancy, needs to be developed.

CHAPTER 8

LIFE TABLE ANALYSIS OF NEPAL

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Abstract

Life table analysis is an effective way to present and evaluate survival and mortality data in a number of circumstances. A basic understanding of life table construction is beneficial to demographers, researchers, policy makers and other relevant stakeholders. This chapter aims to describe the basic underlying principles of life tables' construction, the relation among different life table functions, the construction of abridged life tables at national and sub national levels, and applying the proper indirect demographic techniques based on available census data of 2011. It also shows abridged life tables (by five-year age groups) of Nepal for 2011, which contain information on probabilities of dying and life expectancy at various ages by sex and age groups. Coale- Demeny west model life table has been employed to construct the life table of Nepal using MORTPAK software. As such, an analysis of different functions of life tables of different years, the nexus between life expectancy at birth and other relevant demographic indicators and the projection of life expectancy at birth has been undertaken in this study. The analysis shows the decreasing trend of mortality pattern at younger ages and that the longevity of life of Nepalese people has improved over the years in prevailing mortality conditions. The life table measures like life expectancy at birth and has been presented at the district level indicating the district level disparity.

8.1 Introduction

The life table is one of the most prominent discoveries in demography. These tables play a central role in demographic studies like fertility, mortality and migration, as well as population growth and structure. These tables are mainly used to measure the mortality level of the population involved. It examines the toll of mortality, measuring life expectancy and the extent to which death diminishes population numbers as ages rises. A life table shows whether populations are achieving the goal of long life. Sometimes the life table is viewed as a 'death table'; it is equally concerned with survival and length of life. Computation of the life table is the oldest technique of measuring mortality experience. The concept of a life table was first originated by John Graunt (1620-74), although the term 'life table' was a later innovation. John Graunt mentioned the concept of life table, for the first time, in his book "Natural and Political Observations Made upon the Bills of Mortality" in 1662. He presented the life table of the population of England in this book. John's concept of the table using mortality data was used to obtain the proportion surviving at each age, as it was evidently intended. Later, William Petty made improvements in this table scientifically. Euler, Shishu Milk, Naip and Kuisines are some of the contributors in improving and developing more scientific life tables. The astronomer Edmund Halley, in 1693, was the first to employ correct mathematical methods to calculate a life table, using vital statistics collated by Caspar Neumann of Breslau. Many countries have developed their own life tables based on the population database system established either with

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strong vital registration systems or population censuses or specific surveys. In Nepal, life tables have also been constructed in previous years on the basis of population census data using model life tables as a standard method.

This chapter covers the basic underlying principles of life table construction, life table construction by national and sub national areas of Nepal based on the population census data, and trend of life table functions.

8.2 Definition and basic concepts of life table

A life table is a statistical tool that describes the mortality conditions at a particular point of time among the population. It summarises the mortality experience of a population and yields information about longevity and life expectation. Keyfitz defined a life table as “a scheme for expressing the forms of mortality in terms of probabilities”. According to Professor Bogue, “the life table is a mathematical model that portrays mortality conditions of a particular time among a population and provides a basis for measuring longevity”. Similarly, Professor G.W. Barclay defined the life table as “a life history of a hypothetical group of cohort of population, as it is diminished gradually by deaths. The record begins at the birth of each individual member, and continues until all have died”.

By studying various definitions, it is known that a life table provides the complete statistical description of mortality. It shows the number of survivors at different ages of a group of individuals of the same cohort or generation. It is viewed as a single statistical model containing combined mortality rates of a population at different ages. A life table does not contain the effect of the age distribution of the actual population. The entire life table is created from age specific mortality rates from which other measures like the probability of dying, survivorship and life expectancy are derived.

8.3 Types of life table

There are different kinds of life tables based on reference year, age structure, and other factors. Two types of life tables are constructed based on the reference year:

1. Current or period life table
2. The generation or cohort life table

8.3.1 Current or period life table

Period life tables are meant to describe patterns of mortality for a specific period. Period life tables, also known as current life tables, are based on the mortality experience over a short period of time such as a year, three years or an intercensal period in which mortality has remained significantly the same. A period life table reflects the mortality of a hypothetical cohort born in a given year, assuming that this generation will experience at each age the mortality rates existing during that year for each age group. In general, a current life table uses the death statistics to a period of one to three years and the mid-year population data. It does not represent the mortality experience of the actual cohort but it assumes a hypothetical cohort that is subject to the age specific death rates observed in the particular period. It means the mortality data based on certain periods is generally used in constructing this type of life table. It assumes that the hypothetical cohort will experience at each age the mortality rates existing during that year for each age group. Period life tables describe patterns of mortality for a specific period.

8.3.2 Cohort life table

Mortality rates in a particular birth cohort are observed until all individuals in that cohort die in a cohort or generation life table. The life table is based on the mortality experience of a particular birth cohort. Cohort means a group of people starting their life together. Through cohort life tables, the annual probabilities of persons dying

born in a certain period or year can be tracked until all the people of the same cohort are diminished by death. In the cohort life table, the mortality experience of the persons in the cohort will be observed from their births through each consecutive age in successive calendar years until all of them die. Their mortality rates can be obtained at every age, from birth to age at death. With this data on death rates, a life table can be constructed for the entire cohort, assuming that most of them die by a certain period. Mortality and immigration data have to be collected over a long period of time in order to produce a cohort life table. This follow-up is practical only among “closed” populations with no migration. Moreover, the value of a cohort table reflects mortality rates of individuals born a long time ago, who lived under different conditions from those prevailing at the time the table is prepared.

Generally, life tables are understood as the current or period life table. A cohort life table is very difficult to construct because it is impossible to observe a cohort until the entire cohort members die. Constructing a cohort life table takes a number of years, may be more than a century. These life tables are known as standard life tables as they portray only mortality measures.

8.4 Type of life tables based on age details

Further, a life table can be classified based on the age detail or length of the age interval in which the data are presented, which are as follows:

1. Complete life table
2. Abridged life table

8.4.1 Complete life table

In a complete life table, information is given for every single year of age from birth until the last applicable age. It means that a complete life table presents the mortality experience for every single year of age.

8.4.2 Abridged life table

The full details of a single year of age life table, that is, complete life table is unmanageable or may not be necessary for many purposes. In this context, a life table of age group is developed that is useful for many purposes such as comparisons between different populations, or for projections and estimates for five year age groups. A summary approach of life table is constructed if the data are deficient and best used in an aggregated form. In such contexts abridged life tables come into their own. Hence, an abridged life table is a summary life table. It is less laborious to prepare the abridged life table and sufficiently reliable for most purposes and often more convenient to use.

In an abridged life table, information is given only for broader age intervals such as x to $x+5$ years. Generally, the usual practice is to construct an abridged life table rather than a more detailed complete life table. In an abridged life table, ages are grouped at 5 or 10 years of interval, except in the initial years. It normally has rows for ages 0, 1 and 5, then for every fifth year of age. Age 1 is invariably included because of the mortality peak in infancy. Since certain functions in a life table refer to exact ages, the rows of an abridged life table are usually labelled as single years, 0, 1, 5, 10, 15 rather than age groups 5-9, 10-14, 15-19

8.5 Types of life table based on decrement process

Standard life tables are different from decrement life tables, such as school life tables, working life tables etc. Another type of life table exists which is known as a decrement life table.

1. Single decrement life table
2. Multiple decrement life table

8.5.1 Single decrement life table

A single decrement process, like mortality, is the process in which individuals have only one known mode of exit from a defined state. Life tables can be used to study all single decrement processes. Individuals always enter the state at duration zero and the cohort entering the state is typically traced until the last member has exited. In the classic life table, the defined state is “being alive” and the mode of exit is “death”. For the process of nuptiality, being unmarried is the defined state, “marry” is the mode of exit or the state left. The single decrement life table process can be applied to determine the duration of single life. Similarly, life table apparatus can be applied to determine, for example, duration of residence in the process of migration from place of birth, duration of life in the process of entering the labour force, duration of life in the process of becoming a mother from the state of having no births to the state of having first birth.

8.5.2 Multiple decrement life table

The life table that describes the erosion caused by a given single factor, e.g., mortality, is called a single decrement life table. A life table that considers attrition to the size of a group from two or more causes is called a multiple decrement life table. The following are some examples:

- i. A group of never married persons may be diminished by death and marriage.
- ii. A group of employees may be diminished by death, retirement and resignation

8.6 Underlying assumptions in the construction of life table

The explicit assumptions while constructing life tables are as follow:

1. The cohort originates from some standard number of births of the same sex, usually 1,000 or 100,000 called the ‘radix’ of the life table. The number of persons living at the age at birth is called the radix of the life table. Starting with a standard number of births is necessary to make a comparison between various life tables. The mortality differentials of the two sexes at various ages make it desirable to construct the table separately for each sex. However, a life table can also be constructed for both sexes combined, taking the sex ratio into consideration.
2. The cohort understudy is closed to migration. It means that death is the only factor due to which the members of the cohort at various ages decrease in number.
3. Members of the cohort die at each age according to a fixed schedule of mortality.
4. Except in the first few years of life, e.g. at the age of infancy under 5 years of age, deaths at each age are evenly distributed, between the two consecutive birth intervals.

8.7 Components of complete life tables

A complete life table contains data or information for every single year of age from birth to the last applicable age. Most of the life tables, however, follow the cohort from birth to the death of its entire members. It is based on sex and age-specific mortality rates, and consists of the following functions or components:

8.7.1 Age specific death rate (M_x or m_x):

Age specific death rate is the total number of deaths to residents of a specified age or age group in a specified geographic area divided by the mid-year population of the same age or age group in the same geographic area for a specified time period, (usually a calendar year), multiplied by 1000. Age specific mortality rates or Average mortality rates at age x is denoted by M_x or m_x . It is the number of people who died at age x divided by the mid-year population at age x . There is a practice of separate life table construction for males and females, because of the marked differences in mortality patterns between the sexes. The starting point for life table construction is to obtain information on the number of male and female deaths in each single year of age, and calculate age specific death rates. To reduce the effects of short-term fluctuations in mortality or deficiencies in the data, life tables are preferably based on the average number of deaths in each age over a period longer than a year, such as three years centred on a census year.

Mathematical notations:

M_x = the age specific death rate. It is capitalised when the rate is derived from observed data for the population.

m_x = age specific death rate calculated from the life table itself

$$M_x = \left(\frac{D_x}{P_x} \right) \times k, \quad \text{Where}$$

M_x = age specific death rate of persons aged x
 D_x = number of deaths in a year at age x
 P_x = midyear population aged x
 $K = 1$ or 1000

8.7.2 Probability of dying between exact ages (q_x)

The probability of dying between exact ages (q_x) is the probability of death between age x and age $x+1$. The column presents the proportion of people who died between age x and age $x+1$ of those living at age x . The link between the observed data on mortality and the life table itself is provided by the q_x function. q_x denotes the probability of dying between pairs of exact ages based on the age specific death rates. The probability of dying (q_x) is the first life table function calculated and all other functions are derived from it.

Using the age specific death rates (m_x), life table probabilities of dying, q_x values are derived from as follows:

$$q_x = \frac{2M_x}{2 + M_x} \quad \text{if calculated from observed death data}$$

or, $q_x = \frac{2m_x}{2 + m_x} \quad \text{if derived from life table mortality data}$

where q_x = the probability of dying between exact ages x and $x+1$

M_x or m_x = the age specific death rate of persons aged x last birthday

Particularly for infants and the old aged, an uneven distribution of deaths exists, hence requiring a more refined approach in calculating q_x . The infant mortality rate (IMR) is used in deriving q_0 (instead of the above formula) since it is based on the initial population – the number of live births. The probability of dying in an open-end age interval is always 1.

i.e ${}_xq_x = 1$

Although M_x or m_x and q_x have similar values where death rates are low, they are different concepts. M_x is a rate based on the mid-year population while q_x is a probability based on the initial population.

$$q_x = D_x / (P_x + 0.5D_x)$$

Where D_x = observed number of deaths of persons aged x last birthday in a year

P_x = observed mid-year population

The probability of dying is equal to the number of deaths divided by the initial population aged x (adding half the deaths to the mid-year population provides an estimate of the size of the initial population aged x).

8.7.3 Average number alive in an open-ended age group:

$$m_x = d_x / L_x$$

$${}_xL_x = l_x / {}_xM_x$$

8.7.4 Probability of surviving from one exact age to the next (p_x)

Probability of surviving (p_x) is the complement of the probability of dying (q_x). Together they sum to 1 in each age interval, because everyone must either survive or die between birthdays. Since the probability of dying in an open-ended age range is always 1, the probability of surviving (p_x) is always 0.

$$p_x = 1 - q_x$$

8.7.5 Number surviving at exact ages (l_x)

The number of survivors at exact age x out of radix is l_x . l_x derived from p_x is an important indicator of the impact of mortality on a population, namely the proportion surviving at each exact age. The number of survivors in the l_x column of the life table has no relationship to the actual number of people in the population whose death rates were used. Individuals can look forward with some confidence to a long life, but governments need to make financial arrangements to support an older population. Figures on the proportion surviving are of great interest to the managers of life insurance and pension arrangements. l_x 's refer to exact ages and are expressed as whole numbers, whereas some other functions refer to intervals and/or are expressed as a decimal. l_x represents the number of survivals at exact age x from an original 100,000 live births (radix).

$$l_{x+1} = l_x * p_x$$

$$l_0 = 100,000$$

or, the l_x values are based on the q_x values, which allow for calculation of the number of survivors since age x-1.

$$l_x = l_{x-1} (1 - q_{x-1})$$

8.7.6 Number of deaths between exact ages (d_x) or D_x

D_x or d_x is absolute number of deaths at age x . d_x is the number of deaths between exact ages. It is obtained by multiplying l_x , the number alive at the start of the age interval, by the probability of dying (q_x)

$$d_x = l_x * q_x$$

$$d_x = l_x - l_{x+1}$$

For a final open-ended age interval, the number dying is the same as the number alive at the start of the interval i.e.

$${}_{\infty}d_x = l_x$$

The sum of the d_x column is 100,000.

8.7.7 Average number alive between exact ages (L_x)

This is the number of person-years lived by the cohort that reached exact age x , between age x and age $x+1$. Although l_x is an important measure of mortality patterns, for some purposes it is limited in that it refers to exact ages rather than age at last birthday. Censuses and surveys, which are the main sources of data on the age distribution of populations, refer to age at last birthday. At any point in time, only a minority of people is celebrating their birthdays, the rest of the population are between birthdays. Hence, if we need information about the age structure of the life table population, a life table concept is needed that is closer to the notion of age at last birthday. The relevant life table function L_x is defined as the average number lived between exact ages or the number of person years lived between exact ages. L_x is calculated as the average of the l_x 's values at the start and end of the interval. Mathematically, it is derived from the formulae below:

$$L_x = 0.5(l_x + l_{x+1})$$

The above formula is an approximation since it assumes that deaths are distributed evenly over the age interval. This formulae is not applied for younger ages since the younger the infant, the greater the risk of death. To address this problem, different equations are used for L_0 and L_1 . In the absence of empirical data on the relative weighting of the l_x values in the equations, the following approximations are recommended for deriving L_0 :

$$L_0 = 0.3 l_0 + 0.7 l_1$$

L_0 is the number of person-years lived by the cohort between birth and its first birthday. For the open-ended interval, L_x is derived from the following formulae:

$${}_{\infty}L_x = l_x / {}_{\infty}M_x$$

L_0 and ${}_{\infty}L_x$ are calculated differently for two reasons:

- i. L_0 is affected by the non-linear distribution of deaths in the first year of life.
- ii. ${}_{\infty}L_x$ requires an estimate of the number of years that will be lived until the last member of the cohort has died.

8.7.8 Total Population aged x and over (T_x)

T_x is the total number of person-years lived by cohort survivors after reaching age x . It is the sum of L_x for all ages after x . The T_x function has applications in calculating life expectancy, which is one of the main summary measures of mortality, as well as other estimates based on total population numbers. It is obtained by from the L_x values. The values of T_x give an indication of how many person years of life are lived from each age. T_x is

calculated as the sum of all the L_x values from age x to the highest age in the life table. Mathematically,

$$T_x = \sum_{t=0}^{\infty} L_{x+t}$$

When there is a final open-end age interval, end $T_x = {}_{\infty}L_x$. When last T_x is known, other T_x s can then be obtained by working reverse from the end of the life table.

$$T_x = T_{x+1} + L_x$$

8.7.9 Expectation of life (e_x)

Expectation of life, also called the life expectancy at age x , denoted by e_x , is the average number of years of life a hypothetical cohort of individuals is expected to live at each respective age when it is assumed that prevailing mortality rates at each respective age remain constant. It is an expected figure that a hypothetical cohort will attain up to the end of life from their attained age, for example 0, 1, 5, 60, 75 etc. It is a more accurate reflection of mortality than the crude death rate because it is independent of the population's age structure, and it is not influenced by extraneous factors such as the selection of a standard population.

Calculation of life expectancy at birth begins with a set of age-specific death rates, from which probabilities of surviving from one age to the next can be estimated. These survival probabilities are applied to an assumed cohort of births that occurred in the same year, following the survivors as they reach successive ages until all have eventually died. As a result of this procedure, a count can be obtained of the total number of years that the birth cohort as a whole will live under the observed mortality conditions. The ratio of all years lived by the total number of people in the cohort to the original number of births represents the average number of years to be lived by persons born in the same year under the particular mortality conditions of that year, which is termed as life expectancy at birth. It is a synthetic cohort measure and can be used for international comparisons of mortality figures.

An important application of T_x is to calculate the life expectancy (e_x), known as final life table function. It is a summary measure of mortality, which is widely employed in comparison through time and between countries, especially in terms of life expectancy at birth. The equation for e_x shows that it is equal to the total person years of life lived after exact age x (T_x) divided by the total persons alive at exact age x (l_x). This represents the average number of years lived by people aged x .

Mathematically,
$$e_x = \frac{T_x}{l_x}$$

The complete life tables presented here show the l_x , q_x and e_x functions for single ages, from birth to last applicable ages like 100.

8.7.10 Other life table rates

There are other life table rates, like life table age specific death rates and the crude birth rate and death rates of the life table population. Life table age specific death rates is expressed as

$$m_x = d_x/l_x$$

This function approximates M_x . The crude birth rate of the stationary population is equal to the total births divided by the total population.

$$CBR = l_0/T_0$$

8.8 Construction of abridged life table

In practice, life table calculations are complicated by the fact that the mortality rates for single years of age cannot be estimated precisely, even in large populations, and some form of smoothing is required. The sharp decline in mortality during infancy and childhood and the small numbers in extreme old age, also create problems while constructing complete life tables. However, as a simple method, abridged life tables can be constructed, using mortality rates for broader age groups, which are more readily available. The main objective in the construction of abridged life tables is to overcome the problems faced in the construction of complete life tables. Such tables are usually sufficient for many purposes.

8.9 Abridged life table functions or components of abridged life tables

A typical abridged life table consists of the columns of x to $(x+n)$ exact age interval, the number alive at exact age x , out of the original number of births (l_x), the probability of dying between exact ages x and $x+n$ (${}_nq_x$), the probability of surviving from exact ages x to exact age $x+n$ (${}_np_x$), the number of deaths between exact ages x and $x+n$ (${}_nd_x$), the average number alive in the interval between exact ages x and $x+n$, i.e. the age distribution of the stationary population (${}_nL_x$), It also denotes the number of person years lived in the interval between exact ages x and $x+n$, the total number of person years lived from exact age x (T_x), expectation of life at exact age x , i.e. the average number of years lived by a person from exact age x (e_x).

Here, n is the number of years in the age interval; exact age means age on birthday, and person years as the sum of all the years that members of a population have lived, during a fixed interval or over their whole lives.

8.9.1 Age specific death rate (${}_nM_x$ or ${}_nm_x$)

Age specific death rates refer to an age group rather than a single year of age. The death rates are calculated from data of twelve months or from the average for three years. The age specific death rates for grouped ages are denoted by ${}_nM_x$ or ${}_nm_x$ where n is the number of years in the age interval. The formulae for the age specific death rate for grouped ages are:

$${}_nm_x \text{ or } {}_nM_x = \frac{{}_nD_x}{{}_nP_x} \times K$$

where n = the number of years in the age interval

${}_nD_x$ = number of deaths during the year to persons aged x to $x+n$

${}_nP_x$ = mid-year population aged x to $x+n$

$k = 1$ or 1000

8.9.2 Probability of dying between exact ages (${}_nq_x$)

It measures the probability that persons in a particular age interval will die while they are in that age interval, that is between exact ages. The formulae to calculate the probability of dying from the age specific death rate is:

$${}_nq_x = \frac{2n \times {}_nM_x}{(2+n) \times {}_nM_x}$$

where, n is the number of years in the age interval.

8.9.3 Probability of surviving from one age to the next (${}_n p_x$)

$${}_n p_x = 1 - {}_n q_x$$

8.9.4 Number of surviving at exact ages (l_x)

The l_x values in an abridged life table represent the number of survivors at exact ages from an original 100,000 births. The l_x values may be calculated using ${}_n p_x$:

$$l_{x+n} = l_x * {}_n p_x$$

8.9.5 Death between exact ages (${}_n d_x$)

$${}_n d_x = l_x * {}_n q_x$$

The ${}_n d_x$ column sums to radix value e.g. 100,000 since the number of deaths occurring over all the age intervals equals the number of births.

8.9.6 Average number alive between exact ages (${}_n L_x$)

Apart from ${}_n q_x$, the ${}_n L_x$ is the only function for abridged life tables that differs appreciably from those for complete life tables:

$${}_n L_x = n * 0.5(l_x + l_{x+n})$$

Abridged life tables typically include separate figures for the first year of life given that the risks of mortality are high for infants. Thus the single year life table function is used as before for L_0 :

$$L_0 = 0.3l_0 + 0.7l_1$$

8.9.7 Total population aged x and over (T_x)

T_x is a life table function or the total number of person years lived from exact age x. T_x is the sum of the ${}_n L_x$ values from age x, and T_0 is equal to the sum of the ${}_n L_x$ column.

8.9.8 Expectation of life (e_x)

Expectation of life, called life expectancy at each age group, is also calculated in the same way as for single year life tables:

$$e_x = T_x / l_x$$

8.10 Life tables for both sexes combined

Sometimes combined life table figures for both sexes are required. The combined life table functions may be obtained by weighting figures in the l_x , d_x , L_x , and T_x columns of the life table by 1.05 or sex ratio at birth (i.e. weighting the life table functions referring to numbers of persons) other than calculating a new life table based on

mortality rates for the total population. L_x and T_x for total persons are obtained as

$$l_x = (1.05l_x^m + l_x^f)/2.05$$

$$T_x = (1.05T_x^m + T_x^f)/2.05$$

8.11 Relation of ${}_n a_x$ with other major life table functions

The average number of person-years lived in the interval x to $x+n$ by those dying in the interval is ${}_n a_x$. This value is derived by dividing the total number of person-years lived in the interval x to $x+n$ by those dying in that interval by the total number of persons who die in the interval.

$${}_n L_x = n.l_{x+n} + {}_n A_x$$

where

${}_n L_x$ = Number of person-years lived by the cohort between ages x and $x+n$

$n.l_{x+n}$ = Number of person-years lived in the interval by members of the cohort who survive the interval

${}_n A_x$ = Number of person years lived in the interval by members of the cohort who die in the interval

$${}_n A_x = {}_n a_x * {}_n d_x$$

where

${}_n a_x$ = Average number of person years lived in the interval by members of the cohort dying in the interval

${}_n d_x$ = Number of persons of the cohort dying in the interval

$${}_n q_x = n \cdot {}_n m_x / \{1 + (n-1) {}_n a_x m_x\}$$

(This relation was developed by Grevile (1943) and Chiang (1968). According to them, the conversion from ${}_n m_x$ to ${}_n q_x$ depends on only ${}_n a_x$ parameter. If persons dying in the interval dying on average half way through the interval, then

$${}_n q_x = n \cdot {}_n m_x / \{2 + n \cdot {}_n a_x m_x\}$$

The value of ${}_n a_x$ is of importance in constructing period life tables in the conversion of ${}_n m_x$ to ${}_n q_x$. The value of ${}_n a_x$ is considered as a function of the level of mortality itself. Generally, the lower the level of mortality, the more infant deaths will be heavily concentrated at the earliest ages of infancy.

8.12 Sources of mortality data in Nepal

Generally the main source of death data is the vital registration system. Although the vital registration system was established in 1977 in Nepal, the recording system still suffers from low coverage and remains highly under used. The system records digitally only the date of registration of vital events, rather than registering the date of occurrence of vital events. The data from the prevailing registration system do not reflect actual mortality levels of the population in Nepal. Coverage of death statistics is still considered highly under reported. Hence, in such conditions, vital indices, including mortality indices, have been continually derived either from regularly conducted surveys, for example demographic health surveys or decennial censuses. Indirect measures of estimation are employed to derive different mortality measures in Nepal.

Data regarding mortality was also collected in the Population Census 2011 of Nepal. The data on death was collected at the household level as well as on an individual basis in form 1 and form 2 respectively. The main data collected were deaths that occurred during the twelve month period prior to the enumeration day of census, by age and sex, the total number of children ever born and surviving by age of mother, widow and widowhood statistics classified by age and sex of surviving spouses, and population distribution by age and sex.

Past experiences indicate that mortality data collected in earlier censuses always showed a low estimation of mortality. So the 2011 census death data is also considered to be under reported. Direct estimation of mortality from the reported data gives a low value of mortality due to underreported death data. Hence, indirect estimation techniques are used for estimating various mortality measures.

A major component of life table construction is death statistics, which are assumed to be under reported as mentioned earlier. Hence a direct method for estimating mortality is not advisable in developing countries like Nepal, as estimations tend to be low due to the omission of real births and deaths. In general, it is believed that infants and children who die are mostly omitted by respondents during census enumeration.

8.13 Use of model life tables

The life table provides a complete description of mortality. It needs the age-specific death rates as basic data input. Age specific death rates are calculated from information on deaths by age and sex (from vital registration systems) and population by age and sex (from censuses). In many developing countries like Nepal, these basic data are either not available due to a lack of a functioning vital registration system, or are not feasible because of incompleteness of coverage or errors in reporting in censuses. In the situation of incompleteness of basic data for life tables, demographers have developed different model life tables. Mortality rates are obtained by employing indirect techniques where there is an unavailability of quality mortality data or a non-functioning vital registration system.

Model life tables or model stable populations are used to construct the specific life tables in the situation of unavailability of adequate data. These are sets of hypothetical life tables across the full range of life expectancies as well as different patterns of age specific mortality rates. These life tables permit a reconstruction of mortality conditions in all kinds of populations of developing countries and even future populations.

A number of empirical model life tables have been devised with varying degrees of sophistication. The best known model life tables are (i) the UN Model Life Tables, (ii) The Coale-Demeny Model Life Tables, (iii) the UN Model Life Tables for developing countries, (iv) the Ledermann System of Model Life Tables and (v) the Brass Logit System. As such, a particular model life table may be more or less suitable for a specific location. The major model life tables are briefly discussed below.

1. UN model life tables (1955).

This was the first set of model life tables published by the UN in 1955, which were constructed using 158 life tables for each sex. It represents several populations over different time periods. The set of life tables covers the range of expectation of life at birth from 20 years to 73.9 years in the interval of 5 years up to age 55, after which mortality decline over time is assumed.

2. The Coale and Demeny regional model life tables.

These were first published in 1966, derived from a set of 192 life tables, by sex, from actual populations. All of the 192 selected life tables were derived from registration data, and were subjected to rigorous standards of accuracy. Further analysis of the underlying relationships identified four typical age patterns of mortality

namely North, South, East, and West models. Each had a characteristic pattern of child mortality. The East model is characterised by high child mortality in relation to infant mortality. The North model is characterised by comparatively low infant mortality, high child mortality and low old age mortality beyond age 50. The South model is characterised by (a) high child mortality in relation to infant mortality at high overall mortality, and (b) low child relative to infant mortality at low overall mortality. The West model is characterised by a pattern midway between the North and East patterns. This model is assumed to represent the most general mortality pattern.

The regional model life table developed by Coale and Demeny in 1983 provides four sets of abridged life tables for females and males. The regional model life table of Coale and Demeny, mainly the western region model, has been a main basis for demographic estimation and reconstruction of life tables in many countries. The West model life tables have been recommended for use when the age pattern of mortality is unknown or deficient. The life expectancy in this model varies from 38.6 years to 75.2 years. In Nepal, the western model has been employed in constructing a life table of Nepal.

3. The Ledermann's system of model life tables (1959, 1969).

This model life table is based on a factor analysis of 154 empirical tables. The method was developed by Ledermann and Brass. This life table considers five factors such as general mortality level, relation between child and adult mortality, pattern of mortality at older ages, pattern of mortality below age 5 years, and the differentials between male and female mortality in the age range 5 to 70 years. They are considered to be more suitable for developing countries.

4. Brass logit system (1971).

This system provides a greater degree of flexibility than the empirical models discussed above. It is based on the assumption that two distinct age-patterns of mortality can be related to each other by a linear transformation of the logit of their respective survivorship probabilities.

5. The UN model life table for developing countries (1981).

The U.N. devised the life tables to address the needs of developing countries, which consisted of 36 life tables covering a wide range of mortality levels from developing countries, by sex. Five families of models namely Latin American, Chilean, South Asian, Far Eastern and a General were identified. The general model was constructed as an average of all the observations. The models incorporate a greater degree of inbuilt flexibility to construct mortality patterns different from actual published mortality schedules.

8.14 Application of life table

The life table values of any particular geographic area for a particular period is useful for the life insurance industry, superannuation funds and pension schemes, since the viability of financial arrangements depends on knowing the likelihood that clients will live to older ages. How many survive to successive ages is important information for them. The life table technique, as a special tool for measuring mortality, is also used in the study of fertility, migration and population structure. It is widely used in the estimation and projection of population size, structure and change at future date. Some of the uses are outlined below:

1. Mortality analysis

The most common use of a life table is to measure the level of mortality in terms of a summary measure ${}_e^0q_x$, i.e. life expectancy at birth. Model life tables may be used to evaluate the quality of mortality data of developing countries. The measures based on the life table may also be used to study variations in mortality

over time between population groups by age, sex, and other demographic characteristics like marital status, residence or by any other demographic characteristics having an effect on mortality.

2. Measurement of morbidity and health

Life table technique, (single decrement or multiple decrement life table), has been used to estimate the risks of disease or specific disability. The technique may be used for analysing hospital stays after the patient is admitted where hospital admission can be regarded as birth and discharge from the hospital as death.

3. Analysis of Mortality by cause of death

Multiple decrement life tables can be used to study variations in mortality due to different causes over time or between different population groups. It can be used to estimate the gain in life expectancy in the case of elimination of a specific cause of death along with an estimation of reduction in mortality risks by age.

4. Life table survival rates

The life table is used for survival analysis to make statistical inferences about the elements in the table and about other parameters underlying the mortality pattern of a study population. Survival rates give the probability of a person surviving from a younger age to an older age group. These survival rates are very useful in projecting the future population.

5. Estimation of migration

The life table survivor rates are used for estimating net migration.

6. Fertility and age structure analysis

Age specific fertility rates multiplied by life table survival rates from birth to the particular age of the mother give net reproduction rates when summed up over the entire range of reproductive life. Life tables can be used to study the relationship between age structure, mortality and fertility.

7. Analysis of socio-economic structure and dynamics

Multiple decrement life tables facilitate an analysis of the labour force, marital composition and educational status etc.

8.15 Methodology adopted to construct life tables for Nepal

The construction of a life table follows some routine steps. The construction of a life table consists of calculating various interdependent “functions,” using the available age-specific death rates as a base. A life table is generally constructed either from age specific death rates, obtained through reported data, or by using model life tables according to the conditions of availability and quality of mortality data. If the death registration is complete or reported data is of good quality for age and sex distribution of deceased persons, a life table can be constructed following routine steps; otherwise model life tables are used to construct a life table in the situation of incomplete or unavailability of death data.

Various methods are in existence for the construction of life tables. Generally, a complete set of age-specific mortality rates (ASDR) is required in constructing the life table. Nowadays, advanced computer software like population analysis spread sheet, MORTPAK etc. are available to construct life tables using age-specific death

rates or derived indicators (rate/ratios) of mortality. The US Bureau of the Census Population Analysis Spread sheets (PASEX) and the United Nations programme in the MORTPAK package are used in deriving the life table values. If the available information on death data is limited, it is recommended that model life tables be used. Programmes for constructing abridged life tables from model life tables are contained in the US Census Bureau Population Analysis Spread sheets (PASEX) and the programme MATCH in the United Nations' MORTPAK package.

8.15.1 Evaluation of mortality data

The National Population and Housing Census of 2011 collected death related data in household information of schedule one which was administered in each and every household i.e., used for complete enumeration. The data on deaths of usually residing members of households that occurred twelve months prior to the day of enumeration was collected in the complete enumeration of the census. During the census, information like sex of deceased person, cause of death, age of deceased person at the time of death and the condition of deceased female aged 15 to 49 years was collected from every household. The part of the census schedule given below was administered in the census of 2011.

Qn. 11 Has any member of this household died in the last 12 months?

1. Yes, [Numbers.....]

2. No → [Go to Qn.13]

Qn. 12 Record the following information about each deceased person:

S.N.	Sex	Cause of death	Age at death (in completed years)	If the deceased was female aged 15–49 years at the time of death, what was the condition?
1.	1. Male 2. Female	1. Pregnant 2. Giving birth 3. Within 6 weeks of the end of a pregnancy or childbirth 4. Others
2.	1. Male 2. Female	1. Pregnant 2. Giving birth 3. Within 6 weeks of the end of a pregnancy or childbirth 4. Others

Mortality data was also collected from schedule 2 in the section of questions regarding fertility of married women of ages 15-49 years. Information, like children ever born but dead during the age span of females of 15-49 years was collected which provides indirect estimates of mortality such as infant mortality rates, child mortality rates and under-five mortality rates.

From the reported death data (see Table 8.1), it is observed that the death pattern of Nepalese people is different in different age groups. The data pattern shows that high mortality was concentrated in younger and older ages in the census of 2011. Figure 8.1 shows the curve of the age specific mortality pattern in the census of 2011 indicating high mortality in old age, and relatively lower mortality in early ages making a J-shape curve. The age specific

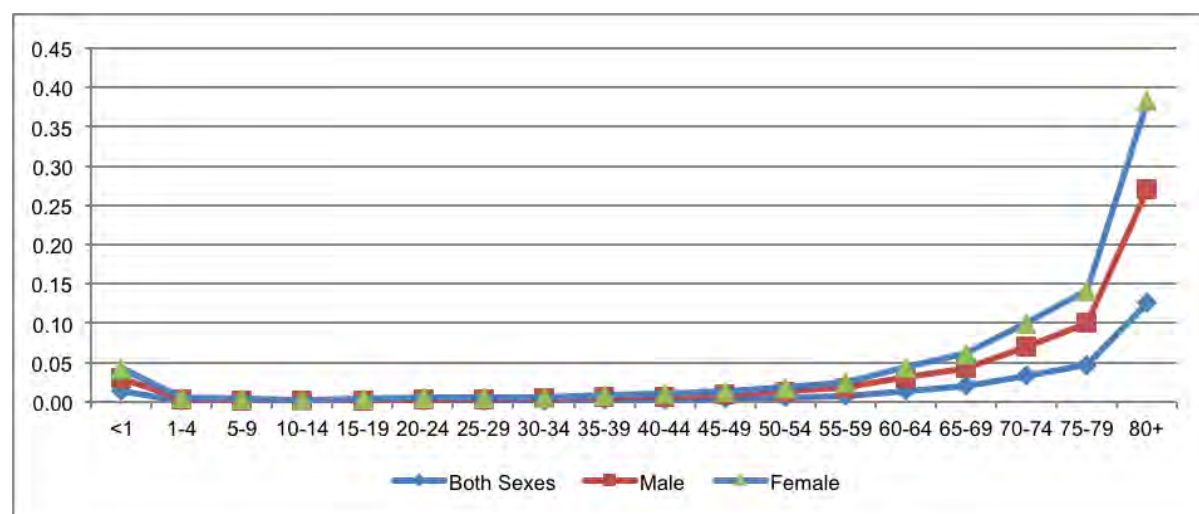
death pattern and curve illustrates that child mortality is noticeably low for both sexes. In the previous censuses of Nepal, the curves of ASDR were almost U-shaped, indicating high mortality in young as well as in old ages.

Table 8.1: Reported age-specific deaths-2011

Age (year)	Age-specific death ratio		
	Both Sexes	Male	Female
<1	0.0139	0.0156	0.0122
1-4	0.0017	0.0017	0.0017
5-9	0.0008	0.0009	0.0006
10-14	0.0006	0.0007	0.0005
15-19	0.0010	0.0011	0.0009
20-24	0.0014	0.0019	0.0011
25-29	0.0016	0.0021	0.0011
30-34	0.0017	0.0025	0.0012
35-39	0.0024	0.0033	0.0016
40-44	0.0030	0.0040	0.0020
45-49	0.0042	0.0052	0.0033
50-54	0.0060	0.0072	0.0047
55-59	0.0081	0.0098	0.0065
60-64	0.0141	0.0166	0.0118
65-69	0.0201	0.0230	0.0172
70-74	0.0330	0.0375	0.0284
75-79	0.0468	0.0531	0.0405
80+	0.1269	0.1442	0.1110

Source: National Population and Housing Census 2011

Figure 8.1 Reported Age-specific Deaths



Source: National Population and Housing Census 2011

From the age-specific death data, mortality indicators like CDR, U5MR, IMR are derived to evaluate deaths recorded in the census. Crude death rates (CDR) from direct estimates stand at 4.9 per thousand populations in 2011, which seems underreported in comparison to the value obtained from indirect estimates using census data. In the 2001 census, the crude death rate obtained using indirect techniques was 10.8 (Dangol, 2003). Such a high decline of CDR from 10.8 to 4.9 per 1,000 populations during a decade seems unrealistic. IMR and under-five mortality rates (U5MR) from direct estimates using reported ASDR stand at 31.01 and 46.71 per thousand live births respectively. From indirect estimates, the values of IMR and U5MR for the 2011 Census are reported as 40.5 and 52.9 per thousand live births respectively.

IMR and U5MR for males and females from direct estimates were also lower than indirect estimates. The Nepal Demographic and Health Survey 2010 reported a figure for IMR and U5MR as 46 and 54 per thousand live births respectively. It illustrates that the indicators from direct estimates using reported deaths from the census of 2011 are underestimated, which need to be adjusted. Table 8.2 shows the differentials in different mortality indicators as derived from direct estimates, the census analysis, and NDHS 2011. Due to the scenario of under-reported age-specific deaths, model life tables have been used for constructing the life table.

Table 8.2: Mortality indicators -2011

Mortality indicator*	Both Sexes			Male		Female	
	Direct estimates	Census analysis (indirect)	NDHS 2011	Direct estimates	Census analysis (indirect)	Direct estimates	Census analysis (indirect)
CDR	4.9	7.3	-	5.8	8.6	4.0	6.0
IMR	31.0	40.5	46	33.5	44.3	28.4	38.9
U5MR	46.7	52.9	54	48.5	54.8	44.6	50.7

Source: National Population and Housing Census 2011

8.15.2 Selection of model life table

Model life tables are intensively used in demographic estimation and population projection. Various families of model life tables are developed for such tasks. Model life tables that are mostly used are the UN General, the Coale-Demeny, the UN South Asian, the UN Far East Asian, the UN Latin American and the Chilean as mentioned above. In order to be able to decide which of these models is appropriate for Nepal, an idea of the age pattern of mortality is necessary. There is no reliable age distribution of mortality to use in Nepal, in deciding the most appropriate family table. Completeness in death reporting in Nepal in the 2011 census is still questionable.

A software named Spectrum (Spectrum 4.3, Future Institute) that is widely used by UN Agencies (UNICEF, WHO, UNSD, UNAIDS etc.) and other international statistical agencies for making population projections has determined the value of IMR for Nepal in 2010 round of census in various model life tables. Such values of IMR and corresponding values of life expectancy at birth are given in Table 8.3.

Table 8.3: IMR and life expectancy at birth from different model life tables

Model life table	Infant mortality rate (per 1000 live births)	Deviation from indirectly estimated value (40.5 per 1000 live births)	Life expectancy at birth (both sexes)	Deviation from indirectly estimated value (66.6 years)
UN General	49.2	-8.7	66.69	-0.09
UN Latin America	55.3	-14.8	66.56	0.04
UN Chile	62.3	-21.8	66.66	-0.06
UN South Asia	63.3	-22.8	66.67	0.07
UN East Asia	34.7	5.8	66.69	-0.09
Coale-Demeny West	41.6	-1.1	66.62	-0.02
Coale-Demeny North	41.7	-1.2	66.68	-0.08
Coale-Demeny East	50.8	-10.3	66.71	-0.11
Coale-Demeny South	67.8	-27.3	66.59	0.01

In Table 8.3, IMRs are shown for all families of the UN model life table and the four families of the Coale-Demeny model life tables corresponding to respective life expectancy at birth (e^o) for both sexes. From table 8.3, it is observed that IMRs for all model life tables deviate in some extent from the observed IMR for Nepal in 2011, obtained from indirect techniques using sex ratio at birth, mean age at child bearing, children ever born and children still surviving. The UN South Asian pattern of model life table has a maximum deviation (-22.8 per thousand live births) and Coale-Demeny West model life table has a minimum deviation (-1.1 per thousand live births) from the observed IMR.

Corresponding life tables were prepared to obtain life expectancy at birth using given IMR for each model life tables and compared with the observed life expectancy at births. All model life tables have provided insignificant deviation in life expectancy at birth from the observed value. Coale-Demeny West model life table has provided a very close value of life expectancy at birth with a minimum deviation of IMR. Therefore, Coale-Demeny West model life table is considered as the best fit for the mortality data of Nepal. In previous censuses, the Coale-Demeny West model life table was used to analyse mortality data in Nepal. The model life table has also been used in many demographic analyses during the past decades in many developing countries. This model life table has also been used as the input variable in the population projection for 2011-2031 of Nepal undertaken by the CBS.

8.15.3 Methodology of constructing life table

A life table for Nepal has been constructed using the application programme MATCH associated with the MORTPAK software package for the reference year 2011. The life tables for both males and females have been constructed independently applying the Coale-Demeny West model life table pattern. The basic input data is survivors under age five obtained through the U5MR. Instead of using the U5MR, the IMR may be used to obtain survivors under age one. The survivors to age one still tend to be at high risk of dying up to age five. If a person passes beyond age five, the probability of surviving increases. The parameters, like average number of children ever born and average number of children still surviving by age of mother, sex ratio at birth and mean year of child bearing have been used as input data for indirect estimation to derive the U5MR.

8.16 Life tables by sex

The abridged life tables for Nepalese males and females are constructed using a separate value of U5MR of both sexes, which is obtained using indirect techniques from the census 2011 data. The survivors under age five for males and females are independently used as input in the Coale-Demeny West model life table. The U5MR values

of 54.8 and 50.7 per thousand live births within a year are applied to derive survivors at age five for males and females respectively.

Table 8.4 is an abridged life table for Nepalese males in 2011, which depicts that a hypothetical cohort of 100,000 males born at the same time will survive as they progress through successive ages. On average, they will survive until age 65.5 years. A cohort of males aged one will survive until age 67.52, whereas a cohort of males aged five will survive to 64.22 or more years. So a male cohort that reaches age 60 will survive 16.05 more years and a cohort who reaches age 70 will survive 9.95 more years. These figures are obtained from the $e(x)$ column of the abridged life table.

Among a hypothetical cohort of 100,000 males that are born at the same time, 95,531 will reach age one and 94,520 will reach age five in existing U5MR. 73,725 persons will reach age 60 years and 24,600 persons will reach age 80 years. The survivors are obtained from the $l(x)$ column of the life table. By analysing the trend of survivorship in the graph, it is observed that the survivorship of male is increasing throughout the censuses following almost the same path as shown in Figure 8.2.

Table 8.5 shows the abridged life table for females for 2011. As the U5MR of females is lower than that of males, a hypothetical cohort of 100,000 females that are born at the same time will survive up to age 67.97 years. A cohort of females aged one will survive until age 69.74, whereas a cohort of females aged five will survive until 66.57 or more years. A female cohort that survives up to age 60 will survive 17.68 more years and a cohort of 70 will survive 10.88 more years.

In existing U5MR, out of 100,000 females, 96,078, 94,930, 77,669 and 31,864 persons will reach age one, five, sixty and eighty years respectively. It is observed in a graphical presentation of trends of survivorship from different censuses that the survivorship of the female population is increasing throughout the censuses following the same path for all censuses (Figure 8.3).

Table 8.4: Abridged life table for male, 2011

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.046	0.045	100000	4469	96295	0.95	6546085	65.46	0.17
1	0.003	0.011	95531	1011	379615	0.99	6449790	67.52	1.52
5	0.001	0.005	94520	491	471373	1.00	6070175	64.22	2.50
10	0.001	0.004	94029	386	469183	0.99	5598802	59.54	2.50
15	0.001	0.007	93644	687	466631	0.99	5129619	54.78	2.69
20	0.002	0.010	92957	959	462455	0.99	4662988	50.16	2.57
25	0.002	0.011	91998	970	457588	0.99	4200533	45.66	2.52
30	0.002	0.012	91028	1079	452516	0.99	3742945	41.12	2.57
35	0.003	0.015	89949	1352	446520	0.98	3290429	36.58	2.62
40	0.004	0.021	88597	1879	438570	0.97	2843909	32.10	2.65
45	0.007	0.032	86718	2789	427078	0.96	2405339	27.74	2.66
50	0.010	0.049	83929	4136	409981	0.94	1978261	23.57	2.66
55	0.016	0.076	79794	6069	384717	0.91	1568280	19.65	2.65
60	0.024	0.116	73725	8519	348452	0.86	1183563	16.05	2.63
65	0.038	0.174	65207	11336	298907	0.79	835111	12.81	2.61
70	0.060	0.261	53870	14051	235149	0.68	536204	9.95	2.57
75	0.095	0.382	39819	15219	160947	0.47	301055	7.56	2.49
80+	0.176	...	24600	24600	140108	...	140108.42	5.70	5.70

Source: National Population and Housing Census 2011

Table 8.5: Abridged life table for female

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0405	0.0392	100000	3922	96736	0.96	6797244	67.97	0.17
1	0.0030	0.0120	96078	1148	381397	0.99	6700508	69.74	1.46
5	0.0010	0.0048	94930	455	473513	1.00	6319111	66.57	2.50
10	0.0008	0.0037	94475	354	471490	1.00	5845599	61.87	2.50
15	0.0012	0.0060	94121	569	469277	0.99	5374108	57.10	2.67
20	0.0017	0.0084	93552	783	465882	0.99	4904831	52.43	2.60
25	0.0020	0.0100	92769	925	461593	0.99	4438949	47.85	2.57
30	0.0024	0.0118	91843	1080	456596	0.99	3977356	43.31	2.57
35	0.0029	0.0145	90763	1319	450641	0.98	3520760	38.79	2.59
40	0.0038	0.0188	89444	1684	443208	0.98	3070120	34.32	2.62
45	0.0053	0.0262	87761	2300	433367	0.97	2626912	29.93	2.64
50	0.0077	0.0379	85461	3238	419671	0.95	2193545	25.67	2.64
55	0.0114	0.0554	82223	4554	400415	0.93	1773874	21.57	2.65
60	0.0178	0.0856	77669	6645	372778	0.89	1373459	17.68	2.66
65	0.0290	0.1356	71024	9630	332471	0.83	1000681	14.09	2.65
70	0.0485	0.2173	61394	13343	275113	0.73	668210	10.88	2.61
75	0.0807	0.3369	48051	16187	200520	0.49	393097	8.18	2.55
80+	0.1655	...	31864	31864	192577	...	192577	6.04	6.04

Source: National Population and Housing Census 2011

8.17 Differential in life tables

8.17.1 Life table by urban-rural residence

Urban area in Nepal refers to the municipal entities of local bodies that are officially declared as municipal areas from the government decision based on Local Self-governance Act 2055. There were 58 municipal entities (1 metropolitan city, 4 sub-metropolitan cities, and 53 municipalities) existing at the time of the census in 2011. The life table analysis here, for the urban residence, is made taking into account these 58 municipal areas.

A hypothetical cohort of urban males that are born at the same time will survive up to age 70.1 years whereas females will survive up to 71 years of age (Table 8.6 and Table 8.7). If a cohort of 100,000 males and females is taken into account independently, only 96,975 males and 96,550 females will reach age five. The U5MR of urban females is higher than males and thereby survivorship at age five is higher for males than females. The U5MR for deriving survivorship at age five is used at 30.3 per thousand live births for urban males and 34.5 for females.

Table 8.6: Abridged life table for male in urban area

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0264	0.0258	100000	2577	97723	0.97	7010825	70.11	0.12
1	0.0012	0.0046	97423	448	388606	1.00	6913102	70.96	1.58
5	0.0006	0.0028	96975	269	484202	1.00	6524496	67.28	2.50
10	0.0005	0.0023	96706	225	482967	1.00	6040294	62.46	2.50
15	0.0009	0.0044	96481	426	481426	0.99	5557327	57.60	2.70
20	0.0012	0.0061	96055	590	478837	0.99	5075901	52.84	2.57
25	0.0012	0.0061	95465	584	475876	0.99	4597065	48.15	2.52
30	0.0014	0.0069	94881	655	472818	0.99	4121189	43.44	2.58
35	0.0018	0.0090	94226	847	469131	0.99	3648371	38.72	2.64
40	0.0027	0.0136	93380	1269	463964	0.98	3179239	34.05	2.69
45	0.0046	0.0226	92111	2079	455776	0.97	2715275	29.48	2.70
50	0.0075	0.0369	90032	3325	442499	0.95	2259499	25.10	2.70
55	0.0126	0.0610	86707	5290	421259	0.92	1817000	20.96	2.68
60	0.0201	0.0960	81418	7819	388755	0.88	1395741	17.14	2.66
65	0.0323	0.1502	73599	11053	341822	0.81	1006986	13.68	2.63
70	0.0524	0.2326	62546	14551	277681	0.71	665163	10.63	2.59
75	0.0847	0.3500	47995	16798	198382	0.49	387483	8.07	2.52
80+	0.1650	...	31196	31196	189100	...	189100	6.06	6.06

Source: National Population and Housing Census 2011

Table 8.7: Abridged life table for female in urban area

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0288	0.0281	100000	2810	97568	0.97	7100096	71.00	0.13
1	0.0017	0.0066	97190	641	387146	0.99	7002529	72.05	1.48
5	0.0006	0.0030	96550	286	482033	1.00	6615382	68.52	2.50
10	0.0005	0.0024	96264	230	480741	1.00	6133349	63.71	2.50
15	0.0008	0.0039	96033	370	479302	1.00	5652608	58.86	2.67
20	0.0011	0.0054	95663	513	477091	0.99	5173305	54.08	2.61
25	0.0013	0.0066	95151	625	474242	0.99	4696215	49.36	2.58
30	0.0016	0.0081	94525	765	470789	0.99	4221972	44.66	2.60
35	0.0021	0.0106	93761	990	466447	0.99	3751183	40.01	2.62
40	0.0029	0.0146	92771	1354	460663	0.98	3284736	35.41	2.64
45	0.0044	0.0216	91416	1974	452456	0.97	2824074	30.89	2.66
50	0.0065	0.0321	89442	2874	440474	0.96	2371617	26.52	2.66
55	0.0099	0.0482	86568	4171	423088	0.94	1931143	22.31	2.66
60	0.0157	0.0757	82397	6237	397457	0.90	1508055	18.30	2.67
65	0.0262	0.1234	76160	9396	358846	0.84	1110598	14.58	2.66
70	0.0447	0.2021	66764	13492	301823	0.74	751752	11.26	2.63
75	0.0758	0.3200	53272	17047	224826	0.50	449929	8.45	2.56
80+	0.1609	...	36225	36225	225103	...	225103	6.21	6.21

Source: National Population and Housing Census 2011

In rural areas, a hypothetical cohort of males that are born at the same time will survive up to age 64.9 years and females will survive up to 67.6 years of age (Table 8 and Table 9). Only 94,148 rural males among a cohort of 100,000 males will reach age five, whereas 94,704 females will reach age five. The U5MR for obtaining survivorship at age five is used at 58.52 per thousand live births for males and 52.96 per thousand live births for females. The survivorship at ages five and average longevity of both urban males and females is higher than that of rural males and females. The difference between male and female survivorship in urban areas is narrower than that of rural areas.

Table 8.8: Abridged life table for male in rural area

Age	m(x,n)	q(x,n)	l(x)	d(x,n)	L(x,n)	S(x,n)	T(x)	e(x)	a(x,n)
0	0.0490	0.0471	100000	4714	96125	0.95	6489588	64.90	0.18
1	0.0030	0.0119	95286	1138	378311	0.99	6393463	67.10	1.51
5	0.0011	0.0056	94148	525	469427	1.00	6015153	63.89	2.50
10	0.0009	0.0044	93623	410	467089	0.99	5545725	59.23	2.50
15	0.0015	0.0077	93213	719	464400	0.99	5078636	54.48	2.69
20	0.0022	0.0109	92493	1005	460029	0.99	4614236	49.89	2.57
25	0.0022	0.0112	91489	1020	454920	0.99	4154207	45.41	2.53
30	0.0025	0.0126	90469	1136	449580	0.99	3699288	40.89	2.57
35	0.0032	0.0159	89333	1416	443281	0.98	3249707	36.38	2.61
40	0.0045	0.0221	87916	1945	435005	0.97	2806426	31.92	2.65
45	0.0067	0.0332	85972	2855	423177	0.96	2371421	27.58	2.66
50	0.0103	0.0504	83116	4193	405767	0.94	1948244	23.44	2.66
55	0.0161	0.0775	78923	6118	380235	0.90	1542477	19.54	2.65
60	0.0249	0.1174	72805	8544	343773	0.86	1162241	15.96	2.63
65	0.0384	0.1759	64261	11306	294226	0.78	818468	12.74	2.60
70	0.0604	0.2632	52955	13938	230816	0.68	524242	9.90	2.56
75	0.0954	0.3849	39017	15016	157405	0.46	293426	7.52	2.49
80+	0.1765	...	24001	24001	136022	...	136022	5.67	5.67

Source: National Population and Housing Census 2011

Table 8.9: Abridged life table for female in rural area

Age	m(x,n)	q(x,n)	l(x)	d(x,n)	L(x,n)	S(x,n)	T(x)	e(x)	a(x,n)
0	0.0420	0.0406	100000	4062	96636	0.95	6759918	67.60	0.17
1	0.0032	0.0129	95938	1234	380616	0.99	6663282	69.45	1.46
5	0.0010	0.0051	94704	479	472322	1.00	6282666	66.34	2.50
10	0.0008	0.0040	94225	373	470192	1.00	5810344	61.66	2.50
15	0.0013	0.0063	93852	593	467873	0.99	5340152	56.90	2.66
20	0.0018	0.0087	93259	814	464340	0.99	4872280	52.24	2.60
25	0.0021	0.0104	92445	959	459890	0.99	4407940	47.68	2.57
30	0.0025	0.0122	91486	1117	454718	0.99	3948050	43.15	2.57
35	0.0030	0.0150	90369	1357	448575	0.98	3493332	38.66	2.59
40	0.0039	0.0193	89012	1722	440951	0.98	3044758	34.21	2.61
45	0.0054	0.0267	87290	2335	430929	0.97	2603807	29.83	2.63

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
50	0.0079	0.0386	84956	3276	417052	0.95	2172878	25.58	2.64
55	0.0115	0.0562	81680	4590	397610	0.93	1755826	21.50	2.65
60	0.0181	0.0867	77090	6682	369787	0.89	1358216	17.62	2.66
65	0.0293	0.1369	70408	9639	329353	0.83	988429	14.04	2.65
70	0.0489	0.2189	60768	13305	272054	0.73	659076	10.85	2.61
75	0.0812	0.3386	47463	16072	197835	0.49	387023	8.15	2.54
80+	0.1659	...	31391	31391	189188	...	189188	6.03	6.03

Source: National Population and Housing Census 2011

8.17.2 Life tables by ecological belts

Nepal is physically divided into three ecological regions i.e. Mountain, Hill and Tarai. The life tables for the three ecological belts are constructed using U5MRs to obtain survivorship to age five. These three belts have different scenarios of U5MRs, thereby survivorship and death patterns obtained from gender specific life tables are different for each ecological belt. Table 8.10, Table 8.11, Table 8.12, Table 8.13, Table 8.14, and Table 8.15 show the life tables for males and females by Mountain, Hill and Tarai respectively. For Mountain, Hill and Tarai U5MRs are 72.50, 42.35 and 64.22 per thousand live births for males and 66.02, 38.00 and 60.82 per thousand live births for females respectively.

A hypothetical cohort of 100,000 males in Mountain, Hill and Tarai that are born at the same time, will survive up to age 62.82 years, 67.61 years and 64.04 years respectively. In the case of the female cohort, they will survive up to age 65.49 years, 70.25 years and 66.32 years respectively for Mountain, Hill and Tarai. Of a hypothetical cohort of 100,000 males in Mountain, Hill and Tarai regions with the same birth date, only 94,372, 96,492 and 94,914 persons will reach age one, 92,750, 95,765 and 93,578 persons will reach age five, 69,405, 77,268 and 71,400 will reach age 60 years and 21,888, 27,368 and 23,114 males will reach age 80 years respectively. More females than males will survive to each respective age. In Mountain, Hill and Tarai, 95,129, 96,936 and 95,451 females will reach age one, 93,398, 96,200, and 93,918 females will reach age five, 73,820, 81,228 and 75,106 will reach age 60 years and 28,811, 34,967 and 29,808 persons will reach age 80 years respectively.

(a) Mountain

Table 8.10: Life table for male in mountain

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0589	0.0563	100000	5628	95522	0.94	6282103	62.82	0.20
1	0.0043	0.0172	94372	1622	373406	0.99	6186581	65.56	1.48
5	0.0014	0.0070	92750	651	462123	0.99	5813175	62.68	2.50
10	0.0011	0.0054	92099	499	459249	0.99	5351052	58.10	2.50
15	0.0018	0.0091	91600	837	456058	0.99	4891803	53.40	2.68
20	0.0026	0.0129	90763	1169	450980	0.99	4435745	48.87	2.58
25	0.0027	0.0134	89594	1202	444997	0.99	3984765	44.48	2.53
30	0.0031	0.0152	88391	1341	438693	0.98	3539768	40.05	2.57
35	0.0038	0.0189	87050	1646	431308	0.98	3101076	35.62	2.60
40	0.0052	0.0257	85405	2199	421816	0.97	2669768	31.26	2.63

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
45	0.0076	0.0373	83206	3101	408729	0.95	2247951	27.02	2.65
50	0.0114	0.0553	80105	4428	390105	0.93	1839222	22.96	2.65
55	0.0172	0.0829	75676	6271	363577	0.90	1449118	19.15	2.64
60	0.0263	0.1240	69405	8605	326559	0.85	1085541	15.64	2.62
65	0.0403	0.1835	60800	11160	277181	0.78	758982	12.48	2.60
70	0.0627	0.2718	49640	13494	215217	0.67	481801	9.71	2.56
75	0.0985	0.3944	36146	14258	144817	0.46	266584	7.38	2.48
80+	0.1798	...	21888	21888	121767	...	121767	5.56	5.56

Source: National Population and Housing Census 2011

Table 8.11: Life table for females in mountain

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0507	0.0487	100000	4871	96084	0.94	6549163	65.49	0.20
1	0.0046	0.0182	95129	1731	376092	0.99	6453079	67.84	1.44
5	0.0013	0.0066	93398	618	465444	0.99	6076987	65.07	2.50
10	0.0010	0.0052	92780	480	462698	0.99	5611543	60.48	2.50
15	0.0016	0.0079	92300	734	459774	0.99	5148845	55.78	2.65
20	0.0022	0.0108	91566	987	455453	0.99	4689071	51.21	2.59
25	0.0026	0.0127	90579	1148	450093	0.99	4233618	46.74	2.56
30	0.0030	0.0148	89430	1324	443930	0.98	3783525	42.31	2.57
35	0.0036	0.0178	88107	1571	436729	0.98	3339596	37.90	2.58
40	0.0045	0.0223	86535	1931	428040	0.97	2902866	33.55	2.60
45	0.0061	0.0298	84604	2524	417023	0.96	2474826	29.25	2.62
50	0.0087	0.0424	82081	3480	402168	0.95	2057803	25.07	2.63
55	0.0125	0.0608	78601	4781	381734	0.92	1655635	21.06	2.64
60	0.0195	0.0930	73820	6869	352946	0.88	1273901	17.26	2.65
65	0.0310	0.1444	66951	9668	311910	0.82	920955	13.76	2.64
70	0.0512	0.2280	57283	13063	255082	0.72	609045	10.63	2.60
75	0.0842	0.3485	44220	15409	183082	0.48	353963	8.00	2.53
80+	0.1686	...	28811	28811	170881	...	170881	5.93	5.93

Source: National Population and Housing Census 2011

(b) Hill

Table 8.12: Life table for males in hill

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0362	0.0351	100000	3508	96995	0.96	6761202	67.61	0.14
1	0.0019	0.0075	96492	728	384185	0.99	6664207	69.06	1.55
5	0.0008	0.0040	95765	383	477868	1.00	6280021	65.58	2.50

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
10	0.0007	0.0032	95382	310	476137	1.00	5802153	60.83	2.50
15	0.0012	0.0059	95072	563	474063	0.99	5326016	56.02	2.69
20	0.0017	0.0083	94509	782	470645	0.99	4851953	51.34	2.57
25	0.0017	0.0084	93727	786	466690	0.99	4381308	46.75	2.53
30	0.0019	0.0095	92941	882	462566	0.99	3914618	42.12	2.57
35	0.0024	0.0122	92059	1119	457641	0.99	3452052	37.50	2.63
40	0.0036	0.0177	90941	1609	450949	0.98	2994412	32.93	2.67
45	0.0056	0.0278	89332	2487	440888	0.96	2543463	28.47	2.68
50	0.0089	0.0438	86845	3805	425380	0.94	2102575	24.21	2.68
55	0.0144	0.0695	83039	5771	401708	0.91	1677195	20.20	2.66
60	0.0226	0.1071	77268	8277	366820	0.87	1275488	16.51	2.64
65	0.0355	0.1637	68992	11293	318052	0.80	908667	13.17	2.62
70	0.0566	0.2488	57698	14354	253706	0.70	590615	10.24	2.58
75	0.0903	0.3686	43344	15976	176882	0.47	336909	7.77	2.51
80+	0.1710	...	27368	27368	160027	...	160027	5.85	5.85

Source: National Population and Housing Census 2011

Table 8.13: Life table for females in hill

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0315	0.0306	100000	3064	97371	0.97	7024718	70.25	0.14
1	0.0019	0.0076	96936	736	385885	0.99	6927348	71.46	1.47
5	0.0007	0.0033	96200	321	480196	1.00	6541463	68.00	2.50
10	0.0005	0.0027	95879	258	478749	1.00	6061267	63.22	2.50
15	0.0009	0.0043	95621	411	477148	0.99	5582518	58.38	2.67
20	0.0012	0.0061	95210	584	474657	0.99	5105369	53.62	2.61
25	0.0015	0.0075	94626	706	471420	0.99	4630712	48.94	2.58
30	0.0018	0.0089	93920	838	467580	0.99	4159293	44.29	2.59
35	0.0023	0.0115	93083	1069	462861	0.99	3691712	39.66	2.61
40	0.0032	0.0157	92014	1441	456663	0.98	3228851	35.09	2.64
45	0.0046	0.0228	90573	2067	448010	0.97	2772188	30.61	2.65
50	0.0069	0.0337	88506	2985	435523	0.96	2324178	26.26	2.65
55	0.0103	0.0502	85521	4293	417556	0.94	1888654	22.08	2.66
60	0.0163	0.0785	81228	6379	391260	0.90	1471098	18.11	2.67
65	0.0270	0.1270	74849	9502	352005	0.84	1079838	14.43	2.66
70	0.0459	0.2068	65347	13513	294625	0.74	727833	11.14	2.62
75	0.0774	0.3254	51834	16867	217982	0.50	433208	8.36	2.56
80+	0.1625	...	34967	34967	215226	...	215226	6.16	6.16

Source: National Population and Housing Census 2011

(c) Tarai

Table 8.14: Life table for males in tarai

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0531	0.0509	100000	5086	95874	0.94	6403975	64.04	0.19
1	0.0035	0.0141	94914	1336	376315	0.99	6308102	66.46	1.50
5	0.0012	0.0062	93578	577	466448	0.99	5931787	63.39	2.50
10	0.0010	0.0048	93001	447	463890	0.99	5465339	58.77	2.50
15	0.0017	0.0083	92555	768	460994	0.99	5001449	54.04	2.68
20	0.0024	0.0117	91787	1073	456331	0.99	4540455	49.47	2.57
25	0.0024	0.0121	90714	1095	450862	0.99	4084124	45.02	2.53
30	0.0027	0.0136	89619	1221	445124	0.98	3633262	40.54	2.57
35	0.0034	0.0171	88398	1511	438376	0.98	3188138	36.07	2.61
40	0.0048	0.0236	86887	2051	429595	0.97	2749762	31.65	2.64
45	0.0071	0.0349	84836	2958	417241	0.96	2320167	27.35	2.65
50	0.0107	0.0524	81878	4293	399320	0.93	1902926	23.24	2.65
55	0.0166	0.0797	77585	6185	373362	0.90	1503606	19.38	2.65
60	0.0255	0.1201	71400	8574	336651	0.85	1130245	15.83	2.63
65	0.0392	0.1791	62827	11250	287150	0.78	793594	12.63	2.60
70	0.0613	0.2668	51576	13759	224315	0.68	506444	9.82	2.56
75	0.0966	0.3888	37818	14704	152134	0.46	282129	7.46	2.49
80+	0.1778	...	23114	23114	129996	...	129996	5.62	5.62

Source: National Population and Housing Census 2011

Table 8.15: Life table for females in tarai

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0472	0.0455	100000	4549	96299	0.95	6632077	66.32	0.19
1	0.0041	0.0161	95451	1533	377895	0.99	6535778	68.47	1.45
5	0.0012	0.0060	93918	563	468182	0.99	6157883	65.57	2.50
10	0.0009	0.0047	93355	438	465680	0.99	5689701	60.95	2.50
15	0.0015	0.0073	92917	678	462995	0.99	5224021	56.22	2.65
20	0.0020	0.0100	92239	919	458986	0.99	4761026	51.62	2.60
25	0.0024	0.0118	91320	1074	453985	0.99	4302041	47.11	2.56
30	0.0028	0.0138	90247	1242	448212	0.98	3848056	42.64	2.57
35	0.0034	0.0167	89004	1488	441426	0.98	3399844	38.20	2.58
40	0.0043	0.0211	87517	1850	433153	0.98	2958417	33.80	2.60
45	0.0058	0.0286	85667	2451	422522	0.97	2525264	29.48	2.63
50	0.0083	0.0409	83217	3402	408043	0.95	2102742	25.27	2.64
55	0.0121	0.0590	79815	4709	387987	0.93	1694699	21.23	2.65
60	0.0189	0.0905	75106	6799	359560	0.89	1306712	17.40	2.65
65	0.0303	0.1415	68307	9662	318737	0.82	947151	13.87	2.64
70	0.0503	0.2245	58645	13164	261697	0.72	628414	10.72	2.61
75	0.0830	0.3446	45481	15672	188802	0.49	366717	8.06	2.54
80+	0.1675	...	29808	29808	177915	...	177915	5.97	5.97

Source: National Population and Housing Census 2011

8.18 Differential in life table values by variation in method

The values of life table components vary depending on the different methods of construction. Life tables for both males and females are also constructed using reported age-specific mortality data from the census of 2011 without making an adjustment (see Annexes 1–4). Direct estimates of IMR for males is 33.5 per 1000 live births while it is 28.4 per 1000 live births for females in 2011. These values of IMR are used in constructing life tables. Table 8.16 shows that the expectation of life at birth for males is 70.3 years and for females 75.5 years, which is much higher than that of the previous census in 2001 (60.1 for males and 60.7 for females). Significant differences exist in life table values, basically survivors and expectation of life at birth, when different model life table patterns are used.

Table 8.16: Variation in life table values by different methods

Method/Input data	Using IMR				Using U5MR			
	Survivors/ 100000		1e_0		Survivors/ 100000		1e_0	
	${}^2l_{m,80}$	${}^3flx_{80}$	Male	Female	${}^2mlx_{80}$	${}^3flx_{80}$	Male	Female
Reported ASDR	41439	52747	70.3	75.5	40797	51847	69.2	74.2
Using Model Life Tables								
CD-West	24645	31972	65.5	68.1	24600	31864	65.5	67.9
CD-North	30474	36232	65.4	68.1	32248	37942	66.7	69.3
CD-East	14210	36630	66.7	70.4	25097	33840	66.2	69.6
CD-South	39928	53099	71.4	75.5	38628	50635	70.8	74.4
UN General	15586	40359	66.9	71.1	29210	23921	67.3	71.1
UN South Asian	21658	47762	70.2	74.3	37215	47300	70.9	74.1

Note: 1e_0 indicates life expectancy at birth in year
 ${}^2mlx_{80}$ denotes male survivors at age 80 and
 ${}^3flx_{80}$ denotes female survivors at age 80.

As presented in table 8.16, whether IMR or U5MR are used as inputs to life tables, the variation is much smaller than the effect of using different models for life table calculations. There is a noticeable difference in expectation of life and survivorship up to age 80 years obtained using IMR and U5MR from reported death data of the census of 2011. If a Coale-Domeny West model life table is used there is almost a similar figure of life expectancy at birth and survivorship up to age 80 years either obtained from the IMR or from the U5MR. Values from other model life tables vary to some extent if IMR and U5MR are used separately.

8.19 Trend of survivors (l_x)

Figure 2 and Figure 3 present the trend of survivors for males and female at various reference years. It shows the pattern of more survivors at all ages in 2011 than previous years, indicating the longevity of lives of people in recent years and indicates an improvement in health conditions in the country. This also indicates that the number of people in old age has increased in later years, showing the longevity of life of aged persons compared to earlier years. The number of persons age 80+ was 12,262 males in 1981 while it was 24,600 males in 2011 on the basis of the same number of persons at age zero (100,000), known as the radix. Similarly, the number of survivors for females of a hypothetical cohort is more than that of males in 2011.

Figure 8.2: Trend of survivors for male

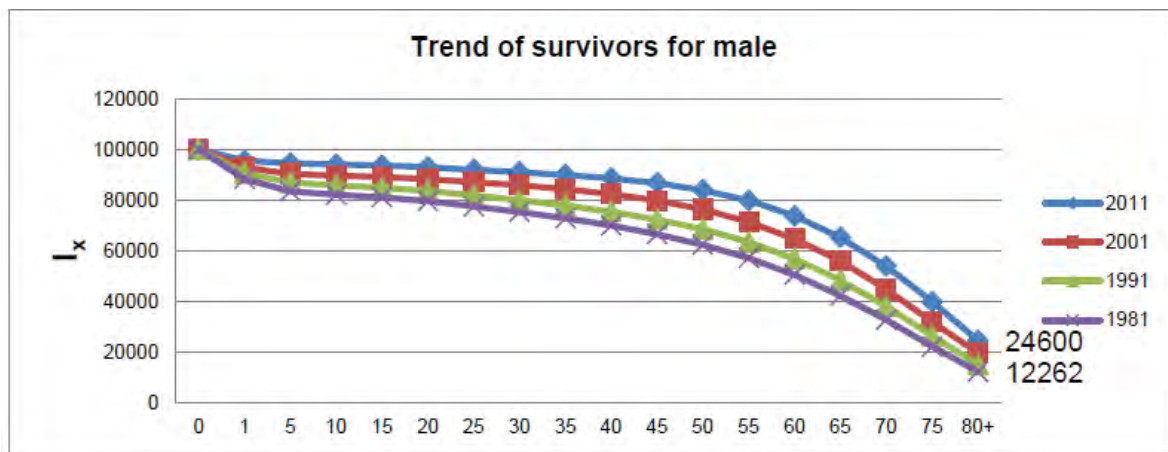
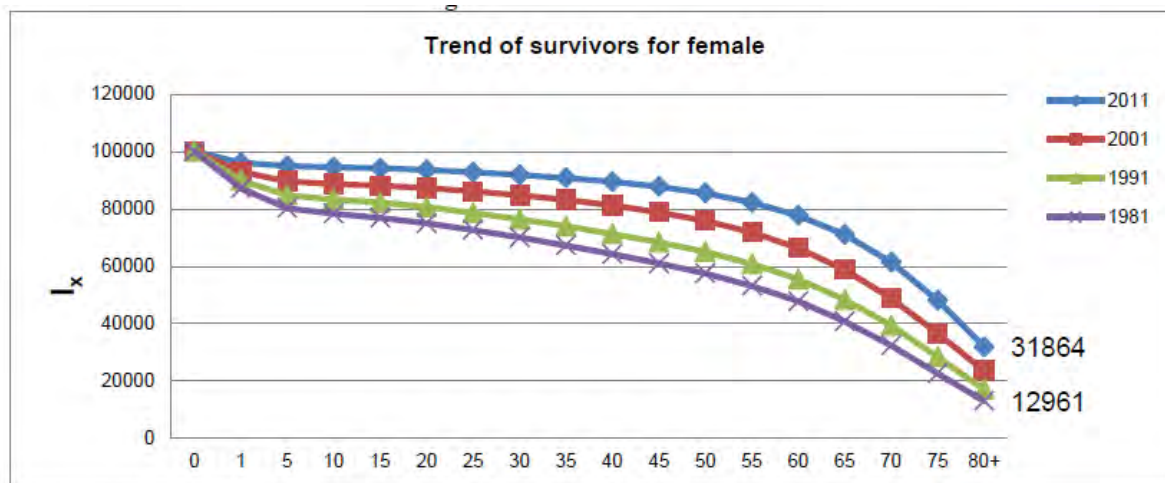


Figure 8.3: Trend of survivors for female



8.20 Trend of deaths (${}_n d_x$)

The trend of deaths over three decades has been sketched for males and females which indicate that the number of deaths at young ages have been decreasing over the years for both sexes based on the hypothetical cohort (see Figure 8.4 and Figure 8.5). The number of deaths for males at infant age has declined from 9,456 in 1991 to 4,469 in 2011 out of a hypothetical 100,000 births. This is about a 53% decline of mortality at infancy for males, while it was about a 61% decline for females out of a hypothetical 100,000 births.

Figure 8.4: Trend of deaths for male

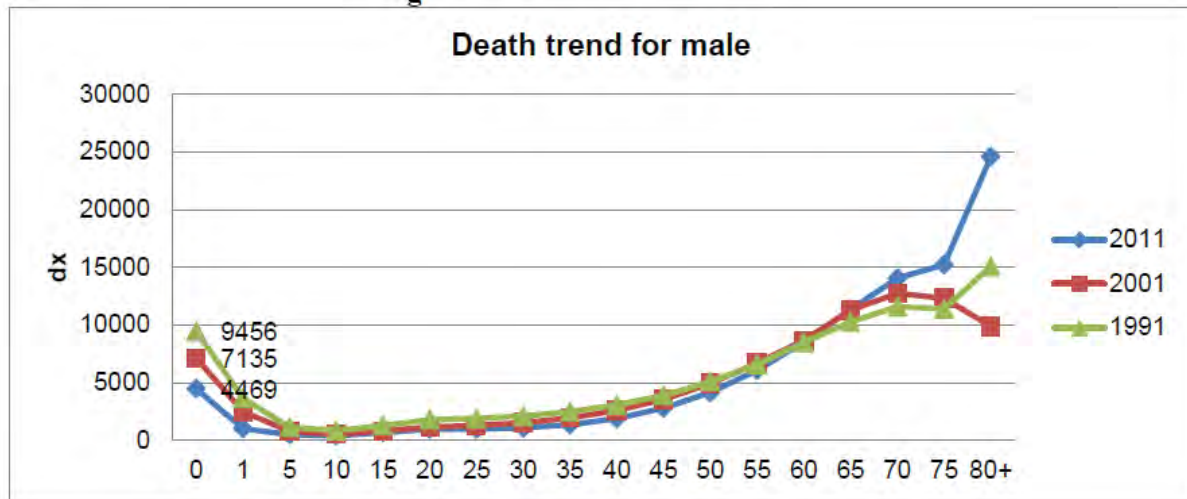
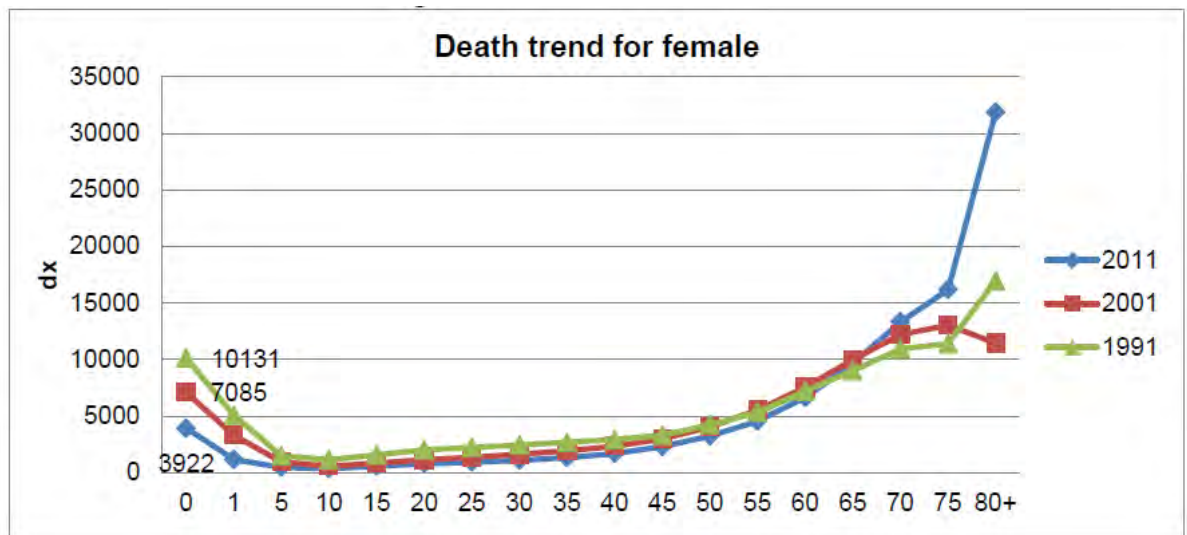


Figure 8.5: Trend of deaths for female



8.21 Pattern of life expectancy

Life expectancy, also called expectation of life, of a hypothetical cohort is calculated using various indirect demographic techniques. The steps to calculate expectation of life are the same steps required in the construction of a life table. Modern software is used to derive expectation of life from life tables as well. The US Bureau of the Census spread sheets and the associated application programmes in the MORTPAK package are generally used if the data quality is sound. If the available information is limited, model life tables can be used. The software MORTPAK provides expectation of life indirectly using input variables such as sex ratio at birth, mean age of child bearing, children ever born, still surviving and dead.

The value of expectation of life for Nepal from census 2011 data is obtained by using the Coale-Demeny West model life table from the MATCH programme in MORTPAK. Expectation of life for total population is obtained from indirect techniques that use sex ratio at birth and expectation of life for males and females separately.

Spatial and gender differentials in expectation of life at birth are calculated using U5MRs of respective regions and sex. The life expectancy at birth for urban-rural residence, ecological belts, development regions, eco-development regions and districts are obtained using the same methodology adopted for calculating life expectancy at birth at the national level using population census 2011 data. In all sub-national areas, gender differential is calculated. The result represents that the females have a higher life expectancy at birth than that of males in all residences and regions.

8.21.1 Intercensal variation in life expectancy at birth

The life expectancy at birth of Nepalese population in 2011 stands at 66.6 years for both sexes, 65.5 years for males and 67.9 years for females (Table 8.17). As females have lower U5MRs, they have 2.3 more years of life expectancy at birth than males. Prior to 1971, life expectancy at birth of females exceeded that of males but thereafter, up to 1991, males' expectation of life at birth exceeded females. Before the 2011 census, the difference between life expectancy at birth of males and females appeared narrower. The National Population Census 2001 data shows only a 0.6 years gap between male and female figures whereas the 1991 census data reported a 1.50 years difference between males and females' expectation of life.

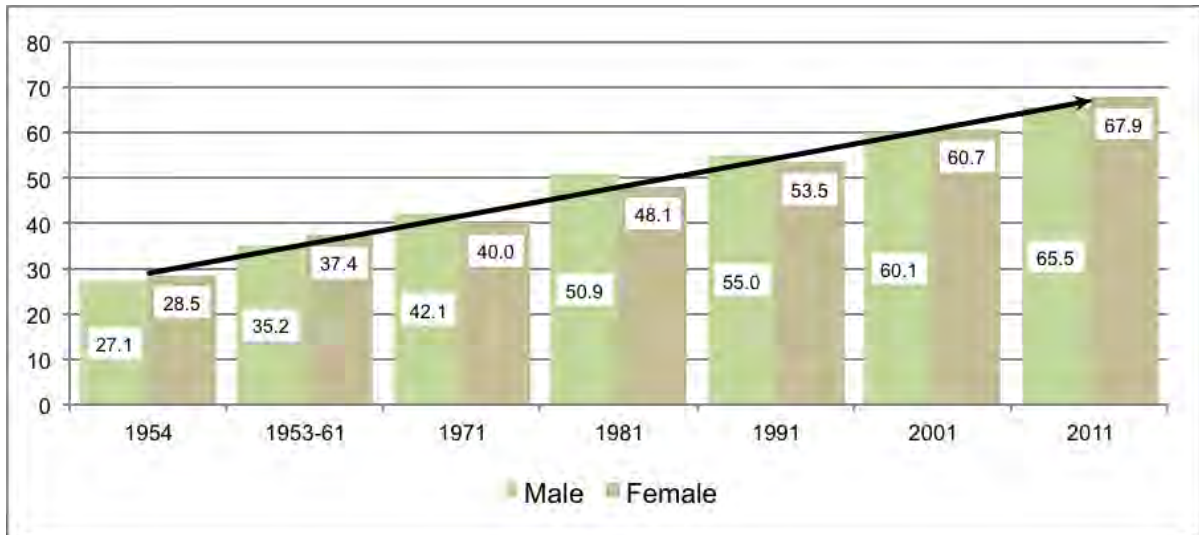
Table 8.17: Life expectancy at birth from 1952/54-2011

S.N.	Year/duration of estimation	Life expectancy at birth (years)			Source
		Male	Female	Both sexes*	
1	1954	27.1	28.5	27.78	Vaidhyanathan and Gaige, 1973
2	1953-61	35.2	37.4	36.27	CBS, 1974
3	1971	42.1	40.0	41.08	Gubhaju, 1982
4	1981	50.9	48.1	49.53	CBS, 1986
5	1991	55.0	53.5	54.27	CBS, 1993
6	2001	60.1	60.7	60.39	Dangol, 2003
7	2011	65.5	67.9	66.6	CBS, 2014

* Calculated from sex ratio at birth and life expectancy at birth of both males and females using indirect technique.

Expectation of life at birth for both genders, males and females, has gradually been increasing over the years from 1954 to 2011. The expectation of life at birth in 1954 for males and females was 27.1 years and 28.5 years respectively. This figure has increased to 65.5 for males and 67.9 years for females in 2011. From 2001 to 2011, it has increased by 5.4 years and 7.2 years for males and females respectively. Expectation of life for both sexes has increased from 27.78 years in 1954 to 66.6 years in 2011 i.e. an 140% increase in life expectancy at birth is observed. Such a significant change in life expectancy at birth is due to increasing modern health facilities that have reduced death rates, especially infant and child death rates during recent years.

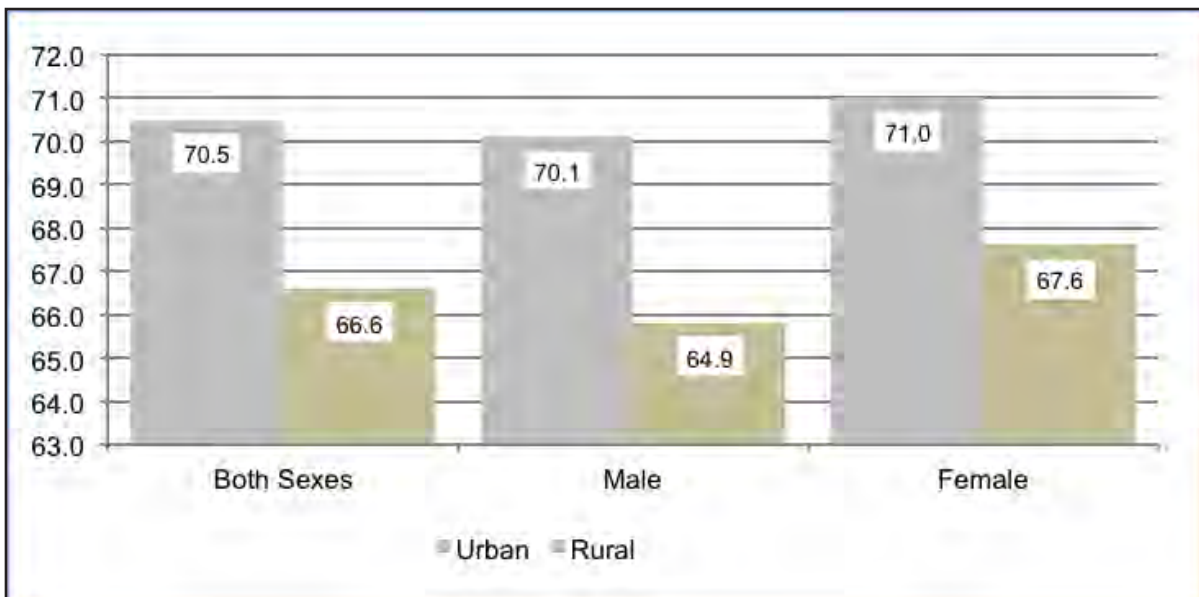
Figure 8.6: in Life expectancy at birth (in years) from 1954 to 2011



8.21.2 Life expectancy at birth by urban-rural residence

Life expectancy at birth for urban males is 70.10 years and for females is 71.00 years in 2011 with a difference of less than one year (Figure 8.7). The values of life expectancy for rural males and females are 64.9 and 67.6 years respectively.

Figure 8.7: Life expectancy at birth by urban-rural residence

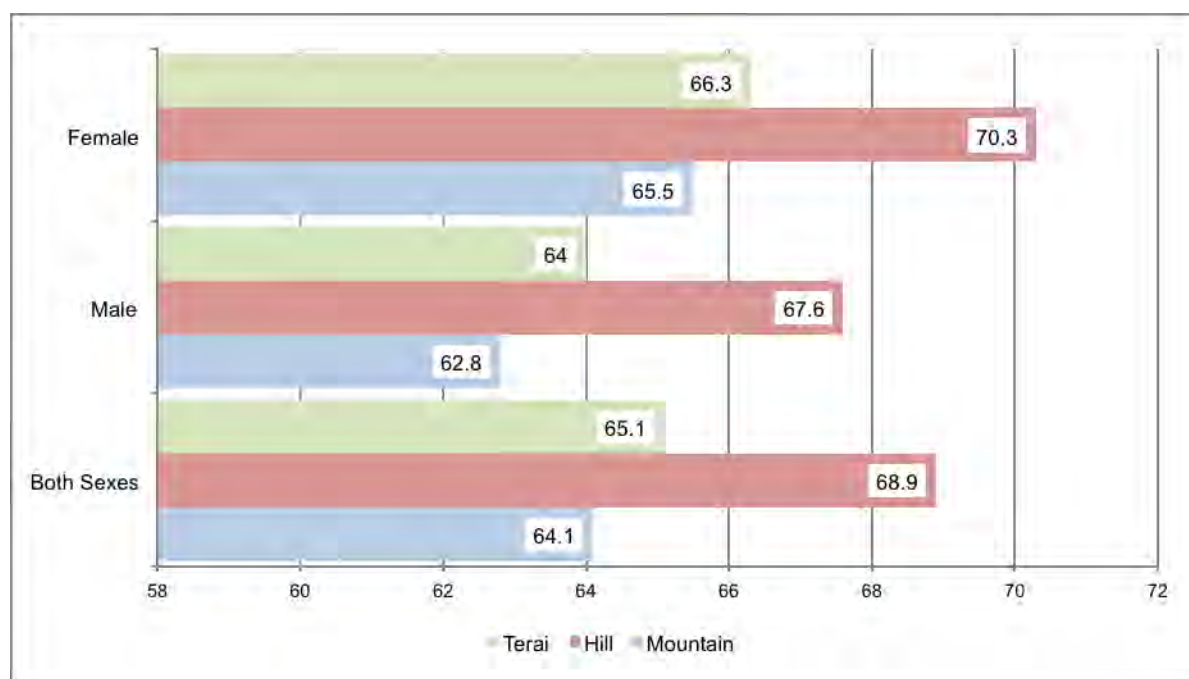


The difference between male and female expectation of life is wider in rural than urban areas. Rural males have 2.7 years less expectation of life than females. For both sexes, urban people have 3.9 more years of life expectancy than rural people.

8.21.3 Life expectancy at birth by ecological regions

Among three ecological belts in Nepal, Hill region has the highest expectation of life at birth for both males and females whereas Mountain region has the lowest (Figure 8.8). In all regions, females have higher values than males. In Mountain and Hill regions, females have 2.7 more years of life expectancy at birth than males. In Terai, 2.3 years more value is reported for females than males.

Figure 8.8: Life expectancy at birth by ecological regions



8.21.4 Life expectancy at birth by development region

By analysing expectation of life at birth for development regions, Western Development Region has a maximum value and Mid-western Development Region a minimum for both males and females (Table 8.18). The difference between males' and females' expectation of life at birth is highest in Far-western Development Region and lowest in Western Development Region. In Far-western Development Region, females have 3.4 more years of life expectancy at birth than males. Western Development Region females have only 1.4 year more value than males.

Table 8.18: Life expectancy at birth by Development Region

Region	Life expectancy at birth (year)		
	Both sexes	Male	Female
Nepal	66.6	65.5	67.9
Eastern Dev. Region	67.2	66.1	68.5
Central Dev. Region	67.3	66.6	68.0
Western Dev. Region	68.6	67.9	69.4
Mid-Western Dev. Region	64.5	62.9	66.3
Far-Western Dev. Region	65.5	63.8	67.3

8.21.5 Life expectancy at birth by eco-development region

Expectation of life at birth can also be analysed for the 15 eco-development regions that are formed by nesting parts of the five development regions into respective parts of the three ecological belts. Among these 15 eco-development regions, Western Hill has the highest and Mid-western Mountain has the lowest expectation of life at birth for both sexes. (Table 8.19). In all eco-development regions, females have higher values than males. The gap between males' and females' expectation of life at birth is highest in Eastern Hill (3.8 years) and lowest in Far-western Tarai (0.7 years).

Table 8.19: Life expectancy at birth by eco-development region

Region	Life expectancy at birth (year)			Region	Life expectancy at birth (year)		
	Both sexes	Male	Female		Both sexes	Male	Female
Nepal	66.6	65.5	67.9	Western Hill	71.1	70.3	72.1
Eastern Mountain	67.2	66.2	68.2	Western Tarai	65.4	64.8	66.1
Eastern Hill	68.4	66.6	70.4	Mid-Western Mountain	60.8	59.4	62.3
Eastern Tarai	66.7	65.8	67.6	Mid-Western Hill	65.2	63.4	67.1
Central Mountain	69.5	68.3	70.7	Mid-Western Tarai	65.0	63.9	66.1
Central Hill	70.9	70.2	71.7	Far-Western Mountain	62.1	60.6	63.6
Central Tarai	63.5	62.3	64.8	Far-Western Hill	67.2	65.4	69.1
Western Mountain	70.2	69.2	71.3	Far-Western Tarai	67.2	66.9	67.6

8.21.6 Life Expectancy at Birth by Districts

Table 8.20 presents the life expectancy for both sexes by districts. Among 75 districts in Nepal, Bhaktapur has a maximum value of life expectancy at birth and Dolpa has a minimum value of life expectancy for both sexes. For males and females, both districts i.e. Bhaktapur and Dolpa stand at the highest and lowest figure respectively. The life expectancy values in most of the districts (sixty) lie between 60 and 70 years. The life expectancy is lower than 60 years in six districts while the value is higher than 70 years for both sexes in the remaining 9 districts. In the case of males, seven districts have a figure less than 60 years and six districts have a figure higher than 70 years. For females' expectation of life at birth, 19 districts have a figure higher than 70 years and only one district (Dolpa) has a figure lower than 60 years.

Table 8.20: Life expectancy at birth by districts

Region	Life expectancy at birth (year)			Region	Life expectancy at birth (year)		
	Both sexes	Male	Female		Both sexes	Male	Female
Taplejung	65.1	64.1	66.2	Syangja	70.1	69.0	71.3
Panchthar	66.2	64.6	67.9	Kaski	73.5	73.2	73.9
Ilam	67.5	66.5	68.5	Manang	69.9	68.4	71.2
Jhapa	67.3	66.6	68.1	Mustang	69.6	69.1	69.9
Morang	67.3	65.9	68.8	Myagdi	69.6	69.1	70.2
Sunsari	67.2	67.0	67.4	Parbat	72.7	72.2	73.2
Dhankuta	69.1	67.8	70.5	Baglung	68.3	67.6	69.1

Region	Life expectancy at birth (year)			Region	Life expectancy at birth (year)		
	Both sexes	Male	Female		Both sexes	Male	Female
Terhathum	68.7	67.8	69.7	Gulmi	70.6	69.7	71.6
Sankhuwasabha	69.3	69.2	69.5	Palpa	71.3	71.0	71.7
Bhojpur	68.8	67.8	69.9	Nawalparasi	67.8	67.2	68.4
Solukhumbu	66.7	65.0	68.4	Rupandehi	68.0	67.4	68.6
Okhaldhunga	66.8	65.1	68.7	Kapilbastu	61.3	60.9	61.7
Khotang	67.0	65.2	68.8	Arghakhanchi	69.4	69.5	69.3
Udayapur	68.3	66.6	70.1	Pyuthan	65.8	64.6	67.1
Saptari	64.8	64.0	65.6	Rolpa	64.8	63.5	66.1
Siraha	65.6	64.6	66.7	Rukum	64.9	63.7	66.2
Dhanusa	62.9	61.7	64.2	Salyan	65.3	64.0	66.7
Mahottari	63.5	62.3	64.7	Dang	66.3	65.1	67.6
Sarlahi	62.9	61.6	64.3	Banke	63.8	63.5	64.1
Sindhuli	67.8	66.5	69.3	Bardiya	64.6	63.4	65.9
Ramechhap	68.8	67.4	70.1	Surkhet	66.5	65.2	67.8
Dolakha	69.8	68.7	70.9	Dailekh	65.2	64.4	66.0
Sindhupalchok	69.3	68.4	70.2	Jajarkot	61.7	60.5	63.0
Kavrepalanchok	70.7	70.5	70.9	Dolpa	57.7	56.7	58.7
Lalitpur	73.2	72.9	73.6	Jumla	62.7	61.6	63.8
Bhaktapur	74.2	74.0	74.5	Kalikot	59.7	59.2	60.3
Kathmandu	73.0	72.5	73.6	Mugu	59.5	58.9	60.2
Nuwakot	69.1	67.8	70.5	Humla	58.9	57.9	60.0
Rasuwa	67.4	65.8	69.1	Bajura	59.5	58.3	60.8
Dhading	68.8	67.9	69.7	Bajhang	60.4	59.2	61.7
Makwanpur	68.0	67.3	68.7	Achham	65.0	63.9	66.2
Rautahat	59.6	58.4	60.9	Doti	65.0	64.1	65.9
Bara	64.6	63.5	65.7	Kailali	66.2	65.0	67.4
Parsa	67.3	66.6	68.0	Kanchanpur	66.1	65.0	67.3
Chitawan	69.2	68.9	69.5	Dadeldhura	64.4	63.1	65.7
Gorkha	68.9	68.0	69.9	Baitadi	64.2	63.0	65.5
Lamjung	69.5	68.3	70.9	Darchula	64.6	63.3	65.8
Tanahu	69.8	69.2	70.4				

8.21.7 Expectation of life at different ages

Expectation of life and survivorship of population in different ages differs as age patterns change. As age increases from exact one year, expectation of life decreases successively. In applied demography, the only ${}_nq_x$ function that is frequently used is ${}_1q_0$, representing the probability of dying between birth and exact age one; this is usually called the IMR. If a person passes through the risk of infant death, his/her probability of surviving increases in comparison to life expectancy at birth (e_0). For 2011, expectation of life at age one for both males and females is higher than their expectation of life at birth. A hypothetical cohort of males of exact age one is expected to survive 67.5 more years and the same cohort of female survives to 69.7 years (Table 21). The difference between life expectancy at birth and at age one is 2 years for males and 1.7 years for females.

Table 8.21: Expectation of life at different ages

Region	Sex	Age							
		0	1	5	60	65	70	75	80
Nepal	Both sexes	66.6	68.6	65.3	16.8	13.4	10.4	7.9	5.9
	Male	65.5	67.5	64.2	16.1	12.8	10.0	7.6	5.7
	Female	68.0	69.7	66.6	17.7	14.1	10.9	8.2	6.0
Urban-rural									
Urban	Both sexes	70.5	71.5	67.9	17.7	14.1	10.9	8.3	6.1
	Male	70.1	71.0	67.3	17.1	13.7	10.6	8.1	6.1
	Female	71.0	72.1	68.5	18.3	14.6	11.3	8.5	6.2
Rural	Both sexes	66.2	68.2	65.1	16.7	13.4	10.4	7.8	5.8
	Male	64.9	67.1	63.9	16.0	12.7	9.9	7.5	5.7
	Female	67.6	69.5	66.3	17.6	14.0	10.9	8.2	6.0
Ecological Belt									
Mountain	Both sexes	64.1	66.7	63.8	16.4	13.1	10.2	7.7	5.7
	Male	62.8	65.6	62.7	15.6	12.5	9.7	7.4	5.6
	Female	65.5	67.8	65.1	17.3	13.8	10.6	8.0	5.9
Hill	Both sexes	68.9	70.2	66.7	17.3	13.8	10.7	8.1	6.0
	Male	67.6	69.1	65.6	16.5	13.2	10.2	7.8	5.9
	Female	70.3	71.5	68.0	18.1	14.4	11.1	8.4	6.2
Tarai	Both sexes	65.1	67.4	64.4	16.6	13.2	10.3	7.7	5.8
	Male	64.0	66.5	63.4	15.8	12.6	9.8	7.5	5.6
	Female	66.3	68.5	65.6	17.4	13.9	10.7	8.1	6.0
Development Region									
Eastern	Both sexes	67.2	69.0	65.7	16.9	13.5	10.5	7.9	5.9
	Male	66.1	67.9	64.6	16.2	12.9	10.0	7.6	5.7
	Female	68.5	70.1	66.9	17.8	14.2	10.9	8.2	6.1
Central	Both sexes	67.3	69.0	65.7	17.0	13.5	10.5	7.9	5.9
	Male	66.6	68.3	64.9	16.3	13.0	10.1	7.7	5.8
	Female	68.0	69.8	66.6	17.7	14.1	10.9	8.2	6.1
Western	Both sexes	68.6	70.0	66.5	17.2	13.7	10.6	8.0	6.0
	Male	67.9	69.3	65.8	16.6	13.2	10.3	7.8	5.9
	Female	69.4	70.8	67.4	17.9	14.3	11.0	8.3	6.1
Mid-western	Both sexes	64.5	67.0	64.1	16.5	13.2	10.2	7.7	5.8
	Male	62.9	65.6	62.7	15.7	12.5	9.7	7.4	5.6
	Female	66.3	68.4	65.5	17.4	13.9	10.7	8.1	6.0
Far-western	Both sexes	65.5	67.7	64.6	16.6	13.3	10.3	7.8	5.8
	Male	63.8	66.3	63.3	15.8	12.6	9.8	7.4	5.6
	Female	67.3	69.2	66.2	17.6	14.0	10.8	8.1	6.0
Eco-development Region									
Eastern Mountain	Both Sexes	67.2	68.9	65.6	16.9	13.5	10.5	7.9	5.9
	Male	66.2	68.0	64.6	16.2	12.9	10.0	7.6	5.7
	Female	68.2	69.9	66.7	17.7	14.1	10.9	8.2	6.1

Region	Sex	Age							
		0	1	5	60	65	70	75	80
Eastern Hill	Both sexes	68.4	69.9	66.4	17.2	13.7	10.6	8.0	6.0
	Male	66.6	68.3	64.9	16.3	13.0	10.1	7.7	5.8
	Female	70.4	71.6	68.1	18.1	14.5	11.2	8.4	6.2
Eastern Tarai	Both sexes	66.7	68.6	65.3	16.8	13.4	10.4	7.9	5.9
	Male	65.8	67.8	64.4	16.1	12.9	10.0	7.6	5.7
	Female	67.6	69.5	66.4	17.6	14.0	10.9	8.2	6.0
Central Mountain	Both sexes	69.5	70.7	67.1	17.4	13.9	10.8	8.1	6.0
	Male	68.3	69.6	66.0	16.7	13.3	10.3	7.9	5.9
	Female	70.7	71.8	68.3	18.2	14.5	11.2	8.4	6.2
Central Hill	Both sexes	70.9	71.8	68.1	17.8	14.2	11.0	8.3	6.2
	Male	70.2	71.0	67.3	17.2	13.7	10.7	8.1	6.1
	Female	71.7	72.6	69.0	18.5	14.7	11.4	8.5	6.3
Central Tarai	Both sexes	63.5	66.2	63.5	16.3	13.0	10.1	7.6	5.7
	Male	62.3	65.1	62.4	15.6	12.4	9.7	7.3	5.5
	Female	64.8	67.3	64.7	17.2	13.7	10.6	8.0	5.9
Western Mountain	Both sexes	71.8	72.5	68.8	18.1	14.4	11.2	8.4	6.2
	Male	71.4	72.0	68.2	17.5	14.0	10.9	8.3	6.2
	Female	72.2	73.0	69.4	18.6	14.9	11.5	8.6	6.3
Western Hill	Both sexes	71.9	68.3	63.4	14.2	11.0	8.3	6.2	6.2
	Male	70.2	71.0	67.3	17.2	13.7	10.7	8.1	6.1
	Female	72.1	72.9	69.2	18.6	14.8	11.4	8.6	6.3
Western Tarai	Both sexes	65.4	67.6	64.6	16.6	13.3	10.3	7.8	5.8
	Male	64.8	67.1	63.9	16.0	12.7	9.9	7.5	5.7
	Female	66.1	68.3	65.4	17.4	13.8	10.7	8.0	6.0
Mid-Western Mountain	Both sexes	60.8	64.2	61.9	15.9	12.7	9.9	7.4	5.6
	Male	59.4	63.0	60.7	15.1	12.1	9.4	7.1	5.4
	Female	62.3	65.4	63.1	16.7	13.3	10.3	7.8	5.8
Mid-Western Hill	Both sexes	65.2	67.5	64.5	16.6	13.2	10.3	7.8	5.8
	Male	63.4	66.0	63.0	15.7	12.6	9.8	7.4	5.6
	Female	67.1	69.1	66.1	17.5	14.0	10.8	8.1	6.0
Mid-Western Tarai	Both sexes	65.0	67.3	64.3	16.5	13.2	10.2	7.7	5.8
	Male	63.9	66.4	63.3	15.8	12.6	9.8	7.5	5.6
	Female	66.1	68.3	65.4	17.4	13.8	10.7	8.0	6.0
Far-Western Mountain	Both Sexes	62.1	65.1	62.6	16.1	12.8	10.0	7.5	5.6
	Male	60.6	63.9	61.4	15.3	12.2	9.5	7.2	5.5
	Female	63.6	66.3	63.9	16.9	13.5	10.4	7.9	5.8
Far-Western Hill	Both sexes	67.2	69.0	65.7	16.9	13.5	10.5	7.9	5.9
	Male	65.4	67.5	64.2	16.0	12.8	10.0	7.6	5.7
	Female	69.1	70.6	67.3	17.9	14.3	11.0	8.3	6.1
Far-Western Tarai	Both sexes	65.7	67.8	64.7	16.7	13.3	10.3	7.8	5.8
	Male	63.9	66.3	63.3	15.8	12.6	9.8	7.5	5.6
	Female	67.6	69.4	66.3	17.6	14.0	10.8	8.2	6.0

A hypothetical cohort of both sexes which passes through under-five mortality risk and enters into exact age five will survive 65.3 additional years. Such a cohort of males and females will survive 64.2 and 66.6 more years. As the age of a hypothetical cohort increases, the probability of dying increases successively, and thereby there is a decrease in expectation of life. If a cohort passes all risks of mortality to age 60 or enters into 60 years of age, that cohort is expected to live 16.8 more years. A male cohort of age sixty will survive 16.1 additional years and a female cohort will survive 17.7 additional years. Cohorts of population who attain exact age sixty are the group of pension holders in Nepal if they are in domain of attaining a pension i.e. in public service. Therefore, the government can make pension plans by evaluating their expectation of life for the rest of their years.

If a hypothetical cohort of people of both sexes attains the older age of 70, it is expected to survive 10.4 more years; a male cohort is expected to survive 10 years more and a female cohort will survive about 11 years more. In Nepal a cohort of population of age seventy is treated as the persons eligible to gain old-age allowance from the government. It will be useful for the government to make plans to allocate annual resources for this allowance by analysing such cohort's expectation of life for the rest of their years. Finally, a hypothetical cohort of age 80, if it passes all the risks of mortality until this age, is expected to survive about 6 more years. Male and female cohorts of age 80 will survive 5.7 and 6 more years respectively.

Regarding sub-national area, urban people have high expectations of life in different ages than rural. People of hilly regions have the highest and people of mountain regions have the lowest values of expectation of life at all ages. The population of both sexes of Western Development Region has the highest and the Mid-western Development Region the lowest figure for all ages. In the case of eco-development regions, people of Western Mountain have the maximum value of expectation of life and the people of Mid-western Mountain region have the minimum expectation of life at all ages.

8.21.8 Longitudinal trends of life expectancy

Despite the lack of quality mortality data in Nepal, life tables have been constructed using indirect techniques (model life tables) for various purposes, for example projecting population or deriving mortality and survival rates.

Figure 8.9 and Figure 8.10 present life tables for males and females for 1953-1961, 1961-1971, 1981, 1991, 2001, and 2011. Both trends show the significant improvement in life expectancies. Life expectancy at birth for males has increased from 35.15 years in 1961 to 65.46 years in 2011 with a gain of 30.31 years in half a century. Similarly life expectancy at birth for females has increased from 38.9 years in 1961 to 67.97 years in 2011 with a gain of 29.07 years in half a century. Both figures show a higher imbalance of life expectancies in earlier periods compared to recent years where life expectancies at birth were lower than at other ages from 1961 to 2001. This imbalance was due to the higher infant and young age mortality rates in these periods.

Figure 8.9: Trend of life expectancy for male at different ages

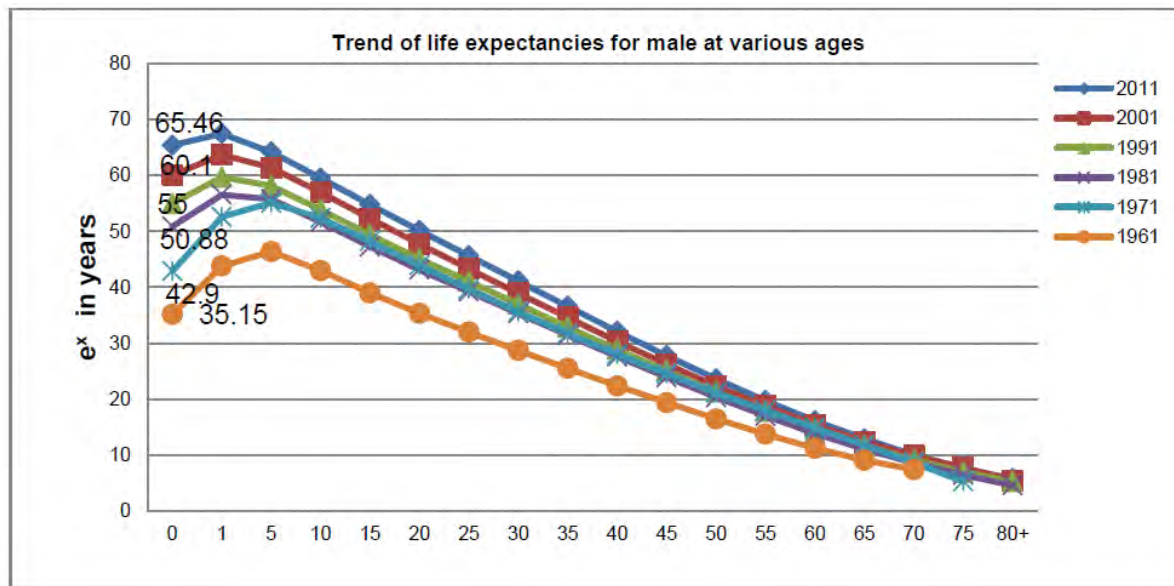
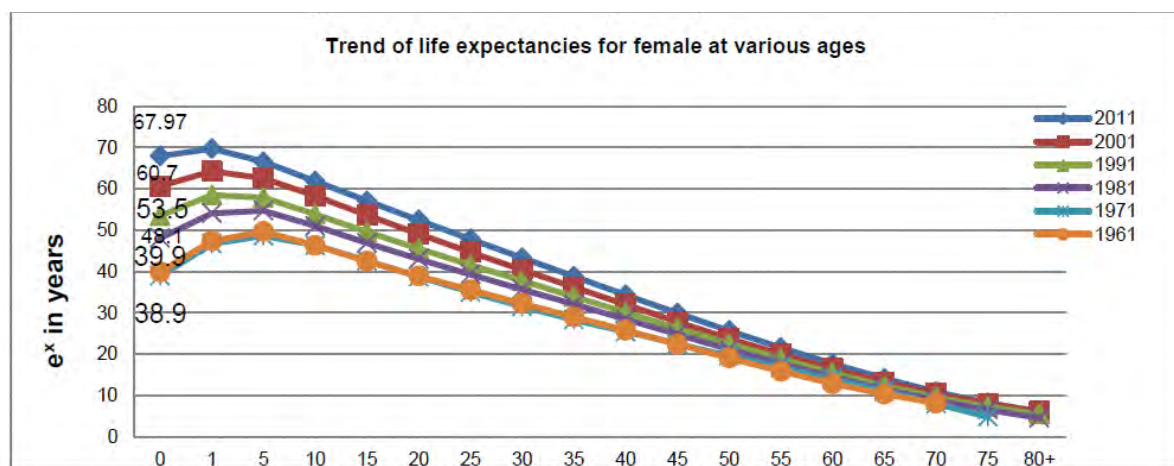


Figure 8.10: Trend of life expectancy for female at different ages



8.21.9 Imbalance of life expectancy at birth and other ages

In principle, life expectancy at birth should be higher than life expectancy at any other age. For developed countries and industrialised countries, the e_0 calculated from period life tables is currently higher than the life expectancy at any other age (because of low infant mortality rates), and the course of life expectancy by age decreases monotonically in each subsequent age group. However, lower life expectancy at birth than that of age one has been observed historically in Nepal, due to high infant and child mortality rates. As in many developing countries, life expectancy at birth has been found to be lower than other ages, sometimes up to age five years. This diminishes the feature of life expectancy at birth as an indicator of longevity.

Table 8.22: Life expectancies at age group (1-4) years, e_1 by geographic regions, 2011

Area	Male	Female	Difference in e_1
Nepal	67.52	69.74	2.22
Urban	70.96	72.05	1.09
Rural	67.1	69.45	2.35
Mountain	65.56	67.84	2.28
Hill	69.06	71.46	2.4
Tarai	66.46	68.47	2.01

The imbalance of life expectancy at birth can be observed in the life tables derived for various regions of Nepal. Table 8.22 reveals the life expectancy at age (1-4) years as denoted by e_1 for different regions of Nepal. If e_1 's are compared with respective e_0 's, life expectancies at birth have been found to be lower than age group (1-4) years. Nationally, life expectancy at age group (1-4) is 2.06 years for males and 1.77 years for females more than that of age 0. It is observed that in these populations, the maximum life expectancy occurs not at birth but at a later age. This imbalance in the life table usually disappears at a higher age, which is expected to be at age one or age one group. High infant and early childhood mortality result in lower values of life expectancy at birth than at other ages. Thus, changes in mortality in the first year of life significantly affect life expectancy at birth, and it has been recommended that the time series of e_0 alone is not suited for studying the length of life in aging populations.

Table 8.23: Life expectancy at age group (60-64) years by region 2011

Area	Male	Female	Difference in e_0
Nepal	16.05	17.68	1.63
Urban	17.14	18.3	1.16
Rural	15.96	17.62	1.66
Mountain	15.64	17.26	1.62
Hill	16.51	18.11	1.6
Tarai	15.83	17.4	1.57

The current life table of Nepal shows the expectation of life at old ages. The life expectancy at age (60-64) years for males and females is 16.05 years and 17.68 years respectively. This figure is higher in urban than rural for both sexes as indicated in Table 8.23. Among the geographic regions, life expectancies at old age, i.e. at age group 60-64 years was lowest with a value of 15.64 years for males, and 17.26 years for females in Mountain region compared to other regions.

Figure 8.11 and Figure 8.12 show the trend of imbalance of life expectancy at birth and at age group (1-4) years. The gap of imbalance was greater in the 1953-61 period while it is approaching crossover in 2011. It shows that the IMR has been decreasing over the years (See Figure 8.11 and Figure 8.12). As indicated by Table 8.22, life expectancy at birth for both sexes were lower than other age groups in the earlier periods. The life expectancy value was higher in the age group (5-9) years until 2001, while it was lower than life expectancy at birth in 2011. This shows declining mortality in younger ages in recent years.

Figure 8.11: Trend of life expectancy imbalance for male 1961-2011

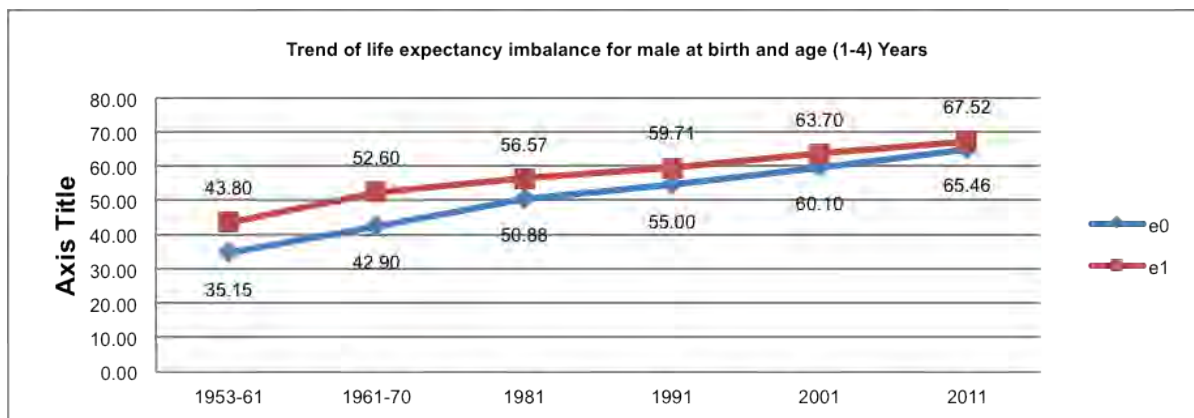


Figure 8.12: Trend of imbalance of life expectancy for female at birth and age group (1-4) Years

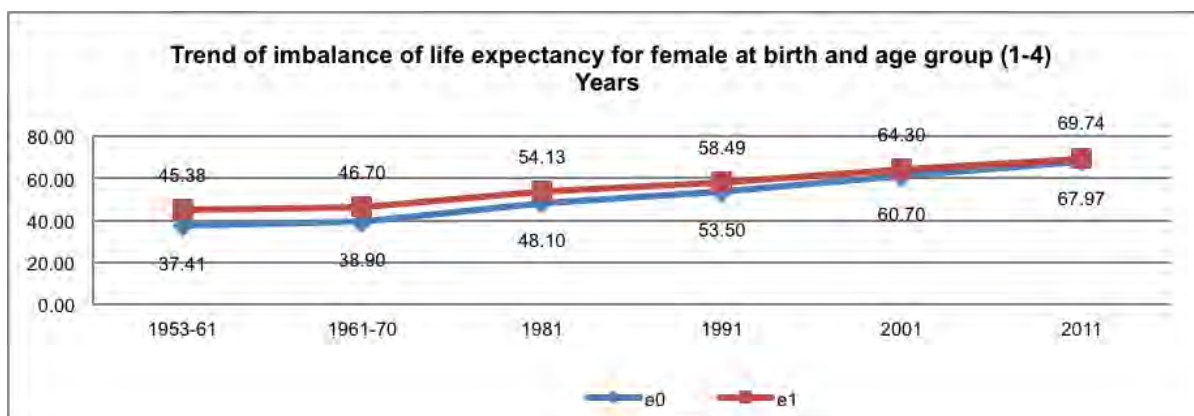


Table 8.24: Life expectancies at various ages (1961-2011)

Year	Male				Female			
	e0	e1	e5	e60	e0	e1	e5	e60
1953-61	35.15	43.80	46.38	11.14	37.41	45.38	48.21	12.63
1961-1971	37.04	45.72	47.78	11.54	37.04	47.42	49.69	12.83
1961-1970	42.90	52.60	55.10	14.80	38.90	46.70	48.60	13.90
1981	50.88	56.57	55.76	13.82	48.10	54.13	54.73	14.42
1991	55.00	59.71	58.15	14.49	53.50	58.49	57.90	15.41
2001	60.10	63.70	61.40	15.40	60.70	64.30	62.60	16.50
2011	65.46	67.52	64.22	16.05	67.97	69.74	66.57	17.68

8.22 Nexus between expectation of life and other demographic indicators

8.22.1 Changes in mortality pattern and life expectancy at birth

Subsequent changes can be seen in some mortality indicators and expectation of life at birth throughout the censuses (Table 8.25). As there is an improvement in mortality indicators, life expectancy at birth increases noticeably. Crude death rates (CDR) in the 1981 census were 13.5 per thousand populations and this has declined to 7.3 in 2011. Over three decades, there is an 84.9% decline in the CDR. Along with the CDR, the IMR and the U5MR also declined in later years. IMR declined to 40.5 per thousand live births in the 2011 census from 117 in 1981, with a reduction of 76.5 deaths per 100 births. The U5MR for the 2001 census was estimated at 91.2 per thousand live births whereas it was estimated at 52.9 per thousand live births in 2011. During a decade it declined by 38.3 deaths per 1000 births. On the other hand, life expectancy at birth increased to 66.6 years in 2011 census from 49.5 years in the 1981 census. Over thirty years it increased by 17.1 years. From such an intercensal change pattern, it is observed that there is a negative relation between the change in mortality indicators (CDR, IMR, U5MR) and life expectancy at birth i.e. the lower the deaths rates the higher the life expectancy at birth and vice versa.

Table 8.25: Mortality indicators and life expectancy at birth

Census year	Crude death rate (per 1000 population)*	Infant mortality rate (per 1000 live births)*	Under-five mortality rate (per 1000 live births)*	Life expectancy at birth (year)**
1981	13.5	117.0	-	49.5
1991	13.3	97.0	-	54.3
2001	10.3	64.0	91.2	60.4
2011	7.3	40.5	52.9	66.6

Note: * Population Monograph 2003, CBS

** Indirect estimate using life expectancy at birth of male and female as well as sex ratio at birth.

8.22.2 Change in age pattern of population and life expectancy at birth

A change in the age pattern of the population and expectation of life at birth is observed throughout the censuses in Nepal. The proportion of elder population of age 60 years and over of the total population in 1981 was reported as 5.7%, whereas in the 2011 census it increased to 8.1%. Between the four censuses, the proportion of the population aged 60 years and over increased by 2.4%. The proportion of the male and female population aged 60 years and over increased by 2.3% and 2.5% respectively. Similarly, the proportion of the total population aged 75 years and over has increased by 0.7% between the 1981 and 2011 censuses. The proportion of the male and female population aged 75 years and over increased by 0.7% and 0.8% respectively.

The old-age dependency ratio (ratio of elders of age 60 years and over to the active aged population of 15-59 years) has reached 12 in 2011 from 10.78 in 1981, with an increase of 11.3% over this period. The index of ageing (ratio of elders of age 60 years and over to the population of 0-14 years) is another indicator representing ageing of the population, which has increased throughout the censuses. In 1981, the value of the index of ageing was 13.8, it reached 23.3 in 2011, an increase of 68.8%

All age related indicators are an increasing trend i.e. ageing of population is increasing, life expectancy at birth has increased noticeably from 1981 to 2011 by 17.1 years. There is also a positive relation between an increase in ageing and life expectancy at birth i.e. increases in the old age population and life expectancy at birth follow the same direction.

Table 8.26: Age-pattern of population and life expectancy at birth from 1981-2011

Census year	Sex	Proportion of population 60+ years (%)*	Proportion of population 75+ years (%)*	Old-age dependency ratio (60+/15-59)*	Index of ageing*	Life expectancy at birth (year)**
1981	Both sexes	5.7	1.0	10.8	13.8	49.5
	Male	5.9	1.0	11.2	13.9	50.9
	Female	5.5	0.9	10.3	13.6	48.1
1991	Both sexes	5.5	0.9	11.2	13.7	54.3
	Male	5.6	0.9	11.6	13.5	55.0
	Female	5.4	1.0	10.8	13.8	53.5
2001	Both sexes	6.5	1.3	12.0	16.7	60.4
	Male	6.6	1.3	12.3	16.3	60.1
	Female	6.4	1.3	11.7	16.7	60.7
2011	Both sexes	8.1	1.7	14.3	23.3	66.6
	Male	8.2	1.7	15.1	22.6	65.5
	Female	8.0	1.7	13.6	24.0	67.9

Note: * Population Monograph 2003, CBS

** Indirect estimate using life expectancy at birth of male and female as well as sex ratio at birth.

8.23 Projection of life expectancy at birth

The projection is made using the same methodology adopted for the population projection of Nepal 2011 to 2031 (see Figure 8.13 and Table 8.27). It is observed that the life expectancy value will progressively increase over the next two decades. By 2031, life expectancy at birth for both sexes is projected to reach 71.9 years from 66.6 years in 2011. The change in expectation of life for the coming 20 years will be 5.3 years whereas over the past 20 years (1991-2011) the expectation of life has increased by 12.3 years. The pace of increase for the next 20 years is appreciably slower than for the previous 20 years. Globally, demographers accept that the expectation of life will slowly increase after it has achieved 60 years and above.

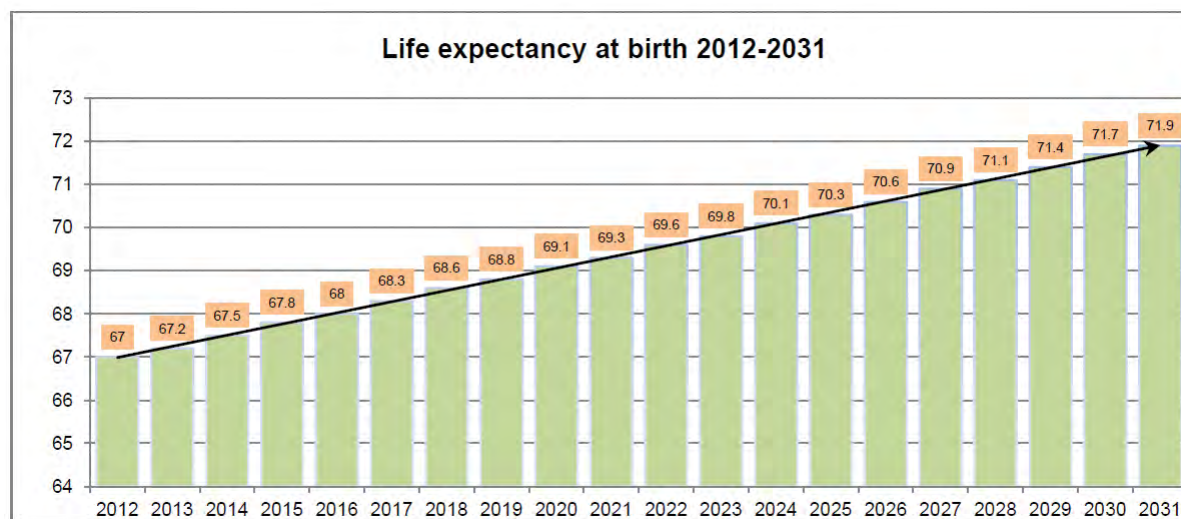
Figure 8.13: Projection of life expectancy (2012-2031)

Table 8.27 presents projected IMR, U5MR and life expectancy at birth for male and female populations. The infant and U5MR are projected to successively decrease over the next 20 years whilst the expectation of life for males and females is projected to increase. When the next census of the population is undertaken in 2021, life expectancy at birth for males and females is projected to reach 67.6 years and 70.9 years respectively. By that time, the IMR and U5MRs are projected to have fallen to 31.6 and 38.6 deaths per thousand live births. Expectation of life for males will reach 69.8 years and for females it will reach 73.9 years by 2031. By that time, IMR and U5MR are projected to have fallen to 22.5 and 26.7 deaths per thousand live births.

Table 8.27: Projection of life expectancy at birth and mortality indicators

Year	Rate/Per 1000 live births		Life expectancy at birth (year)		
	Infant mortality	Under-five mortality	Male	Female	Both sexes
2012	40.5	51.2	65.6	68.2	67.0
2013	39.4	49.5	65.8	68.5	67.2
2014	38.4	47.9	66.1	68.8	67.5
2015	37.3	46.5	66.3	69.2	67.8
2016	36.3	45.0	66.5	69.5	68.0
2017	35.3	43.6	66.7	69.8	68.3
2018	34.4	42.2	66.9	70.1	68.6
2019	33.5	41.0	67.1	70.4	68.8
2020	32.5	39.8	67.4	70.7	69.1
2021	31.6	38.6	67.6	70.9	69.3
2022	30.7	37.4	67.8	71.2	69.6
2023	29.8	36.2	68.0	71.5	69.8
2024	28.9	35.0	68.2	71.8	70.1
2025	28.0	33.8	68.5	72.1	70.3
2026	27.1	32.6	68.7	72.4	70.6
2027	26.2	31.4	68.9	72.7	70.9
2028	25.3	30.3	69.1	73.0	71.1
2029	24.4	29.1	69.4	73.3	71.4
2030	23.5	27.9	69.6	73.6	71.7
2031	22.5	26.7	69.8	73.9	71.9

Source: Population projection for Nepal 2011-2031, CBS, 2014.

8.24 International Comparison of Life Expectancy at Birth

It is worthwhile to study the scenario of life expectancy in different continents and countries to observe how life expectancy varies from continent to continent and country to country. Table 8.28 depicts the general picture of life expectancies of groups of countries by development status, different continents and countries in 2011. It is noted that the life expectancy of world for both sexes, male and female was 70, 68, and 72 respectively. These figures are high with about 3.4, 2.5 and 4.1 years more than the life expectancies of Nepal for both sexes, male and female respectively in 2011. The life expectancies for both sexes of developed countries like Switzerland, USA, and Oceania are very high compared to countries like Nepal (see Table 8.28). The life expectancy of Switzerland for both sexes, male and female is 82, 80 and 84 years respectively indicating a highly developed status. In comparison with the South Asian Countries, Sri Lanka ranks top regarding life expectancy for both sexes, while

Nepal ranks in fifth position. Nepal exceeds India in life expectancy values for both sexes by 2.6 years in 2011. It is noticed that life expectancy for males in almost all countries of South Asia is exceeded by the life expectancy of females. However, life expectancy for both sexes are more or less similar in value to neighbouring countries like Bhutan, Bangladesh, India, Pakistan and Nepal ranging in values between 64 to 69 years for both sexes, 63 to 68 years for males, and 65 to 69 for females.

Table 8.28: Life expectancy at birth different countries, 2011

SN	Countries	Life expectancy at birth 2011		
		Both sexes	Male	Female
1	World	70	68	72
2	More developed	78	74	81
3	Less developed	68	66	70
4	Less developed (excluding China)	66	64	68
5	Least developed	59	57	60
6	Africa	58	56	59
7	North America	78	76	81
8	South America	74	71	77
9	Asia	70	68	72
10	Europe	76	73	80
11	Switzerland	82	80	84
12	UK	80	78	82
13	Oceania	77	75	79
14	Australia	82	79	84
15	USA	78	75	80
16	China	74	72	77
	SAARC Countries			
17	Afghanistan	44	44	44
18	Bangladesh	69	68	69
19	Bhutan	69	68	69
20	India	64	63	65
21	Maldives	73	73	74
22	NEPAL (2011)*	66.6	65.5	67.9
24	Pakistan	65	64	66
25	Sri Lanka	74	71	78

Note: * Population Census 2011 of Nepal (derived)

Source: Population Reference Bureau, 2012 website: www.prb.org

8.24.1 Comparison with the life expectancies at birth of neighbouring states of India

It is also relevant to compare life expectancy values with the neighbouring states of India. Registrar General of India has published life tables by states in its publication in SRS Analytical Studies Report No 1 of 2012. The life expectancies at birth for both sexes of West Bengal, Bihar and Uttar Pradesh were 69, 65.8, and 62.7 year respectively in 2006-2010. The life expectancy at birth for both sexes of Nepal in 2001 and 2011 was 60.4 and 66.6 years respectively. As such, life expectancy at birth for males was found to be 67.4, 65.5 and 61.8 years

in West Bengal, Bihar and Uttar Pradesh respectively, while it was 71, 66.2 and 63.7 years for females in the respective states. These life expectancy values indicate a similar pattern of life expectancy as Nepal with the adjoining neighbouring states of India.

8.25 Major findings and policy implication of life table analysis

From life table analysis, it is observed that the survivorship and life expectancy at birth of the Nepalese population has increased over the years, including during the last intercensal period. The probability of surviving and expectation of life at different ages of females is higher than that of males. Spatially, life expectancy of rural people is relatively lower than urban people. Similarly, expectation of life at different ages of the urban population is higher than that of the rural population. Mountain ecological region has the lowest life expectancy. The Hill people have the higher expectation of life at different ages than any other region. Among the eco-development regions, people of Western Mountain have the highest and people of Mid-western Mountain have the lowest expectation of life at different ages. It was found that the life expectancy was lowest in Dolpa district while it was highest in Bhaktapur district.

Expectation of life at birth of the Nepalese population has increased by 38.82 years from the 1952/54 census to the 2011 census. Such increases in life expectancy at birth are evidently supported by a reduction in crude death rates, the IMR as well as the U5MR indirectly obtained from census data. Subsequently the raising index of ageing, old-age dependency ratio and proportion of aged population to the total population also support an increasing trend of expectation of life at birth. By projecting expectation of life at birth, it will successively increase over the next two decades but at a slower pace than the past two decades.

Increasing life expectancy at birth indicates that the survivorship of the population is also increasing, thereby there is an increase in population ageing. Such an increase in survivorship tends to affect pre-designed population policies and future policies formed for population management and human resource planning. An increase in expectation of life measures the human development situation of a nation as a whole as well as its specific parts. There needs to be a drive to reallocate health resources for those sectors where expectation of life is lower. Such resources in Nepal should be prioritised to make this additional effort without removing resources from other areas to rural areas, mountain ecological belt and Mid-Western Development region. In eco-development regions, priority needs to be given to mountain and hill districts of Mid-western and Far-Western Development Region and Central Tarai. If investment is made to reduce infant mortality and increase survivorship to exact age one, the expectation of life at birth will increase.

The increase in expectation of life indicates increases in the elderly population, thereby an increase in the social security burden for the government, such as old-age pensions, allowance, and discount in public services delivery system. The government needs to allocate extra resources for such social security schemes annually, taking into account the expectation of life at different ages, generally at age sixty and seventy. On the other hand, old-age dependency leads to an additional burden on the economically active aged members of a family, requiring more contribution of time and money for their elder members. As population's survivorship in different age is analysed, life insurance companies will need to manage their liabilities in terms of those insured.

8.26 Conclusion

The life table, one of the most powerful tools in demography, is used to simulate a population's lifetime mortality experience. It does so by taking that population's age-specific death rates and applying them to a hypothetical population of 100,000 people born at the same time. It is widely used by public as well as private sectors, policy makers and advocates, insurance companies, academics and international agencies.

Due to incompleteness of age specific death data, the life table of the Nepalese population cannot be prepared using reported deaths directly, so model life table patterns are applied. The Coale-Demeny West model life table pattern seems most suitable for Nepal. The U5MR rather than the IMR is used to construct life tables for various geo-spatial areas as well as for both genders. Different columns of the life table provide different types of survivorship and mortality indicators. Survivors at different ages (l_x) and expectation of life at different ages (e^0_x) are the indicators most used.

The age specific death pattern of the Nepalese population has changed from a U-shape (high mortality in early and old ages) to a J-shape (relatively lower mortality in early age and high mortality in old ages), which indicates that the survivorship of the population is increasing throughout the different censuses. Survivorship of females at various ages is higher than that of males for almost all the geo-spatial areas. Urban population has higher survivorship than rural.

Life expectancy pattern at different ages for both males and females follow the same path, indicating a maximum at age one. Life expectancy at birth (e_{00}) seems lower than at age one (e_{01}) for both sexes due to a high IMR. As population age increases, expectation of life tends to reduce successively. From an analysis of the latest four censuses, there exists an inverse relation between changes in mortality indicators (CDR, IMR and U5MR) and life expectancy at birth i.e. the lower the deaths rates, the higher the life expectancy at birth and vice versa. On the other hand, there is a positive relation between increases in ageing and life expectancy at birth i.e. increases in old age population and life expectancy at birth follow the same path. From the projected figure, it is observed that life expectancy at birth of Nepalese people for both males and females will increase in the coming years but at a slower pace than prevailing values.

Annexes

Annex 8.1: Abridged life table of male based on reported deaths and population, 2011

x	nMx	nax	nqx	lx	ndx	nLx	5Px	Tx	ex
0	0.0345	0.096	0.0335	100000	3350	96973	0.96	7032476	70.3
1	0.0017	-0.101	0.0068	96650	662	383886	1	6935503	71.8
5	0.0009	2.5	0.0043	95988	417	478899	1	6551617	68.3
10	0.0007	2.5	0.0034	95571	320	477056	1	6072719	63.5
15	0.0011	2.5	0.0054	95251	510	474979	0.99	5595663	58.7
20	0.0018	2.5	0.0092	94741	871	471527	0.99	5120683	54
25	0.0021	2.5	0.0106	93870	994	466866	0.99	4649156	49.5
30	0.0024	2.5	0.0121	92877	1125	461571	0.99	4182290	45
35	0.0033	2.5	0.0161	91752	1479	455060	0.98	3720719	40.6
40	0.0039	2.5	0.0194	90272	1755	446975	0.98	3265659	36.2
45	0.0052	2.5	0.0256	88517	2268	436918	0.97	2818685	31.8
50	0.0072	2.5	0.0353	86250	3048	423627	0.96	2381767	27.6
55	0.0097	2.5	0.0473	83201	3939	406158	0.94	1958140	23.5
60	0.0165	2.5	0.079	79262	6264	380651	0.91	1551982	19.6
65	0.0228	2.5	0.1078	72998	7872	345310	0.86	1171331	16
70	0.0372	2.5	0.1702	65126	11087	297911	0.8	826021	12.7
75	0.053	2.5	0.233	54038	12600	238692	0.5	528110	9.77
80+	0.143	6.984	1	41439	41439	289417		289417	6.98

Annex 8.2: Abridged life table of female based on reported deaths and population, 2011

x	nMx	nax	nqx	lx	ndx	nLx	5Px	Tx	ex
0	0.0287	0.084	0.028	100000	2800	97435	0.97	7545100	75.5
1	0.0017	-0.046	0.0069	97200	667	386101	1	7447665	76.6
5	0.0006	2.5	0.0032	96533	305	481903	1	7061564	73.2
10	0.0005	2.5	0.0025	96228	245	480529	1	6579662	68.4
15	0.0009	2.5	0.0046	95983	437	478823	1	6099133	63.5
20	0.0011	2.5	0.0054	95546	513	476446	0.99	5620309	58.8
25	0.0011	2.5	0.0054	95032	515	473874	0.99	5143863	54.1
30	0.0011	2.5	0.0057	94517	538	471240	0.99	4669989	49.4
35	0.0016	2.5	0.0081	93979	765	467980	0.99	4198750	44.7
40	0.002	2.5	0.0101	93213	941	463713	0.99	3730770	40
45	0.0033	2.5	0.0163	92272	1504	457599	0.98	3267056	35.4
50	0.0046	2.5	0.0229	90768	2076	448649	0.97	2809458	31
55	0.0064	2.5	0.0317	88692	2813	436427	0.96	2360809	26.6
60	0.0117	2.5	0.0569	85879	4890	417171	0.93	1924382	22.4
65	0.0171	2.5	0.0819	80989	6636	388356	0.89	1507211	18.6
70	0.0282	2.5	0.1319	74353	9804	347255	0.84	1118855	15
75	0.04	2.5	0.183	64549	11801	293240	0.6	771600	12
80+	0.11	9.069	1	52747	52747	478359		478359	9.07

Annex 8.3: Abridged life table of male based on Coale-Demeny west model using IMR-Nepal 2011

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.04599	0.04430	100000	4430	96322	0.95	6554207	65.54	0.17
1	0.00264	0.01048	95570	1001	379796	0.99	6457884	67.57	1.52
5	0.00103	0.00513	94569	485	471631	1.00	6078088	64.27	2.50
10	0.00081	0.00406	94084	382	469462	0.99	5606457	59.59	2.50
15	0.00146	0.00727	93701	682	466932	0.99	5136995	54.82	2.69
20	0.00206	0.01023	93020	952	462788	0.99	4670062	50.21	2.57
25	0.00210	0.01045	92068	962	457960	0.99	4207275	45.70	2.52
30	0.00236	0.01174	91106	1070	452931	0.99	3749315	41.15	2.57
35	0.00300	0.01490	90037	1342	446985	0.98	3296384	36.61	2.62
40	0.00426	0.02109	88695	1871	439082	0.97	2849399	32.13	2.65
45	0.00650	0.03202	86824	2780	427630	0.96	2410317	27.76	2.67
50	0.01005	0.04910	84044	4127	410576	0.94	1982687	23.59	2.66
55	0.01572	0.07582	79917	6059	385358	0.91	1572111	19.67	2.65
60	0.02438	0.11526	73858	8513	349133	0.86	1186754	16.07	2.63
65	0.03785	0.17352	65345	11339	299599	0.79	837621	12.82	2.61
70	0.05965	0.26045	54007	14066	235799	0.68	538023	9.96	2.57
75	0.09443	0.38178	39940	15249	161486	0.47	302224	7.57	2.49
80+	0.17545	...	24692	24692	140738	...	140738	5.70	5.70

Annex 8.4: Abridged life table of female based on Coale-Demeny west model using IMR-Nepal 2011

Age	$m(x,n)$	$q(x,n)$	$l(x)$	$d(x,n)$	$L(x,n)$	$S(x,n)$	$T(x)$	$e(x)$	$a(x,n)$
0	0.0402	0.0389	100000	3890	96758	0.96	6805744	68.06	0.17
1	0.0030	0.0117	96110	1129	381574	0.99	6708986	69.81	1.46
5	0.0009	0.0047	94981	449	473783	1.00	6327412	66.62	2.50
10	0.0007	0.0037	94532	350	471785	1.00	5853629	61.92	2.50
15	0.0012	0.0060	94182	563	469596	0.99	5381844	57.14	2.67
20	0.0017	0.0083	93619	777	466233	0.99	4912249	52.47	2.60
25	0.0020	0.0099	92842	918	461979	0.99	4446016	47.89	2.57
30	0.0023	0.0117	91925	1072	457022	0.99	3984037	43.34	2.57
35	0.0029	0.0144	90853	1310	451110	0.98	3527015	38.82	2.59
40	0.0038	0.0187	89543	1675	443721	0.98	3075905	34.35	2.62
45	0.0053	0.0261	87867	2292	433921	0.97	2632184	29.96	2.64
50	0.0077	0.0377	85575	3229	420266	0.95	2198263	25.69	2.64
55	0.0113	0.0552	82346	4546	401053	0.93	1777997	21.59	2.65
60	0.0178	0.0853	77800	6636	373460	0.89	1376943	17.70	2.66
65	0.0289	0.1353	71164	9627	333183	0.83	1003484	14.10	2.65
70	0.0484	0.2170	61537	13352	275811	0.73	670301	10.89	2.61
75	0.0806	0.3365	48185	16213	201135	0.49	394490	8.19	2.55
80+	0.1654	...	31972	31972	193355	...	193355	6.05	6.05

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CHAPTER 9

INTERNATIONAL MIGRATION AND CITIZENSHIP IN NEPAL

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Abstract

International migration in Nepal started with the recruitment of physically strong youth by the British Army. Recently, Nepal has observed a rapid increase of absent population over census periods. In the 2001 census, 762,181 persons were reported to be absent. The figure went up to 1,921,494, more than doubled in 2011. The emigration rate for 2011 is estimated at 10.77 per thousand populations, whereas the immigration rate for the same period stands at 0.46 per thousand populations. The gross migration rate and the net migration rate are respectively calculated as 11.23 and -10.32 per thousand populations. Data on both the foreign-born population and foreign citizens indicate a fluctuating trend, which may pose questions about the reliability of these data. In 1961, the percentage of the foreign born population was nearly 4.1% of the total population, it decreased to 1.6% in 1981 and increased to 2.4% in 1991, 2.7% in 2001 and 1.8% in 2011. The number of foreign citizens, as recorded by various censuses, shows a fluctuating trend. Foreign citizens in 1961 were 1.2% of the total population, which increased to over 3% in 1981, before declining to 0.5% from 1991, the same figure as recorded in 2011. Data on international migration largely depends on the government's policies towards employment in foreign countries. So far the government has adopted a policy to encourage youth to work abroad, hoping that they will find employment there and provide remittance for the country's overall development. However, whether youth get employed abroad or within the country needs to be an informed choice and the government needs to act as a facilitator.

9.1 Introduction

Migration and development are closely interlinked. Migration can contribute to human development, especially if the rights of movers are improved (UNDP, 2009). In the Nepalese context, both women and men's migration to India, or other countries, can help reduce poverty, largely depending on the benefits they (and their families) obtain from migration and the costs they have to bear. Migrant workers face many obstacles during the migration process and in their destination countries. Some of the most important obstacles that decrease migrants' potential benefits and increase their costs are low levels of skills and hence lower salaries, and poor professional development opportunities in their destination countries. Other factors include: high interests rates paid for loans from local moneylenders or relatives; migrants' low awareness and/or misinformation about the foreign country they are going to; their earning potential; their rights and obligations; the migration related procedures they have to follow; corruption at all levels of the migration cycle, for example by recruiting agents and sub-agents in Nepal; and other forms of exploitation, including gender-based violence (GBV), primarily an issue for female migrant workers. Overall, migrants working abroad are involved in the activities popularly known as the 4Ds (difficult, dangerous, dirty and demeaning) (Connell, 1993; Martin, 1996; UNFPA, 2006).

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Utilising mainly 2011 census information, this chapter attempts to establish evidence based on facts and figures to support the issues, concerns and observations mentioned above about international migration in Nepal. The historical legacy of migrating for employment in Nepal is covered briefly to provide a link to theoretical literature both universal as well as for the Nepalese context. For the first time information on migration, including the absent population, foreign born population and foreign citizens, and the basis of measurement of gross and net migration, using international migration data, are detailed in a census report. Certain policy issues are considered to review their implications on Nepal's international migration.

9.2 Historical context

International migration in Nepal started with the recruitment of physically strong young people by then powerful countries. Slowly it became a livelihood strategy for a large part of the rural population in Nepal. Later on it became a "Lahure"¹ culture, that is, "In the 19th Century, Nepali (Gurkhas) were recruited to serve in the British Army and British India, while recently, during the latter part of the 1990s, Nepali began to migrate increasingly to the Gulf countries for work" (Seddon et al., 2002). As a result, an estimated five million Nepali are employed in foreign countries, of which around 40% leave for India, while the remaining 60% go overseas, primarily to the Gulf countries, Malaysia, Lebanon and the Republic of Korea. Women account for around 9% of overseas migrants. Around one third of the population benefits from remittances. The latter accounts for 15.5 to 25% of Nepal's Gross Domestic Product (GDP) (NIDS, 2010).

Emigration by the hill people of Nepal has become more than a historical tradition and legacy. It is now an essential strategy of household sustenance and survival, a situation of economic dependency without which a significant portion of the Nepalese population, particularly in the hills would be unable to exist. British forceful recruitment hindered the initial development of the agricultural economy and migration caused further labour shortages in rural Nepal.

Over 200,000 of the country's male youths were recruited during the period of the First World War. After the demarcation and delineation of the Nepal/India international border under the provision of the Sugauli Treaty in 1816, and the existence of the High Himalayas as a natural boundary between Nepal and China, Nepal emerged as a politically established state (Kansakar, 2003). The British East India Company started recruiting Nepali from among the Gorkhali prisoners of war in 1815. As a result, the Nepalese hill people, in particular, went to Lahore, the capital of Punjab, to join the army of Sikh king Ranjit Singh. From that time Nepalese hill people serving in foreign armies were called "Lahure". In order to make the process easier, the British Government encouraged the Gorkhals to migrate to India along with their families and to also establish settlements in various parts of India. This is the main reasons for the extension of Nepalese inhabitants in various northern parts of India even today, such as in Darjeeling, Sikkim, Assam, and Ahmedabad. In the 19th century the rate of emigration of the Nepalese hill people to Bengal, Assam, Burma, Bhutan, and Sikkim further escalated.

The Mutiny War, India's first war of independence in 1857, launched by the Indians against the British Government was suppressed by the British for which the then Nepali Rana regime is said to have assisted, providing 12,000 of the Nepalese Army to the British in India in 1861. In return, the British Government gave the territory of the far Western Tarai – Banke, Bardiya, Kailali and Kanchanpur - back to Nepal (Shrestha, B.N. 2012).

The first civil code of Nepal in 1862, declared by Janga Bahadur Rana, put a provision in place that foreigners residing in Nepal could purchase and sell land, which resulted in large-scale migration of Indian businessmen and entrepreneurs to Nepal, and was followed by migration of tillers as well.

1 The word Lahure is also interchangeably used as Recrute, that is, an army who used to be recruited by British Raj in the service from the city Lahore, which is now the first biggest city of Punjab and the second biggest of Pakistan.

In 1942 during World War II, a large number of Nepalese settled in Myanmar fled into India and Nepal. Many of them lost their lives on the way, very few came back to their place of origin and a few settled underground. There are still settlements of Nepalese inhabitants in Myanmar and the nearby country of Thailand as well.

Various migration related policies, laws and coercive measures are responsible for the lack of appropriate migration management. Due to this migrants, especially those who settled in more remote areas of Nepal, have deprived the Nepali people of various socio-economic and development opportunities.

Nepalese emigration to India has hindered Nepal to implement effective policy to control immigration from India. Emigration was primarily induced by the State apparatus through oppressive land and labour policies, agricultural indebtedness, and recruitment by the British Army (KC, 1999: 21).

For example, in the 19th Century, the Nepalese government deliberately invited Indian immigrants to the Tarai for agricultural colonisation (KC, 1998: 64). This encouraged Indian immigrants to extend their business and influence over the simple and uneducated Nepalese. The ‘extension of an Indian railway to the Nepalese border by the last decade of the 19th century brought Indian traders and businessmen’. They assumed a dominant posture over the simple and uneducated Nepalese. The Nepalese accepted the spread of Indian immigrants over Nepal in terms of trade and business, seeing it as an opportunity to gain access to goods and new markets. Although the Nepalese benefited, Indian immigrants occupied most of the main markets leaving the Nepalese behind.

With the establishment of joint industrial ventures in the Tarai in the 1930s, more Indian industrial labourers came to Nepal for work in factories (Conway, et al., 1982). This discouraged and deprived Nepalese of employment in these factories, who were treated as less efficient and skilled personnel to be employed in factories.

9.2.1 1950 Nepal-India treaty

The 1950 Treaty signed between Nepal and India on Peace and Friendship is said to have given more benefits to Indian nationals than the Nepalese. However, the Nepalese has not categorically identified which points of the Treaty are unequal. Article 6 of the Treaty states, ‘nationals of the other, in its territory, national treatment with regard to participation in industrial and economic development of such territory’. Similarly, Article 7 grants, ‘on a reciprocal basis, to the nationals of one country in the territory of the other the same privileges on the matter of residence, ownership of property, participation in trade and commerce, movement and other privileges of similar nature and afford[s] the Nepalese nationals in Nepal protection from unrestricted competition’ (KC, 1998: 65).

The 1950 Nepal-India Treaty is the fundamental basis of the relationship between the two countries. Many opinions have been voiced regarding this treaty, especially by Nepalese academics, political parties and social activists. They are of the opinion that it ‘should be revised in order to put the relationship between the two countries on a more realistic footing.’ The provision in the Nepal India Treaty of 1950 in Article VII encouraged large-scale immigration of Indians to Nepal.

9.3 Data sources and methods

The census is a major source of migration data. Two questions in particular provide invaluable data on migration. The first is the question about ‘Place of birth’. The second is the question as to whether all the members of the family are currently residing at home. The query ‘place of birth’ is the basic and universal question for every migration study and provides information mainly on ‘non-migrant’, ‘in-migrant’, and ‘immigrant’. Question No. 16 of Schedule 2 questionnaire asks, ‘Where is the birthplace of the respondent?’ Options for answering this question include ‘same district’ and ‘different district’. Follow up questions for those responding to ‘different district’ are related to ‘VDC/Municipality’ as well as ‘foreign country’. Additional questions are asked as a follow up related to duration of residence in a current place (Question No. 17), reasons for stay in a current place

(Question No. 18), and place of residence 5 years previously (Question No. 19). Similarly, the status of presence at home at the time of enumeration gives information on 'absent population', that is, abroad and 'out-migration', that is, internal migration. The particular question for this information is in Schedule 1, Question No. 13 that states the list of 'absent population in a given household'. Question No. 14 further specifies this list of absent population by sex, age, educational attainment, duration of absence, reasons for absence and the destination country.

9.3.1 Migration data in different censuses

The 1952/54 census, which is regarded as the benchmark of the modern scientific census in Nepal, contains data on out-migration, both internal and international. In an explanatory chapter regarding the 1952/54 Census, S.M. Joshi states that 8.6% of the absentee population was internal migration, as compared to 91.4% external migration (Joshi, 1957:83-86). Of the total absentee population, 67.3% was recorded for Central Hill and 27.2% for Eastern Hill, both areas of heavy Gorkha recruitment.

The 1961 census collected data on both internal and international migration on the basis of citizenship and place of birth. The data on foreign citizens is available for India, China, Pakistan, other countries and those that are unstated. The data by place of birth and by sex are categorised into native-born and foreign-born. For native-born, data are available by sex and by districts and regions, but the data on the foreign-born population are only available by sex for the category as a whole. The country of birth for foreign-born populations includes India, Pakistan, China, Myanmar and Malaya. Only three countries were listed as options for foreign citizens, India, China and Pakistan. As regards to the absentee population, the census indicates that destination countries are India, Malaysia, Myanmar, China and Pakistan.

The 1971 census was conducted after the political division of the country into 14 zones and 75 administrative districts. The censuses of 1952/54 and 1961 had only 35 administrative districts divided into 54 census districts in 1952/54 and 55 districts in 1961. The 1971 census collected data on migration only for the de-jure population (those populations that are counted according to their regular or legal residence) and not the de-facto population, when the population is enumerated where they spend the night on the day enumerated.

The 1981 census collected migration data by sex, and broad age groups (0-15 years, 15-59 years and 60 years and above). Additional information was collected on the foreign-born population including: a) duration of stay in Nepal, b) duration of stay in present place of residence, and c) reason for stay in the present place of residence. Regarding the reason for stay in the present place of residence for the foreign-born population, categories included: a) trade and commerce, b) agriculture, c) service, d) study/training, e) marital relations, and f) others/unstated. As for the data collected on birthplace, only two countries are mentioned, India and China. The rest were put into two categories, other Asian and others/not stated. The tables on citizenship included 4 categories a) Nepali, b) Indian, c) Chinese, and d) others/unstated. The data collected on the categories of citizenship above were 97.68%, 0.78%, 0.05% and 2.39% of the total population respectively. One of the notable features of the 1981 census was the data on the absentee population (10 years and above) within and outside the country, a total of 187,795 persons.

Among the total absentee population, 2.28% were absent due to trade and commerce, 8.97% for agriculture, 30.30% were absent for service, 7.15% were absent for study, 2.47% for marital relations and others or unstated were reported at 48.82%. As for destination countries, India, China, other Asian countries and others were included as categories. Data on the absentee population, and destination abroad by age and sex is available in the household tables. Age is categorised by 5 year age groups.

The only country specified in the destination countries is India, while others have been categorised as: a) South Asia, b) other Asian, c) Arab countries, d) Europe, e) North America, f) others, and g) not stated. Categories for reasons absent include: a) agriculture, b) trade, c) employment, d) education/training, e) dependency, f) others, and g) not stated. In the table on duration of absence, the periods have been grouped into 11 categories as less than one year, 1-2 years, 3-5 years, 6-10 years, 16-20 years, 21-25 years, 26-30 years, 31-40 years, and 40 years and above.

In the 1991 census of Nepal, migration data is available by birth-place, citizenship, and by region and countries of destination for the absentee population. Migration is referenced in three sections of the census. Migration data is available by sex and in five year age groups, in addition to destination country. The countries of foreign-born population have been broadly categorised into five groups as: a) SAARC countries, b) other Asian countries, c) European countries, d) other countries, and e) countries not stated. Data on specific countries are available for SAARC countries only, including India, Pakistan, Bangladesh and Bhutan. Sri Lanka and the Maldives are grouped together. No data is available for individual countries for the other groups. Data on the foreign-born population is categorised as duration of residence, education and marital status. The period of duration of residence of the foreign-born population has been categorised into 7 groups as: a) below six months, b) six months to one year, c) one to five years, d) five to ten years, e) eleven to fifteen years, f) fifteen or more years, and g) not stated. Another table with duration of residence contains the major occupation of the foreign-born population by sex, and includes: a) professional/technical, b) administrative, c) clerical, d) sales, e) service, f) farming and fishing, g) production and labour, h) other occupation, and i) not stated.

In the 2001 census, data on migration were collected from complete enumeration and sample enumeration (see Table 9.1). Place of birth was enumerated under the sample schedule by native born and foreign born. Similarly, duration of residence in place and its reasons were also included under the sample schedule. Absentee population by sex, duration of absence and reasons were included under the complete enumeration. This included the absentee population within the country and destination abroad by sex. The age at time of absence and citizenship were also included in the complete enumeration.

As in 2001, migration data from the 2011 census is obtained from both complete enumeration (Form 1) and sample enumeration (Form 2). Form 1 has two categories of questionnaires, that is, a household questionnaire, (questions 1 -14) and an individual questionnaire (questions 1 – 15). Information on absent population by households is obtained through Question No. 13 under household category. Similarly, Q. No. 14 gives information on absentee population by age and sex, as well as their status of education, duration of stay abroad (in years), purpose or reasons for going abroad and the destination country. This attempt to identify the absent population by age group and level of education is the first exercise of its kind in the history of census taking in Nepal. The purpose or the reasons for migration are close-ended questions, that is, ‘trade’, ‘private job’, ‘institutional job’, ‘study’, ‘conflict’, ‘dependent’, ‘other’ and ‘don’t know’. The reason ‘conflict’ has been added for the first time in the census history is in light of the armed conflict that occurred in Nepal from 1996 to 2006, until the formal initiation of conflict transformation and peace building among the conflicting parties, the CPN (Maoists) and other political parties, as well as the then monarchy and the government. Form 1 also provides categories of the households of non-migrants, and absentees in terms of ‘internal’ and ‘international.’

Foreign countries that the absent population is going to are categorised in terms of India, other SAARC countries, ASEAN countries², the Middle East, other Asian countries, European Union countries, other European countries, North American countries (USA and Canada), South American/Caribbean countries, African countries, Pacific regions and others. This categorisation carried out for analysing the 2011 census migration data is the first attempt of its kind.

Question No. 16 specified in Form 2 of the sample enumeration schedule addresses the place of birth. The categories specified are ‘same district’, ‘different district’ and ‘abroad’. Thus, this question provides information on ‘internal migration’, that is, ‘in-migration’ and ‘out-migration’, and ‘immigration’, that is, ‘foreign born population’ and ‘foreign citizens’. Similarly, question No. 19 provides information on residence 5 years before, seeking information on those staying in same district, different districts or abroad.

Information on citizenship is collected from Form 1 of the individual schedule, Question No. 11. This question is asked as to which country the person is a citizen of. The options given are ‘Nepal’, ‘India’, ‘China’ and

2 Among them, huge number of Nepalese are in Malaysia followed by South Korea and other countries (Indonesia, Thailand, Singapore, Philippines, Vietnam, Myanmar, Brunei, Cambodia, Laos).

'Other'. Citizenship of the population by countries is available by sex and age. Similarly, countries of foreign citizens include: India, China, Pakistan, Bangladesh, Bhutan, Sri Lanka, and the Maldives, other countries of Asia, Europe, North America, South America, Africa and Australia/New Zealand.

This chapter primarily uses census data collected in different periods, while facts and figures are mainly updated by data from the 2011 census. Previous censuses have been quoted to compare and contrast figures in order to analyse the level, trend and pattern of international migration. Where relevant, information from surveys, particularly two NLSS reports (2004 and 2011), as well as data on foreign labour migration updated by the Department of Foreign Employment (DoFE) have also been analysed. Finally, policy documents have been reviewed concisely to determine policy implications.

9.4 Review of literature

Although migration is a phenomenon that has taken place since the history of mankind, its theoretical interpretation is found in the 'laws of migration' first defined by Ravenstein (1885). His conclusion was that migration and distance; migration by slopes; stream and counter stream; urban-rural difference in the propensity to migrate and the predominance of females among short distance migrants, usually prevails in migration studies. Similarly, technology and migration and the dominance of economic motives, taken from the general conclusions of his second paper (Ravenstein, 1889), may not prevail everywhere.

Ravenstein's seven laws of migration were later interpreted in an extensive way by Stouffer (1960) and Lee (1966). Stouffer introduced intervening opportunities and competitive migrants, whereas Lee introduced migration relationships between origin and destination, associated with the area of origin, destination, intervening obstacles, and personal factors. Lee reformulated Ravenstein's theory to give more emphasis to internal (or push) factors and outlined the impact that intervening obstacles have on the migration process, arguing that variables such as distance, physical and political barriers, and having dependents can impede or even prevent migration.

Within a framework of total human movement, migrations can be divided into two categories: 1) those which involve complete spatial displacement of the daily/weekly reciprocal movement patterns of the migrant (total displacement migrations), and 2) those which involve displacement of only part of the everyday reciprocal movements of migrants (partial displacement migrations). In this connection, Zapf's (1946) inverse distance law, based on the mathematical statistics, refers to the fact that many types of migration data studied in physical and social sciences can be approximated.

Even though migration creates unemployment and induces informal sector growth, this behaviour is economically rational and utility-maximizing in the context of the Harris-Todaro model (Todaro, 1969). As long as migrating economic agents have complete and accurate information concerning rural and urban wage rates and the probabilities of obtaining employment, they will make an expected income-maximizing decision. Migration as a social process is defined more as the 'hypothesis of mobility transition', a concept developed first by Zelinsky in 1971. He developed a five phase model of mobility transition, phase one being the pre-modern traditionally society, phase two early transitional society, phase three late transitional society, phase four advanced society, and finally phase five future super-advanced society.

Migration systems theory as pioneered by the Nigerian geographer Akin Mabogunje (1970) has been the most comprehensive attempt at integrating both first (endogenous) and second order (contextual) migration system feedbacks to date, as well as world-systems developed by Immanuel Wallerstein in the 1970s and 1980s.

Sam Stouffer and his associates first identified relative deprivation as one of the main indicators for migration in their wartime study "The American Soldier" (1960). To them, relative deprivation occurs where individuals or groups subjectively perceive themselves as unfairly disadvantaged over others perceived as having similar attributes and deserving similar rewards (their reference groups).

The differential characteristics of streams of migration are regarded as the consequences of social and cultural constraints upon the head of a household. Migration is a large concern for policy makers because flows of population can significantly affect local political, social, economic, and ecological structures for both sending and receiving areas (DaVanzo, 1981). Regional economists, demographers, sociologists and geographers have made numerous contributions to migration studies since 1960 (Greenwood 1969, 1975). Many early economic studies used aggregated data to treat migration as an equilibrating mechanism that minimises geographic wages and employment differentials, while later studies have shifted to a microeconomic approach to study why individuals and families move (DaVanzo 1981).

Judson, D.H. (1990) attempted to develop a formal theory of decision making in human migration. Other examinations of the decision making process had several shortcomings, such as examining residential preferences without reference to other constraints impacting on the migration decision, which are addressed in this chapter. Furthermore, the links between migration decision-making and aggregate rates of migration have been left unspecified or it has been assumed that detailed micro data are needed to apply decision-making frameworks to migration data. Judson's paper aims to re-examine these issues within migration decision theory, and presents conclusions that suggest that decision theory has a much broader application to migration data than previously specified.

Hampton (2007) said that many actual decision-making problems incorporate higher-order structures, involving interdependencies between different stimuli, actions, and subsequent rewards. It is not known whether brain regions implicated in decision making, such as ventromedial prefrontal cortex, employ a stored model of the task structure to guide choice (model-based decision making) or merely learn action or state values without assuming higher-order structures, as in standard reinforcement learning.

9.4.1 Application of theories in the Nepalese context

Population migration can be both a solution and problem globally. It creates opportunities for migrants to gain knowledge and skills and, thereby earn money. However, migration may pose problems to a host community due to the heavy inflow of newcomers associated with intolerance and crime. This remained a characteristic phenomenon during the 10 year long armed conflict period in Nepal. Although very few studies focusing on the nature of forced migration have been undertaken in Nepal, Khatiwada (2008) studied migration by contextualising the mass exodus of conflict affected people during the conflict period as a dichotomy of migration in terms of voluntary and forced.

Nepalese migration trends did not remain within the limited scope of classical push and pull factors; it got a paradigm shift from the voluntary forced dichotomy to the post conflict relative deprivation, decision-making and livelihood approach.

Traditionally, studies of migration were confined to the Marxist, capitalist, social, cultural, religious, developmental and economic approaches in the realm of mainly the push and pull factors. Several ebbs and flows have occurred during the last 100 years of human mobility. As a result, approaches to migration studies can be analysed as a shift from traditional Marxist/capitalist to legal, social-development, political economy and security approaches (Khatiwada, 2011). Prior to armed conflict or during armed conflict, three main approaches were linked to increasing migration – the legal institutional approaches, social development, and the security approaches mainly on humanitarian grounds due to rural areas of Nepal being hit hard during the conflict. The trend of going abroad to countries in the Gulf and Malaysia, for example, for employment increased in Nepal during the armed conflict period primarily influenced by the security approach. In the post conflict period, the political economy approach has a direct link with relative deprivation, and a shift in decision-making and livelihood.

After the post conflict period, there has been a realisation by people that they have been relatively denied opportunities to participate in politics, state affairs and many other sectors of state building. The state could

not address the growing aspirations of people and this impacted on the level and trend of migration as a form of foreign labour. This trend did not only touch the areas of relative deprivation but also caused a huge shift in decision-making. Previously, male heads of households were the decision makers about migration in a family, whereas many females began to lead the households during the armed conflict and this shift also had a direct impact on migration. As a result, more and more females made their own decisions to go abroad for employment. Livelihood has been the main push factors for these people to go abroad to earn money and improve their well-being.

9.4.2 Review of quality of census data on migration

The Centre for Economic Development and Administration (CEDA) reviewed the quality of the census data of 1971 in 1971. The study remarked that owing to the frequent changes in district boundaries, census questionnaires and definitions, a comparative study and analysis of census data of Nepal, at both the national and district levels, has become virtually impossible since 1961. The authors recommended adjusting the 1971 census according to the changes in the district boundaries resulting from the Second Amendment of the Constitution (CEDA, 1973). However, their recommendations were not implemented as the Nepalese scholars on migration argue.

New Era (2000) and KC (2008) reviewed the contents of the census data relating to migration (see Table 9.1) that shows that migration data were collected from the very beginning of census taking. While information on the absentee population, both abroad and within the country, was available by sex from the very beginning of the census, information on place of birth and citizenship by sex was only included from 1961. The 1971 census added the duration of residence and the 1981 census further added the reasons for absence or residence. However, the 1991 census omitted the information on the duration of residence in present place and reasons for absence. The questions related to migration were again changed in the 2001 census of Nepal. The “place of birth” and “citizenship” questions were included but the question on “residence one year ago” was replaced by “residence five years ago”. Since 2001, information on “duration of residence” and “main reason of staying” at the present place of residence was also collected. Regarding emigration, “absent from the household and ‘who have gone abroad” was collected from each household counted in the census (KC, 2008).

Table 9.1: Migration related questions in census schedules, census years 1952/54-2011

SN	Description of questions	1952 /54	1961	1971	1981	1991	2001		2011	
							Complete	Sample	Complete	Sample
1.	Place of birth		Y	Y	Y	Y		Y		Y
2.	Native born		Y	Y	Y	Y		Y		Y
3.	Foreign born		Y	Y	Y	Y		Y		Y
4.	Duration of residence in Nepal (foreign born)				Y	Y				
5.	Duration of residence in present place				Y			Y		Y
6.	Reason for residence in present place				Y	Y		Y		Y
7.	Place of residence at fixed prior date									Y
8.	Absentee population	Y	Y		Y	Y	Y		Y	
9.	By age, sex				Y		Y		Y	
10.	By VDC/ Municipality								Y	

SN	Description of questions	1952 /54	1961	1971	1981	1991	2001		2011	
							Complete	Sample	Complete	Sample
11.	By education								Y	
12.	Duration of absence					Y	Y		Y	
13.	Reason for absence				Y		Y		Y	
14.	Absent within country but other district	Y	Y		Y				Y	
15.	Destination abroad by sex	Y	Y		Y	Y	Y		Y	
16.	Age at time of absence					Y	Y		Y	
17.	Citizenship		Y	Y	Y	Y	Y		Y	
18.	Nepalese by sex, age		Y	Y	Y	Y	Y		Y	
19.	Non-Nepalese by sex, age		Y	Y	Y	Y	Y		Y	

Source: *New Era, 2000; KC, 2008*

Note: Y = Yes; blank = No (not included/implied).

Khatriwada (2008) submitted a report on the issues of the population census of 2011 to the CBS, recommending that migration, the core component bringing changes in overall political, social, economic and cultural issues, needs to be internalised from a broader perspective. Stressing that collecting data only on lifetime migration cannot generate a great deal of information on issues related to migration, it was suggested that migration data based on typologies, such as permanent and temporary, voluntary and forced (types by voluntary and forced), migration and conflict, migration and trafficking, HIV/AIDS migration and development and migration and politics, be collected.

Some modifications in migration questions based on the recommendations above have been reflected in the 2011 census such as 'conflict' has been placed as a close-ended reason for migration in the questionnaire. Furthermore a couple of questions related to migration such as place of residence at a fixed prior date, migration information by VDC/Municipality, absent within country but other district, and educational status of absent population have also been included. (see Table 9.1).

9.4.3 Data availability in census report, 2011

Table 9.2 presents the data available on international migration in the census report. Whereas the data on absent household and population are available in Table 11 of the National Reports I and II, the report also provides information on population by citizenship (see Table 23). Similarly, population by place of birth, and population aged 5 years and above, residing in enumerated area by residence 5 years ago, are also available in this report in Volume III, Tables No. 1 and 5, respectively.

Table 9.2: Data availability on international migration in the census report, 2011

SN	International migration contents	Sources			
		National report I	National report II	District report	VDC/ Municipality report (by district)
1.	Absent household and population	Table 11		Table 15	Table 1.10
2.	Population absent from households by sex, age at departure and country of destination			Table 16	
3.	Population absent from households by sex, age at departure and reason for absence			Table 17	
4.	Population absent from households by sex, age at departure, reason for absence and country of destination			Table 18	
5.	Absent population from household by sex, duration of absence and age at departure			Table 19	
6.	Population absent from household by sex, level of education and age at departure			Table 20	
7.	Population by citizenship (Individual)	Table 23; Table 9			
8.	Population by place of birth, sex and five year age groups (Individual)		Table 1, Table 21		
9.	Population aged 5 years and above, residing in enumerated area 5 years ago		Table 5		
10.	Foreign born population by country of birth, sex and age groups		Table 25		
11.	Foreign born population by length of stay in Nepal, sex and age groups		Table 26		
12.	Foreign born population by main reason of stay in Nepal, sex and age groups		Table 27		
13.	Population aged 5 years and above, residing in enumerated area by residence 5 years ago, sex and 5 year age groups		Table 28		
14.	Population 5 years and above by place of residence prior to 5 years in different districts other than the enumeration district, by sex and 5 year age groups		Table 29		
15.	Population 5 years and above by country of residence prior to 5 years in foreign country from the date of enumeration, sex and age groups		Table 30		

Source: CBS, 2014.

9.5 International migration rates

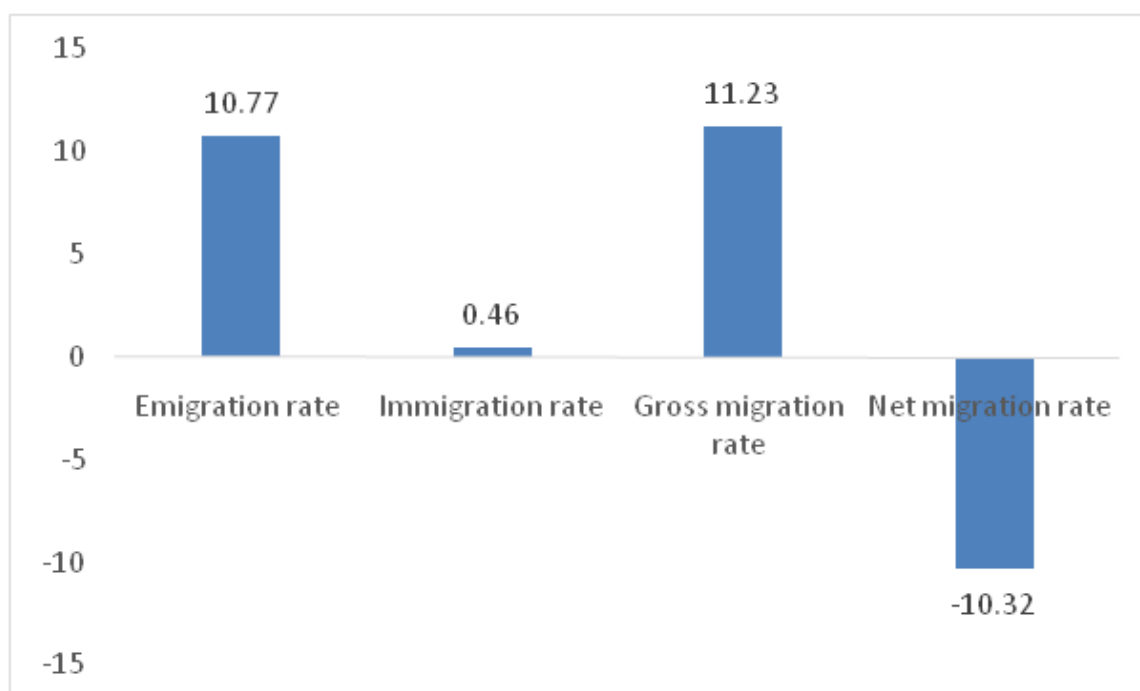
Calculating migration rates is a recent trend worldwide, corresponding to the growing mobility observed in relation to foreign employment. However, no authentic data for calculation are available. PRB (2006) has introduced the concept of calculating immigration and emigration rates. However, it does not categorically specify the sources of

data to use, whether census or vital statistics or other data. For the first time, CBS has used the absent population to calculate the emigration rate and foreign-born population to calculate the immigration rate.

9.5.1 Emigration rate (unadjusted)

The emigration rate is defined as the number of emigrants over a given period, divided by the persons-years lived of the departure country, per 1,000 persons (based on midyear population). It is expressed as number of emigrants per 1,000 populations (PRB, 2006). The emigration rate for 2011 is estimated at 10.77 per thousand populations.

Figure 9.1: International migration rate, Nepal, 2011



Source: CBS (2014)

9.5.2 Immigration rate (unadjusted)

The immigration rate is defined as the number of immigrants over a given period, divided by the person-years lived by the population of the receiving country over that period (mid-year population), expressed as number of immigrants per 1,000 populations (PRB, 2006). The immigration rate from NPHC 2011 data stands at 0.46 per thousand populations.

9.5.3 Gross migration rate(unadjusted)

The number of immigrants plus the number of emigrants over a period, divided by the person-years lived by the population (mid-year population) of the receiving country over that period is known as the gross migration rate. It is expressed as the gross number of migrants per 1,000 populations (PRB, 2006). The gross migration rate for 2011 is estimated at 11.23 per thousand populations.

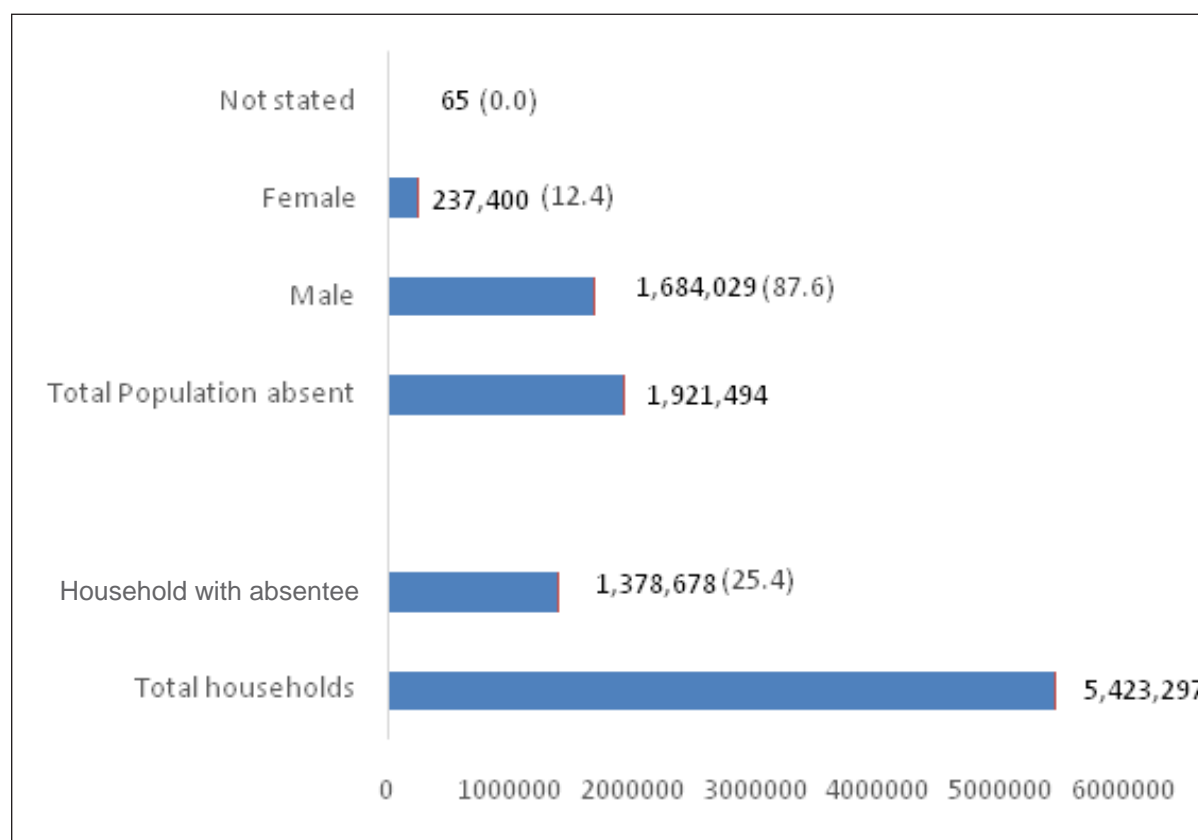
9.5.4 Net migration rate (unadjusted)

The number of immigrants minus the number of emigrants over a period, divided by the person-years lived by the population (mid-year population) of the receiving country over that period, is known as the net migration rate. It is expressed as the net number of migrants per 1,000 populations (PRB, 2006). The net migration rate for 2011 is estimated at -10.32 per thousand populations.

9.6 Absent population

Data on the absent population are available only after the 1942 census, which recorded 87,722 people as absent which is 1.4% of the total population. This number increased to 328,470 in 1961, 3.4% of the total population. Emigration data for the 1971 census are not available.

Figure 9.2: Number and percent of households with at least one member absent and absent population by sex, Nepal, 2011



Source: CBS, 2014

The 1981 census recorded an absent population of 402,977, 2.6% of the total population, which increased to 762,181 in 2001, 3.2% of the total population. In 2011, the total number of absent population was reported to be 1,921,494, 7.3% of the total population. This analysis shows that the absent population in Nepal is growing rapidly.

Table 9.3: Absent population, Nepal, 1911 – 2011

Year	Total	Absent	%	Male	%	Female	%
1911	5,638,749	NA		NA		NA	
1920	5,573,788	NA		NA		NA	
1930	5,532,574	NA		NA		NA	
1942	6,283,649	87,722	1.4	NA		NA	
1952/54	8,256,625	198,120	2.3	173,619	87.6	24,501	12.4
1961	9,412,996	328,470	3.4	NA		NA	
1971	11,555,983	NA		NA		NA	
1981	15,022,839	402,977	2.6	328,448	81.5	74,529	18.5
1991	18,491,097	658,290	3.4	548,002	83.2	118,288	16.8
2001	23,151,423	762,181	3.2	679,489	89.2	82,712	10.8
2011	26,494,504	1,921,494	7.3	1,684,029	87.6	237,400	12.4

Source: CBS, 2003, KC, 2008, Table 16, District Report, CBS, 2014.

According to every census record, male absentees are predominantly higher (87.6% in the census of 2011) than females (12.4%), in the same census. However, the trend of female absentees has also begun to increase, from 11% in 2001 to 12% in 2011.

9.6.1 Absent population

The 2011 census also recorded households with absent populations. The data revealed that, one in every four households (25.42%; 1.38 million households) reported that at least one member of their household was absent or living out of the country.

9.6.2 Destination

The percentage of absent population going to India sharply decreased in 2011, from 77% in 2001 to 38% in 2011. However, the volume of absent population going to India has increased, from 589,050 in 2001 to 722,256 in 2011, which is an increment of 1.2%. One of the reasons for the dramatic percentage decrease is the growing number of youths tending to go to other countries. Among the total absentees in India, 605,869 (83.9%) were males whereas 116,362 (16.1%) were females.

A total of 1,178,926 people went to other countries except India, approximately over three-fifths (61.4%). Among them, 1,062,755 (90.1%) were males and the remaining 116,171 (9.9%) were females. The status of destination of the remaining 20,312 (1.1%) of absentees is not known of which 4,865 (24%) are females.

Table 9.4: Population absent from households and destination abroad by sex, Nepal, 1981-2011

Year	Total absent population	India						Other countries					
		Total		Male		Female		Total		Male		Female	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1981	402,977	375,196	93.1	307,946	82.1	67,290	17.9	27,781	6.9	20,277	73	7,504	27
1991	658,290	587,243	89.2	492,079	83.8	95,164	16.2	40,481	12.8	32,477	80.2	8,004	19.8
2001	762,181	589,050	77.3	520,500	88.4	68,550	11.6	173,131	22.7	158,989	91.8	14,162	8.2
2011	1,921,494	722,255	37.6	605,869	83.9	116,362	16.1	1,178,926	61.4	1,062,755	90.1	116,171	9.9

Not stated					
Total		Male		Female	
No.	%	No.	%	No.	%
-	-	-	-	-	-
30,566	4.6	23,446	76.2	7,120	23.3
-	-	-	-	-	-
20,312	1.1	15,447	76	4,865	24

Source: CBS, 2002, KC, 2008, Table 16, District Report, CBS, 2014.

9.6.3 Age sex structure by destination

More than 76% of the total absent population are in the age group 15- 34 years, followed by 14% in the age group 35-54 years. A proportionately larger percentage of female absentees (14.1%) are under 15 years of age, compared to males (5%) in the same age range.

Over two-fifths (40.5%) of absentees' duration of stay in their destination country is 1-2 years, followed by 3-5 years (22.5%) and 6-9 years (7.8%). Almost the same is true for male and female migrants. Among the absentees, the highest proportion (45.1%) of the absent population is in the age group 15 to 24 years (see Table 9.5).

Table 9.5: Population absent from households and destination abroad by age at departure and duration of years, Nepal, 2011

Duration (years)	Total absent population		Age at departure									
			Under 14		15-34		35-54		55 and above		Age not stated	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Both sexes												
< 1	283,488	14.8	14,259	5.0	213,722	75.4	49,240	17.4	3,945	1.4	2,322	0.8
1 – 2	777,765	40.5	31,273	4.0	608,975	78.3	124,240	16	6,774	0.9	6,503	0.8
3 – 5	432,866	22.5	22,384	5.2	340,568	78.7	63,396	14.7	2,354	0.5	4,164	1
6 – 9	149,101	7.8	14,992	10.1	113,830	76.4	16,877	11.3	748	0.5	2,654	1.8
10-24	193,600	10.1	22,733	11.7	149,312	77.1	17,496	9	896	0.5	3,163	1.6
25-49	35,904	1.9	6,532	18.2	26,623	74.2	1,796	5	208	0.5	745	2.1
50+	2,431	0.1	448	18.4	1,719	70.8	182	7.5	10	0.4	72	3
Not Stated	46,339	2.4	8,527	18.4	18,635	40.2	3,746	8.1	371	0.8	15,060	32.5
Total	1,921,494	100	121,148	6.3	1,473,384	76.6	276,973	14.4	15,306	0.8	34,683	1.8
Male												
< 1	254,735	15.1	9,551	3.7	194,439	76.3	45,831	18	3,077	1.2	1,837	0.7

Duration (years)	Total absent population		Age at departure									
			Under 14		15-34		35-54		55 and above		Age not stated	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1 - 2	688,326	40.9	20,710	3	541,658	78.7	115,275	16.7	5,507	0.8	5,176	0.8
3 - 5	375,779	22.3	14,586	3.9	298,018	79.3	58,190	15.5	1,883	0.5	3,102	0.8
6 - 9	127,184	7.6	10,415	8.2	99,264	78.1	15,199	11.9	591	0.5	1,715	1.3
10-24	169,033	10	18,271	10.8	132,356	78.3	15,540	9.2	740	0.5	2,126	1.3
25-49	33,022	2	6,106	18.5	24,594	74.4	1,558	4.7	181	0.5	583	1.8
50+	2,141	0.1	392	18.3	1,538	71.8	156	7.3	6	0.3	49	2.3
Not Stated	33,809	2	4,866	14.4	15,873	46.9	3,336	9.8	270	0.8	9,464	28
Total	1,684,029	87.6	84,897	5	1,307,740	77.7	255,085	15.2	12,255	0.8	24,052	1.4
Female												
< 1 Year	28,741	1.7	4,707	16.4	19,274	67	3,408	11.9	868	3	484	1.7
1 - 2	89,410	5.3	10,561	11.8	67,298	75.3	8,957	10	1,267	1.5	1,327	1.5
3 - 5	57,071	3.4	7,797	13.7	42,537	74.6	5,204	9.1	471	0.8	1,062	1.9
6 - 9	21,915	1.3	4,577	20.9	14,565	66.5	1,677	7.7	157	0.7	939	4.3
10-24	24,564	1.5	4,462	18.2	16,953	69	1,956	8	156	0.6	1,037	4.2
25-49	2,882	0.2	426	14.8	2,029	70.4	238	8.3	27	0.9	162	5.6
50+	290	0	56	19.3	181	62.4	26	8.9	4	1.3	23	7.9
Not Stated	12,527	0.7	3,660	29.2	2,761	22.1	409	3.2	101	0.8	5,596	44.7
Total	237,400	14.1	36,246	15.3	165,598	69.8	21,875	9.2	3,051	1.3	10,630	4.5

Source: National Population Census 2011, District Report, CBS, 2014

Table 9.6: Population absent from household by sex, age at departure and country of destination

Age group	Absent population destined to																														
	Total		India		Other countries		Other SAARC countries (Except India)		ASEAN countries		Middle East countries		Other Asian countries		European Union countries		Other European countries		North American countries (USA & Canada)		South American/Caribbean countries		African countries		Pacific Ocean region countries		Others		Not Stated		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Both Sexes																															
All Ages	1,921,494		722,255	37.6	1,199,239	62.4	12,068		249,889		721,791		44,566		58,882		3,691		48,077		2,315		5,124		27,366		5,158		20,312		
00-14	121,148		105,006	86.7	16,142	13.3	185		962		523		1,642		4,802		275		4,125		131		161		1,080		164		2,092		
15-24	867,496		362,118	41.7	505,378	58.3	4,870		120,436		287,838		16,639		27,344		1,516		20,696		756		1,719		15,158		2,123		6,283		
25-34	605,888		139,104	23.0	466,784	77.0	4,030		91,983		298,357		18,813		17,529		1,383		15,723		873		2,171		9,442		1,971		4,509		
35-44	227,356		63,087	27.7	164,269	72.3	2,258		30,666		112,037		5,479		4,452		372		4,470		308		817		1,029		683		1,698		
45-54	49,617		26,249	52.9	23,368	47.1	565		3,149		15,158		804		1,550		53		1,235		56		169		140		115		374		
55-64	11,636		8,544	73.4	3,092	26.6	47		181		972		243		993		7		437		12		22		47		17		114		
65+	3,670		2,282	62.2	1,388	37.8	5		30		171		73		780		2		218		4		2		38		14		51		
Not Stated	34,683		15,865	45.7	18,818	54.3	108		2,482		6,735		873		1,432		83		1,173		175		63		432		71		5,191		
Male																															
All Ages	1,684,029		605,869	36.0	1,078,160	64.0	11,009		244,429		673,104		33,223		38,912		3,016		30,519		1,889		4,307		17,768		4,537		15,447		
00-14	84,897		75,905	89.4	8,992	10.6	131		612		449		894		2,488		155		2,162		82		95		556		101		1,267		
15-24	762,772		313,338	41.1	449,434	58.9	4,124		117,698		264,505		11,641		18,451		1,259		13,130		594		1,369		9,631		1,850		5,182		
25-34	544,968		117,998	21.7	426,970	78.3	3,838		90,213		280,144		14,750		12,138		1,170		10,137		748		1,889		6,403		1,773		3,767		
35-44	210,060		56,221	26.8	153,839	73.2	2,215		30,283		106,086		4,592		3,089		329		3,297		277		737		830		625		1,479		
45-54	45,025		23,506	52.2	21,519	47.8	558		3,099		14,614		631		1,008		48		847		52		153		85		109		315		
55-64	9,584		7,386	77.1	2,198	22.9	46		165		938		169		488		5		241		7		19		25		12		83		
65+	2,671		1,776	66.5	895	33.5	3		25		149		41		497		0		109		3		2		18		11		37		
Not Stated	24,052		9,739	40.5	14,313	59.5	94		2,334		6,219		505		753		50		596		126		43		220		56		3,317		
Female																															
All Ages	237,400		116,364	49.0	121,036		1,059		5,452		48,656		11,342		19,967		675		17,558		426		817		9,598		621		4,865		
00-14	36,246		29,096	80.3	7,150		54		350		74		748		2,314		120		1,963		49		66		524		63		825		
15-24	104,704		48,770	46.6	55,934		746		2,737		23,327		4,997		8,891		257		7,566		162		350		5,527		273		1,101		
25-34	60,894		21,102	34.7	39,792		192		1,764		18,197		4,063		5,391		213		5,586		125		282		3,039		198		742		
35-44	17,287		6,866	39.7	10,421		43		382		5,943		887		1,363		43		1,173		31		80		199		58		219		
45-54	4,588		2,741	59.7	1,847		7		50		543		173		541		5		388		4		16		55		6		59		
55-64	2,052		1,158	56.4	894		1		16		34		74		505		2		196		5		3		22		5		31		
65+	999		506	50.7	493		2		5		22		32		283		2		109		1		0		20		3		14		
Not Stated	10,630		6,125	57.6	4,505		14		148		516		368		679		33		577		49		20		212		15		1,874		

Source: National Population Census 2011, District Report, CBS, 2014

A larger percentage of absentees (58.3%) went to to ASEAN Member State Countries and the Middle East, only 41.7% went to India. An overwhelming majority of migrant children under 15 years of age (86.7%) went to India. Apart from India, more men, 673,104 (35%) of males go to the Middle East. A similar pattern is observed for females as well, 48,656 (20.5%) went to the Middle East compared to 19,967 (8.4%) who went to European Union countries.

Census, surveys and individual research on migration are also concerned with the types of people migrating to different parts of the globe. The Nepal Living Standards Survey (NLSS) 2010/11 presented data on the absentee population by their current location, in terms of development regions, ecological zones, place of residence, and other analytical domains, such as the consumption quintile. According to the consumption quintile, the majority of the first and second poorest people (62 and 51% respectively) are believed to be outside the country, whereas the majority of the third (53.3%), fourth (62.8%) and fifth (65.1%) categories are migrating within Nepal. Similarly, some attempts have been made by Gurung to determine the country of destination by type of person, G (2014). He stated that the 'A' category of people, in terms of wealth, can afford to go to the USA, the UK, Australia and Canada, whereas the 'E' category of people chose the neighbouring country of India, while the 'F' category of people cannot even afford to migrate to India. The financial cost of migration is a major determinant in explaining who goes where.

9.6.4 Source areas

Districts including Gulmi, Arghakhanchi, and Pyuthan reported the highest proportion of their population being absent (staying abroad) (CBS, 2012). Whereas Gulmi had the highest proportion of households with an absent member (54.1%), Kathmandu district had the largest number of absentees, that is, 99,805. However, Gulmi again had the highest proportion (20.9%) of absent population followed by Syangja (17.5%) and Kaski (11.6%). Remaining districts with the top 10 absent populations are Nawalparasi (10.2%), Jhapa (9.9%), Kailali (8.1%), Dhanusa (8%), Morang (7.3%), and Rupandehi (7.1%).

Table 9.7: Major areas of origin of absent population

10 districts having most absentee households	No. of total households	Households having migrants	% of total households	10 districts having most absentee population	Total population	Migrant population	% of the total population
Gulmi	64,887	35,131	54.1	Gulmi	280,160	58,561	20.9
Arghakhanchi	46,826	25,266	54.0	Syangja	289,148	50,476	17.5
Pyuthan	47,716	24,124	50.6	Kaski	492,098	57,305	11.6
Syangja	68,856	34,207	49.7	Nawalparasi	643,508	65,335	10.2
Baglung	61,482	29,133	47.4	Jhapa	812,650	80,625	9.9
Palpa	59,260	27,010	45.6	Kailali	775,709	62,644	8.1
Tanahu	78,286	34,119	43.6	Dhanusa	754,777	60,400	8
Parbat	35,698	15,422	43.2	Morang	965,370	70,462	7.3
Myagdi	27,727	11,439	41.3	Rupandehi	880,196	62,904	7.1
Rolpa	43,735	17,047	39.0	Kathmandu	1,744,240	99,805	5.7

Source: National Population Census 2011, District Report, CBS, 2014

By sub-regions, the highest number of absentees (21.9% of absentees and 42.8% of households) were found in Western Hill and Far-Western Hill (32.9%) for households, and Eastern Tarai (14.2%) for number of absentees. Among female absentees, the largest number (44,283) was from Western Hill (see Table 9.8).

Table 9.8: Source areas of absent population from Nepal, 2011

Area	Total	Households with absentee		Sex of absentees							
				Total		Male		Female		Not stated	
				No.	%	No.	%	No.	%	No.	%
Nepal	5,423,297	1,378,678	25.4	1,921,494	100.0	1,684,029	87.6	237,400	12.4	65	0.003
Eastern Mountain	84,844	21,572	25.4	27,608	1.4	25,179	91.2	2,429	8.8	0	0.000
Eastern Hill	346,373	101,196	29.2	128,671	6.7	118,098	91.8	10,572	8.2	1	0.001
Eastern Tarai	799,526	210,248	26.3	273,591	14.2	245,342	89.7	28,231	10.3	18	0.007
Central Mountain	122,034	23,788	19.5	32,961	1.7	23,537	71.4	9,424	28.6	0	0.000
Central Hill	1,014,765	168,263	16.6	228,818	11.9	180,844	79.0	47,972	21.0	2	0.001
Central Tarai	825,439	158,500	19.2	202,677	10.5	191,021	94.2	11,629	5.7	27	0.013
Western Mountain	4,753	1,032	21.7	1,704	0.1	1,152	67.6	552	32.4	0	0.000
Western Hill	676,987	289,486	42.8	420,099	21.9	375,812	89.5	44,283	10.5	4	0.001
Western Tarai	383,859	115,301	30.0	158,031	8.2	141,538	89.6	16,491	10.4	2	0.001
Mid-Western Mountain	68,802	3,512	5.1	5,387	0.3	4,162	77.3	1,225	22.7	0	0.000
Mid-Western Hill	332,025	88,312	26.6	126,311	6.6	112,596	89.1	13,714	10.9	1	0.001
Mid-Western Tarai	294,187	66,499	22.6	89,563	4.7	79,937	89.3	9,624	10.7	2	0.002
Far-Western Mountain	83,265	19,351	23.2	37,763	2.0	28,292	74.9	9,471	25.1	0	0.000
Far-Western Hill	161,891	53,208	32.9	87,268	4.5	73,205	83.9	14,063	16.1	0	0.000
Far-Western Tarai	224,547	58,410	26.0	101,042	5.3	83,314	82.5	17,720	17.5	8	0.008

Source: National Population Census 2011, District Report, CBS, 2014

9.6.5 Reasons for absence

Nearly three quarters (71%) of the total absentees were found leaving their respective places of origin in search of employment; private jobs followed by one in every ten absentees leaving for institutional jobs. While more males (75.4%) were destined for private jobs, almost one third (32.2%) of female absentees were found to be dependents. Proportionately more females (14.2%) were found to go abroad to study than males (5.8%).

Although the role of armed conflict, which challenged the overall personal security of youths for various reasons in villages, was a major factor especially for migration, this was expressed as a factor by a nominal number of the absentees' families (0.1%). Those going abroad for business purposes were also nominal (0.6%) with a marginal variation between males (0.6%) and females (0.8%).

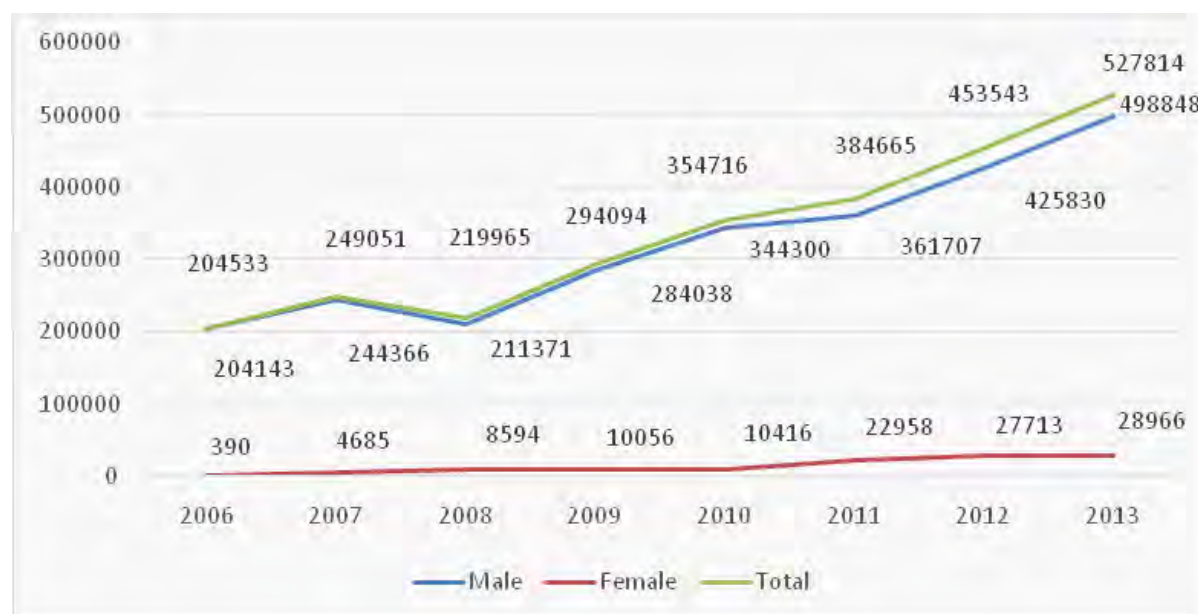
Table 9.9: Distribution of population absent from household by sex, age at departure and reason for absence, 2011

Reasons	Both sexes		Male		Female	
	No.	%	No.	%	No.	%
Business	11685	0.6	9773	0.6	1911	0.8
Private job	1,364,602	71.0	1,270,568	75.4	93,993	39.6
Institutional job	192,484	10.0	181,952	10.8	10,529	4.4
Study	110,564	5.8	76,886	4.6	33,678	14.2
Conflict	2,643	0.1	2,249	0.1	394	0.2
Dependent	131,109	6.8	54,764	3.3	76,341	32.2
Others	26,681	1.4	20,230	1.2	6,451	2.7
Not stated	81,726	4.3	67,607	4	14,103	5.9

Source: National Population Census 2011, District Report, CBS, 2014

9.7 Foreign labour migration

The Department of Foreign Employment (DoFE) under the Ministry of Labour regularly updates the number of people going abroad by taking individual and institutional permission, as well as by sex and destination countries.

Figure 9.3: Labour migrants going abroad by taking official permission (DOFE, 2014)

Source: <http://www.dofe.gov.np/new/pages/details/35> (Accessed on 15 August 2014)

The number of labour migrants by taking official permission until 15 August 2014 is 3,489,365, which is more than 13% of the total population (see Figure 9.3).

The number of female migrants going abroad has also significantly increased during this period, from 82,712 (10.8%) in 2001, to 237,400 (12.4%) in 2011. The Nepal Living Standard Survey recorded that approximately 37% of the total population migrated. Of the migrants, the proportion of females has increased from 21.6% in 2003/04 to 38% in 2010/11 (CBS, 2011).

Table 9.10: Annual figure of labour migrants to abroad by taking official permission, 2006 – 2013 (DoFE, 2014)

Year	Male		Female		Total	
	No.	%	No.	%	No.	%
1994 -2005	758,675				758,675	21.7
2006 - 2014 (August 15)	2,615,287	95.8	115,403	4.2	2,730,690	78.3
Total	3,373,962	96.7	115,403	3.3	3,489,365	100.0

Source: <http://www.dofe.gov.np/new/pages/details/35> (Accessed on 15 August 2014)

The updated data on labour migration abroad, collected by the DoFE, shows an increasing trend. Up until 2006, only 0.2 million people had gone abroad. This figure increased to 0.38 million in 2011, with a proportionately higher number of females (22,958). In 2013, the annual labour migrants increased to 0.52 million, of whom 28,966 were females.

9.8 Foreign born population

Countries included for the foreign born population for almost all censuses since 1961 are India, China, Bangladesh, Bhutan, other Asians, other European countries and other countries.

9.8.1 Trend of foreign born population in Nepal

Information on both foreign-born populations and foreign citizens are available from the 1961 census. The figures collected so far by the various censuses of Nepal indicate a fluctuating trend, which may also pose questions on the reliability of these data. Whereas initially in 1961, the percentage of foreign born population of the total population was nearly 4%, it decreased to 1.6% in 1981, before increasing to 2.4% in 1991, 2.7% in 2001 and 1.8% in 2011.

Table 9.11: Foreign born population and foreign citizens in Nepal, 1961-2011

Year	Total population	Foreign-born population	% of total population	Foreign citizens	% of total population	Foreign citizen as % of foreign-born
1961	9412996	337,620	3.6	110,061	1.2	32.6
1971	11,555,983	337,448	2.9	136,477	1.8	40.4
1981	15,022,839	234,039	1.6	483,019	3.2	206.4
1991	18,491,097	439,488	2.4	90,427	0.5	20.6
2001	23,151,423	608,092	2.7	116,571	0.6	19.2
2011	26,253,828*	479,625	1.8	138,910	0.5	29.0

*Non-institutional population.

Source: CBS, 2003

The figures on foreign citizens as recorded by various censuses also show a fluctuating trend. Foreign citizens in 1961 were 1.2 % of the total population, which increased to over 3% in 1981 before declining to 0.5% in 1991, remaining the same in 2011 (see Table 9.11).

The census records show a smaller number of foreign citizens in comparison to foreign-born populations. For

example, in the census of 1961 there were 110,061 foreign citizens, almost one third (32.6%) of the foreign born population. This trend decreased to 138,910 foreign citizens, 29% of the total foreign-born population in 2001. However, unexpectedly, the 1981 census showed a larger number of foreign citizens (283,019) in comparison to the corresponding figure of foreign-born population at 234,039.

9.8.2 Countries of birth

The census of 2011 recorded the foreign born population in terms of identified, 479,625, which is a decrease from 608,090 in 2001. Of this population, an overwhelming majority (70.6%) were females.

Table 9.12: Foreign born population in Nepal

Sexes	Foreign born population	
	Number	Percent
Both sexes	479,625	65.8
Male	141,165	29.4
Female	338,460	70.6

Source: National Population and Housing Census 2011, CBS

Table 9.13 below shows the trend of immigration in Nepal by countries of birth. Immigration is largely dominated by persons whose birthplace is India, over 90% as recorded in every census. In 1961, 324,159 of the foreign born population were from India. This figure increased to 449,149 in 2011, 94% of the total foreign-born population. This heavy domination is due to the open border between Nepal and India and the official and non-official social, cultural and economic ties that have prevailed between these countries historically.

A fluctuating trend observed in foreign-born populations, is mainly from China, on the northern border of Nepal. The 1961 census recorded the foreign born population at 13,231, excluding India which made up approximately 4% of the country's population. This figure increased to 24,493 in 2001 and decreased to 20,430 in 2011, which is 4.3% of the country's total non-institutional population.

Table 9.13: Trends of foreign born population in Nepal by countries of birth, 1961-2011

Country of birth	Sex	Year											
		1961		1971		1981		1991		2001		2011	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total foreign born population	Both	337,620	100.0	337,448	100.0	234,039	100.0	439,488	100.0	608,092	100.0	479,625	100.0
	Male			123,480	36.6	71,555	30.6	123,560	28.1	183,037	30.1	141,165	29.4
	Female			213,968	63.4	162,484	69.4	315,828	71.9	425,055	69.9	338,460	70.6
India	Both	324,159	96	322,718	95.6	222,278	95	418,982	95.3	583,599	96	449,149	93.6
	Male			115,606	35.8	65,285	29.4	113,405	27.1	171,224	29.3	129,057	28.7
	Female			207,112	64.2	156,993	70.6	305,577	72.9	412,375	70.7	320,092	71.3
Other countries	Both	13,231	3.9	14,236	4.2	10,308	4.4	20,506	4.7	24,493	4	20,430	4.3
	Male			7,613	53.5	5,555	53.9	10,155	49.5	11,813	48.2	9,006	44.1
	Female			6,623	46.5	4,753	46.1	10,251	50	12,680	51.8	11,423	55.9
Not stated	Both	230	0.07	494	0.15	1,453	0.62					10,046	2.09
	Male			261	52.8	715	49.2					3,102	30.9
	Female			233	47.2	738	50.8					6,945	69.1

Source: Individual Table 21, and 25, District Report, CBS, 2014.

9.8.3 Age sex structure

For the first time in the history of census undertakings, the 2011 census report published in 2014, has categorised other countries of foreign born populations in terms of other SAARC countries, ASEAN countries, Middle East, other Asian countries, European Union countries, other European countries, North American countries (USA and Canada), South American/Caribbean countries, African countries, Pacific regions and others.

Of the overwhelming majority of the foreign born population from India (93.6%), over 80% are in the age group 15-59. The same age group dominates the foreign born population from other countries as well.

Table 9.14: Foreign born population by age sex structure and countries of birth, Nepal, 2011

Age group	Total foreign born population	Population born in													
		India		Other SAARC countries		Other Asian countries		European countries		USA/ Canada		Other countries		Countries not stated	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Both Sexes															
Total	479,625	449,149	93.6	3,371	0.7	10,289	2.1	2,296	0.5	616	0.1	3,858	0.8	10,046	2.1
00 - 14	47,082	43,158	9.6	195	5.8	1,578	15.3	368	16	348	56.5	405	10.5	1,029	10.2
15 - 59	382,374	359,506	80	2,807	83.3	7,335	71.3	1,724	0.5	203	33	2,916	75.6	7,882	78.5
60+	50,169	46,484	10.3	369	10.9	1,375	13.4	204	0.4	65	10.6	536	13.9	1,135	11.3
Male															
Total	141,165	129,057	28.7	1,515	1.1	4,897	3.5	868	0.6	266	0.2	1,460	1	3,102	2.2
00 - 14	24,743	22,686	17.6	118	7.8	832	17	205	23.6	108	40.6	255	17.5	541	17.4
15 - 59	103,611	95,063	73.7	1,252	82.6	3,409	69.6	566	65.2	118	44.4	970	66.4	2,235	72.1
60+	12,811	11,308	8.8	145	9.6	658	13.4	97	11.2	41	15.4	235	16.1	326	10.5
Female															
Total	338,460	320,092	94.6	1,856	0.5	5,393	1.6	1,428	0.4	350	0.1	2,398	0.7	6,945	2.1
00 - 14	22,339	20,472	6.4	78	4.2	747	13.9	163	11.4	240	68.6	151	6.3	488	7
15 - 59	278,763	264,444	82.6	1,555	83.8	3,927	72.8	1,158	81.1	86	24.6	1,946	81.2	5,648	81.3
60+	37,358	35,176	11	223	12	717	13.3	107	7.5	24	6.9	301	12.6	809	11.6

Source: Individual Table 21, and 25, District Report, CBS, 2014.

9.8.4 Length of stay

The majority of the foreign-born population stay in Nepal for more than a decade (54%), followed by 1-5 years (17.3%) and 6-10 years (14.7%). Fewer males (47.7%) tend to live in Nepal more than 10 years than females (56.6%), which indicates that marriage is the main reason for staying in Nepal for females.

Table 9.15: Foreign-born population by length of stay in Nepal, sex and age groups

Age group & sex	Total foreign born population		Length of stay (years)									
			<1		1 - 5		6 - 10		>10 years		Not stated	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Nepal												
Both Sexes	479,625	100.0	12,054	2.5	82,885	17.3	70,280	14.7	258,922	54.0	55,485	11.6
Male	141,165	29.4	5,100	3.6	32,213	22.8	25,081	17.8	67,289	47.7	11,481	8.1
Female	338,460	70.6	6,954	2.1	50,671	15.0	45,198	13.4	191,633	56.6	44,004	13.0

Age group & sex	Total foreign born population		Length of stay (years)									
			<1		1 - 5		6 - 10		>10 years		Not stated	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Ecological Belt												
Mountain	4,002	0.8	249	6.2	1,021	25.5	518	12.9	1,638	40.9	577	14.4
Hill	98,580	20.6	4,457	4.5	27,101	27.5	20,349	20.6	39,426	40.0	7,247	7.4
Tarai	377,042	78.6	7,348	1.9	54,762	14.5	49,413	13.1	217,858	57.8	47,661	12.6
Development regions												
EDR	117,880	24.6	3,100	2.6	19,077	16.2	16,148	13.7	68,349	58.0	11,205	9.5
CDR	193,689	40.4	4,397	2.3	32,690	16.9	29,562	15.3	104,044	53.7	22,996	11.9
WDR	115,834	24.2	2,885	2.5	19,394	16.7	17,334	15	62,727	54.2	13,494	11.6
MWDR	29,390	6.1	821	2.8	6,009	20.4	3,953	13.5	13,576	46.2	5,031	17.1
FWDR	22,832	4.8	851	3.7	5,715	25	3,282	14.4	10,225	44.8	2,760	12.1

Source: Individual Table 21, and 25, District Report, CBS, 2014.

By Ecological Zones, the majority of the foreign born population (57.8%) settled in the Tarai for more than 10 years, whereas the respective figure for Mountain and Hill were 41 and 40% respectively. By Development Region, the majority of the foreign born population who stayed more than 10 years was in Eastern Development Region (58%), followed by Central Development Region (53.7%) and Western Development Region (54.2%); the same duration period for Mid Western Development Region and Far Western Development Region were 46 and 45% respectively.

9.8.5 Reasons for stay

The main reason for staying in Nepal was found to be marriage (45.8%), which was predominant among females (63.8%), followed by dependents (17%) and business (7.3%). The reasons for staying due to agriculture (5.6%), business (7.3%) and services (6.3%) were lower.

Table 9.16: Foreign-born population by reasons for stay in Nepal

Main reason for stay	Total		Male		Female	
	No.	%	No.	%	No.	%
Agriculture	27,010	5.6	14,049	10.0	12,961	3.8
Business	34,829	7.3	27,942	19.8	6,887	2.0
Service	30,382	6.3	25,706	18.2	4,675	1.4
Study	20,921	4.4	10,981	7.8	9,940	2.9
Marriage	219,527	45.8	3,590	2.5	215,936	63.8
Dependent	81,721	17.0	36,411	25.8	45,310	13.4
Conflict	1,825	0.4	977	0.7	848	0.3
Others	14,582	3.0	9,023	6.4	5,559	38.1
Not stated	48,828	10.2	12,485	8.8	36,343	74.4
Total	479,625	100.0	141,165	100.0	338,460	70.6

Source: Individual Table 21, and 25, District Report, CBS, 2014.

9.9 Foreign citizens

Of the total 138,910 foreign citizens, the overwhelming majority (87%) were from India, followed by China (2.1%) and other countries (11.1%), with almost a similar composition between males and females, as well as Ecological Zones and Development Regions. The percentage of Chinese was 2.1. The lowest number of foreign citizens (1.3%) were residing in the Mountain, the majority, (56.5%), were in the Tarai, followed by Hill (42.2%).

Table 9.17: Foreign citizens by countries of birth, and current place of residence Nepal, 2011

Area and sex	Foreign citizens							
	Total		India		China		Others	
	No.	%	No.	%	No.	%	No.	%
Nepal								
Both Sex	138,910	100.0	120,891	87.0	2,572	2.1	15,447	11.1
Male	70,038	50.4	63,759	91.0	1,225	1.9	5,054	7.2
Female	68,872	49.6	57,132	83.0	1,347	2.4	10,393	15.1
Ecological Belt								
Mountain								
Both Sex	1,869	1.3	757	40.5	260	34.3	852	45.6
Male	760	40.7	396	52.1	194	49	170	22.4
Female	1,109	59.3	361	32.6	66	18.3	682	61.5
Hill								
Both Sex	58,558	42.2	50,356	86.0	1,971	3.9	6,231	10.6
Male	38,091	65.0	35,010	91.9	914	2.6	2,167	5.7
Female	20,467	35.0	15,346	75.0	1,057	6.9	4,064	19.9
Tarai								
Both Sex	78,483	56.5	69,778	88.9	341	0.5	8,364	10.7
Male	31,187	39.7	28,353	90.9	117	0.4	2,717	8.7
Female	47,296	60.3	41,425	87.6	224	0.5	5,647	11.9
Development Region								
Eastern Dev. Region								
Both Sex	29,524	21.3	23,311	79	196	0.8	6,017	20.4
Male	12,460	42.2	10,416	83.6	70	0.7	1,974	15.8
Female	17,064	57.8	12,895	75.6	126	1	4,043	23.7
Central Dev. Region								
Both Sex	77,591	55.9	69,107	89.1	2,012	2.9	6,472	8.3
Male	40,323	52.0	37,071	91.9	936	2.5	2,316	5.7
Female	37,268	48.0	32,036	86	1,076	3.4	4,156	11.2
Western Dev. Region								
Both Sex	19,551	14.1	17,676	90.4	191	1.1	1,684	8.6
Male	11,118	56.9	10,507	94.5	98	0.9	513	4.6
Female	8,433	43.1	7,169	85	93	1.3	1,171	13.9
Mid-Western Dev. Region								
Both Sex	5,108	3.7	4,389	85.9	42	1	677	13.3
Male	2,368	46.4	2,195	92.7	24	1.1	149	6.3
Female	2,740	53.6	2,194	80.1	18	0.8	528	19.3
Far-Western Dev. Region								
Both Sex	7,136	5.1	6,408	89.8	131	2	597	8.4
Male	3,769	52.8	3,570	94.7	97	2.7	102	2.7
Female	3,367	47.2	2,838	84.3	34	1.2	495	14.7

Source: Table 9; Table 23, National Report, CBS, 2014

By Development Regions, the highest number of foreign citizens was found in Central Development Region (55.9%), followed by Eastern Development Region (21.3%) and Western Development Region (14.1%). Mid Western Development Region had the lowest number of foreign citizens at 3.7%, whereas Far Western Development Region had the highest at 5%.

9.10 Conclusion

International migration in Nepal began with the recruitment of physically strong youth by the British Army. Family migration connected to this was observed as a latter trend, particularly in the northern parts of India. After the 1990s, Nepali began to migrate increasingly to Gulf countries and Malaysia for employment. An estimated five million Nepali are employed in foreign countries, of which around 40% leave for India. Such a huge number of Nepalese in India in an almost undocumented situation, is the outcome of the 1950 Treaty signed between Nepal and India on Peace and Friendship. This Treaty has implications not only for population mobility between these countries, but on political, social and cultural grounds, and now stands as a fundamental basis of the relationship between the two countries.

Censuses particularly from 1950 onward, and some national level surveys such as the NLSS, are the major sources of migration data in Nepal. Both these sources include two major questions to obtain information on migration. Whereas place of birth is administered in order to obtain information on foreign-born populations, immigration, and non-migration, status of presence is another question that provides information on the absent population, that is abroad and 'out-migration', or internal migration.

Since the 1952/54 census, data on the absent population is available in Nepal whereas for the foreign born population, migration data are available from the 1961 census onwards. Almost all these censuses have collected migration information in terms of sex, and broad age groups (0-15 years, 15-59 years and 60 years and above). Since the 2001 census, data on migration were collected by complete enumeration and sample enumeration. Whereas place of birth was enumerated by sample schedule for native born and foreign born in both the 2001 and 2011 censuses, information on the absent population by households was obtained through complete enumeration.

Calculating migration rates is a new initiative by the CBS from the 2011 census onwards. Accordingly, the emigration rate for 2011 is estimated at 10.77 per thousand populations, whereas the immigration rate for the same period stands at 0.46 per thousand populations. The gross migration rate and net migration rate are respectively calculated as 11.23 and -10.32 per thousand populations.

Nepal has observed the largely growing phenomena of an absent population over the census periods. Whereas the 2001 census recorded that there were an absent population of 762,181, the 2011 census identified more than double this figure, that is, 1,921,494 absent people, 7.3% of the total population.

The 2011 census also kept records of the absent households. One in every four households in Nepal (25.4 %; 1.38 million households) reported that at least one member of its household is absent or is living out of the country. This analysis shows that the absent population in Nepal is growing rapidly.

Although the percentage of absent population going to India has sharply decreased in 2011, from 77% in 2001 to 38% in 2011, this decreasing trend is the outcome of the growing number of absentees going to other countries. An overwhelming majority of these absentees (76 %) are in the age group 15- 34 years followed by 14% in the age group 35-54 years. The number of absentee males under 15 years of age is 5%, while the corresponding figure for females is proportionately higher at 14.1%.

Whereas Gulmi had the highest proportion of households with absent members (54.1%), Kathmandu district had the largest number of absentees, at 99,805. Nearly three quarters (71%) of total absentees were found leaving

their respective places of origin in search of private jobs, followed by 1 in every 10 for institutional jobs. While more males (75.4%) were looking for private jobs, almost one third (32.2%) of female absentees were found to be dependents.

Data on both foreign-born population and foreign citizens are available from the 1961 census. The figures collected so far by the various censuses of Nepal indicate a fluctuating trend, which may also pose questions about the reliability of these data. Initially in 1961, the percentage of foreign-born population of the total population, was nearly 4%. This decreased to 1.6% in 1981 and increased to 2.4% in 1991, 2.7% in 2001 and again decreased to 1.8% in 2011.

The figures of foreign citizens recorded by various censuses also show a fluctuating trend. Foreign citizens in 1961 accounted for 1.2 % of the total population, which increased to over 3% in 1981 before declining to 0.5% in 1991, remaining the same in 2011.

Immigration is largely dominated by people born in India, over 90% as recorded in every census. The foreign born population from other countries is mainly from China, standing on the northern border of Nepal, although this follows a fluctuating trend.

9.11 Policy implications

Acts, regulations and rules

Policy formulation regarding international migration in Nepal started with the 1985 Foreign Employment Act. Since then, there have been considerable shifts in policy regimes that govern migration to and from Nepal. The main legislative frameworks for foreign labour migration are briefly summarised below.

The preamble of the Labour Act, 1992 stated the need for timely provisions relating to labour by making provisions for the rights, interests, facilities and safety of workers and employees working in enterprises of various sectors and service, remuneration and welfare arrangements, arrangements relating to health, sanitation and safety and those relating to committees and officers and other miscellaneous government powers (KC, 2003).

The Labour Rules 1993, exercised the powers conferred in the Labour Act, 2049 B.S.. It lays down rules regarding the following: employment, security of profession and service, remuneration and welfare arrangements, arrangements relating to health, sanitation and safety, and those relating to committees and officers and other miscellaneous government powers.

The Immigration Act 1992, felt the need to regulate as well as control the entry of foreigners into the Kingdom of Nepal for the first time, particularly their arrival and departure from the country, and to manage the arrival and departure of Nepalese citizens. The Immigration Rules 1994 framed by the government aimed to exercise powers conferred in the Immigration Act of 2049 B.S.. It lays down rules for provisions for relationship visas, and conduct and terms to be upheld at the time of entrance and departure in and out of Nepal and other miscellaneous rules.

The Foreign Employment Act, 2007 was designed to amend and consolidate laws relating to foreign employment. In its preamble, it is written that: 'Whereas, it is expedient to amend and consolidate laws relating to foreign employment in order to make foreign employment business safe, managed and decent and protect the rights and interests of the people', (GoN, 2007).

The Foreign Employment Rules 2008 were framed to implement the power conferred by Section 85 of the Foreign Employment Act, 2064 (2008). It sets out rules for provisions concerning the selection of institution or worker,

provisions relating to license, provisions relating to prior approval and selection of workers, provisions relating to training, fund, board, tribunal, and other miscellaneous rules.

The first amendment of the Foreign Employment Rules of 2008 was made in 2011. In 2012, the Foreign Employment Tribunal Rules 2012 were introduced in accordance with Article 85 of the Foreign Employment Act 2007. In the same year, the Foreign Employment Policy of 2012 was passed by parliament on February 24, 2012. The policy has been formulated to give direction for the effective management of foreign employment, and to make the process of migration safe and accessible by overcoming the shortcomings of the prevailing Acts and Rules in addressing issues related to foreign employment (GoN, 2014).

The main government agencies responsible for foreign employment are the Ministry of Labour and Transport Management (MOLTM), DOFE, and the Foreign Employment Promotion Board (FEPB). The FEPB, chaired by the Labour Minister, is formed of representatives from private sectors, (recruiting agencies, orientation agencies, trade unions, etc.).

Memorandum of understanding (MOUs)

The Nepal government has signed memorandums of understanding (MOUs) with Japan (2003, 2010), Korea (2010), United Arab Emirates (2007), Bahrain (2008) and Qatar (2005) to date. Three countries, Hong Kong Special Administrative Region, Lebanon and Israel are destinations for MWs under conditions applied by the Government of Nepal. Major conditions applied are related to family members, working conditions and types of activities. (NIDS, 2012). However, the signing of these MoUs with migrant receiving countries lack to mention the scope/type of work (to be identified beforehand); the minimum wage; safety mechanisms, especially for women migrant workers (such as accommodation, communication mechanisms to nearest Nepali missions); yearly monitoring mechanisms in destination; and a review of MoUs at regular intervals.

Recruiting agencies

About 930 recruiting agencies provide services to migrant workers. Their main role is concentrated on the facilitation of the migration process, (application, preparation for visa documents, plane tickets, and sending migrants to destinations). Although trainings, orientations and health certificates are also their responsibilities, these have, unfortunately been treated as formalities and have not been dealt with as seriously as they deserve. As a result, there is information on dozens of return cases from labour receiving countries, due to people failing health check-ups, although this is also carried out in Nepal prior to migrants' departure.

Data on international migration largely depends on government's policies towards labour work in foreign countries. So far the government has adopted a policy that encourages youths to look for labour work abroad, hoping that their employment there will bring remittance for the country's overall development. However, whether a person is employed abroad or within the country needs to be an informed choice of the citizen him/herself and the government needs to act as a facilitator.

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CHAPTER 10

INTERNAL MIGRATION IN NEPAL

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Abstract

Based on 2011 and other decennial population census data, this chapter examines volumes, trends, patterns, causes and socio-economic characteristics of migrants by ecological zone, development region, rural/urban areas, and districts. The census data indicates that over the last 40 years or so, the volume of internal migration has increased tremendously and it has increased more rapidly after 1991. Over the period, hill continues to be the largest area of origin of internal migrants and the net loser of population. A large majority of the districts, mostly from mountain and hills, are net losers and some districts from eastern and western hill lost up to 50% of its population. Tarai and Kathmandu Valley on the other hand continue to be the largest areas of destination of internal migrants and net gainers. It is evident that most migration to Tarai region takes place from the contiguous hill regions. The relative share of hill migration however is declining with a corresponding increase in the share of Tarai migration. In Nepal, rural-rural migration predominates over all other migration streams and a large majority of migrants are longer-term migrants. In-country migration in Nepal is age-sex selective, favouring youth and females. Male migration is mainly economic migration whereas female migration is mainly due to marriage. On average, every year four persons per 1000 population migrate crossing regional boundaries and six persons cross district boundaries. A comparison of lifetime and current migration data indicate that internal migration in recent years is being more directed to the central hill region, especially the three districts of the Kathmandu Valley. In this context, it is imperative to adopt a two-pronged approach to migration management policies that can retain hill people in hill region and minimise the migration flow to the Tarai and Kathmandu Valley.

10.1 The context of internal migration

Migration is one of the major demographic factors to bring change in population size, structure and distribution. It is generally defined as a geographical form of population movement involving change of usual place of residence. Internal migration is associated with change of usual place of residence within the national boundary.

Available evidence suggests that historically Nepal has witnessed three distinct waves of internal migration. The first wave of internal migration came during the unification of Nepal by King Prithivi Narayan Shah and his successors until the early eighteen century. Internal migration in this period was mainly under the compulsory labour services imposed by the then rulers, called Jhara labour, in which youths were used for different purposes such as transport of military and other supplies, construction of temples, palaces, bridges, forts, etc. Jhara labour was a kind of forced and generally unpaid labour. Jhara labourers were frequently required to leave their villages to provide services in distant communities (Shrestha, 1990). People, from whom Jhara labour was exacted, were collected by troops sent to different places (Regmi, 1999). Although hard data on the number of Jhara labourers

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are not available, it is cited that entire adult male populations, irrespective of class and communities, appear to have been under an obligation to render compulsory and unpaid labour services whenever required by the State (Regmi, 1999).

The second wave of internal migration emerged in the mid-50s with the implementation of the state sponsored resettlement programme of hill people to Tarai. The main objective of the resettlement programme was land colonisation of Tarai and increased agricultural production. Launched by Rapti Valley Development Project (RVDP) and Nepal Resettlement Company (NRC), the resettlement programme continued until the late 80s in Chitwan and Nawalparasi. Many hill migrants who could not receive land under the project also encroached upon forest land of Chitwan, Nawalparasi and Rupendehi (Shrestha, 1990). Under the RVDP, 5,233 households were settled in Rapti Valley of Chitwan. In addition, an estimated 7,000 families settled spontaneously each year in the Tarai region (World Bank, 1978, cited by Shrestha, 1990). NRC settled 1,504 families in Nawalparasi and there were more than 10,000 spontaneous settlements (Shrestha, 1990). Likewise, as of early 1988, the NRC settled 4,026 migrants under the Dhanewa project.

In 1969, the then government established Resettlement Department within the Ministry of Food and Agriculture (Kansakar (n.d.) was made responsible for dealing with forest encroachers and their haphazardly distributed settlements. Kansakar (n.d.) further cited that by the year 1980, more than 45,000 households had been resettled under the resettlement programme in 15 Tarai districts. He has indicated that with the initiation of the resettlement programme, hill families began to migrate in such large numbers that it became impossible to keep pace with the demand for land.

The third wave of internal migration emerged with the socio-economic transformation of the country. With the advent of democracy in 1951, the country embarked upon planned economic development of the country. This required increasing investment in various sectors of the economy, such as expansion of roads and transport, development of agriculture, health, education, and industrial development. It can be inferred that people from less developed areas started migrating to more developed areas, especially to areas where there was better infrastructure and economic opportunities. After the restoration of democracy in 1991, the country witnessed a rapid increase in the volume of internal migrants (see Figure 10.1 below). This rise may be largely associated with the expansion of employment opportunities in informal sectors after the restoration of democracy. Internal migration in Nepal is considered to be a survival strategy of mountain and hill people to cope with the hardships of their lives, arising from low agricultural productivity, lack of employment and poor infrastructural development (KC, 2003).

Nepal has a long history of taking population censuses, which started in 1911, but none of the censuses collected information about migration before 1961 in any detail. Therefore, census data on migration is available only from 1961 onwards.

The overall objective of this chapter is to examine internal migration in Nepal based on 2011 census data. The specific objectives are to examine: 1) trends and patterns of internal migration by ecological zones, development regions, districts and rural-urban residence, 2) reasons for migration, 3) socio-economic characteristics of internal migrants, and 4) current levels of internal migration.

10.2 Approaches to data collection on internal migration

UN (2008) recommended that migration data should be collected through four approaches: place of birth, duration of residence, place of last residence, and place of last residence at fixed prior date. Different approaches serve different purposes but a single approach is not sufficient to capture various dimensions of migration. Therefore, if more comprehensive data on internal migration is to be collected, a combination of two or more approaches is generally recommended for data collection as well as analysis.

According to the UN, the place of birth is the civil division in which the person was born, or for those born in other countries, the country of birth. Although “the concept of place of birth usually refers to the geographical unit of the country in which the mother of the individual resided at the time of the person’s birth” (UN, 2008: para. 2.58), Nepalese censuses define the place of birth in terms of the geographical unit in which the birth actually took place. According to the place of birth approach, a person is classified as a migrant whose place of birth is different from the place of enumeration. The UN (2008: para. 2.63) has recommended that data on place of birth should be supplemented by information collected on duration of residence and place of previous residence or residence at a specified date in the past.

The place of birth approach was commonly adopted by the previous three censuses (1991, 2001 and 2011 censuses) of Nepal for data collection on internal migration. These censuses, however, are not consistent in supplementing the place of birth data by other approaches. The 1991 census asked question about “residence at fixed prior date” but did not include questions about “duration of residence” and “place of last residence”. The “duration of residence” question was included in 2001 as well as the 2011 census. But as in the 1991 census, these two censuses did not ask question about “place of last residence”. Although the question on “residence at fixed prior date” was included in all three censuses, the reference date adopted in the 1991 census does not correspond with the other censuses (the 1991 asked about “residence one year prior to the census date but the other two censuses asked about “residence five years prior to the census date”). Therefore, data obtained from this approach in the 1991 census is not strictly comparable with data from the 2001 and 2011 censuses. The 2001 and 2011 censuses however correspond in terms of all three approaches – place of birth, duration of residence and residence at fixed prior date – and their operational definitions.

10.3 Definition of terms

Migration-defining area : In identifying the migration status of a person, a migration-defining area is required. In a migration study, civil or geographic units are generally taken as migration-defining areas. The Nepalese censuses have commonly considered districts (there are 75 districts in Nepal) as migration-defining areas. According to this, a person is classified as a migrant if his/her district of enumeration (current residence) is different from their district of birth. When the total population of the country is classified by place of birth and place of enumeration for 75 districts in matrix form (75 x 75 matrix), then these data can be aggregated at any larger civil or geographical units such as regions, zones, etc. which provides inter-regional or inter-zonal migration volumes. It should be noted that none of the Nepalese censuses considered smaller geographical areas than districts as migration-defining area. Therefore, classification of internal migrants by smaller geographical areas than districts is not possible. It should also be noted that in general the larger the migration-defining area, the smaller the volume of migration and vice versa. If there is no migration-defining area within a country, for instance, the country is a single civil or geographical unit, and the number of internal migrants is zero.

Native born : The total population of a country according to country of birth can be classified into two categories: native born and foreign born. Those born in countries other than Nepal are considered as foreign born, even though some of them hold Nepali citizenship. A person who is born in any part of Nepal is considered as native born even though some of them may also be foreign citizens. Internal migration analysis is primarily confined to the native born population only.

Lifetime migrants and non-migrants : According to the migration status, the total population of a country can be classified into two categories: lifetime migrants (migrant) and non-migrants. A person is a lifetime migrant whose current area of residence² is different from his area of birth, regardless of intervening migrations (Shrock,

2 In this paper, area of residence refers to migration defining area namely district, ecological zones, development regions, and rural-urban residence. In Nepal, there are 75 districts, three ecological zones (mountain, hill and Tarai), five development regions (eastern, central, western, mid-western, and far-western) and 15 eco-development regions (name of eco-development regions is provided in Table 10.5).

Seiegel and Associates, 1976). Non-migrants are those who have not moved from one migration-defining area to another. Lifetime migration data are generally analysed in terms of volume of migration (number of migrants) and percentage of lifetime migrants in native-born population.

Current migrants :Current migrants are those migrants who migrated during the last one-year period preceding the census. They are a part of lifetime migrants. Current migrants are also called as “most recent” migrants because it presents most recent movements of the population. Current migration data are generally analysed in terms of in-migration rate, out-migration rate, and net migration rate.

In-migration rate: In-migration rate is defined as the number of persons “who enters the migration-defining areas crossing its boundary from some point outside the area but within the country³” for the one year period preceding the census per 1,000 population of the area. Data on in-migration rate can be interpreted as annual number of in-migrants per 1,000 population.

Out-migration rate: Out-migration rate is defined as the number of persons “who departs from a migration-defining area by crossing its boundary to a point outside it, but within the same country” during the last one year period preceding the census per 1,000 population of the same area. Data on out-migration rate can be interpreted as an annual number of out-migrants per 1,000 population.

Net migration rate: Net migration rate is defined as a balance between the in-migration rate and the out-migration rate. The balance may be positive or negative. A positive balance is known as net in-migration rate implying an annual number of net gain in population experienced by a migration-defining area through the migration process. On the other hand, a negative balance is known as net out-migration rate. This is a measure of the annual number of net loss of population experienced by a migration-defining area.

Period migration :Data on period migration is collected through a question on “place of residence at a specified (fixed) prior date” as mentioned above. According to this approach, a person is classified as a migrant if his/her residence at a specified prior date is different from the current place of residence. Place of residence at a specified date in the past is the major or smaller division, or the foreign country, in which the individual resided at a specified date preceding the census (UN, 2008, para 2.69). The data on period migration is useful to assess previous migration patterns. The reference date (one year or five years) may differ from one census to another.

Migration stream :Migration stream refers to a group of migrants having common origin and destination in a given migration period (Shrock, Seiegel and Associates, 1976). Based on the type of migration-defining areas, migration streams can be identified as district-to-district stream, rural to urban stream and so on. Likewise, migration streams can also be identified based on ecological zones and development regions.

10.4 Trends in native and foreign born population in Nepal

Table 10.1 presents the total population, native and foreign-born population for 1961-2011. The Table shows that the total population of Nepal in 1961 was 9,413,996, which increased to 26,949,504 in 2011. There has been a 2.8 fold increase in the size of Nepal’s population during the period 1961-2011. The size of the foreign-born population is rather small (lowest at 1.6% in 1981 and highest at 3.6% in 1961). This indicates that the overwhelming majority of Nepal’s population (96-98%) is native-born. The number of native-born population between 1961-2011 increased by 2.8 fold from 9,075,376 in 1961 to 25,524,611 in 2011. During the same period, there has been a 1 fold increase in the number of foreign-born population with a slight decline in its number in 1971-1981 and 2001-2011.

3 The basic notion is derived from Henry S. Shryock, Jacob S. Seiegel and Associates (1976) *Methods and Materials of Demography* (Condensed Edition) by E. G. Stockwell, USA: Bowling Green University.

Table 10.1: Total population, native and foreign born population, 1961-2011, Nepal

Census year	Total population	Native born	Foreign born	Percent in total population	
				Native born	Foreign born
1961	9,412,996	9,075,376	337,620	96.4	3.6
1971	11,555,983	11,218,535	337,448	97.1	2.9
1981	15,022,839	14,788,800	234,039	98.4	1.6
1991	18,491,097	18,046,302	439,488	97.6	2.4
2001	23,151,423	22,128,842	608,092	95.6	2.6
2011	26,494,504	25,524,611	479,625	96.3	1.8

Note: 249,592 birth place "not stated" cases in 2011 census is excluded.

Source: KC, 2003; Population and Housing Census-2011 Database, CBS, 2014.

10.5 Life-time migration

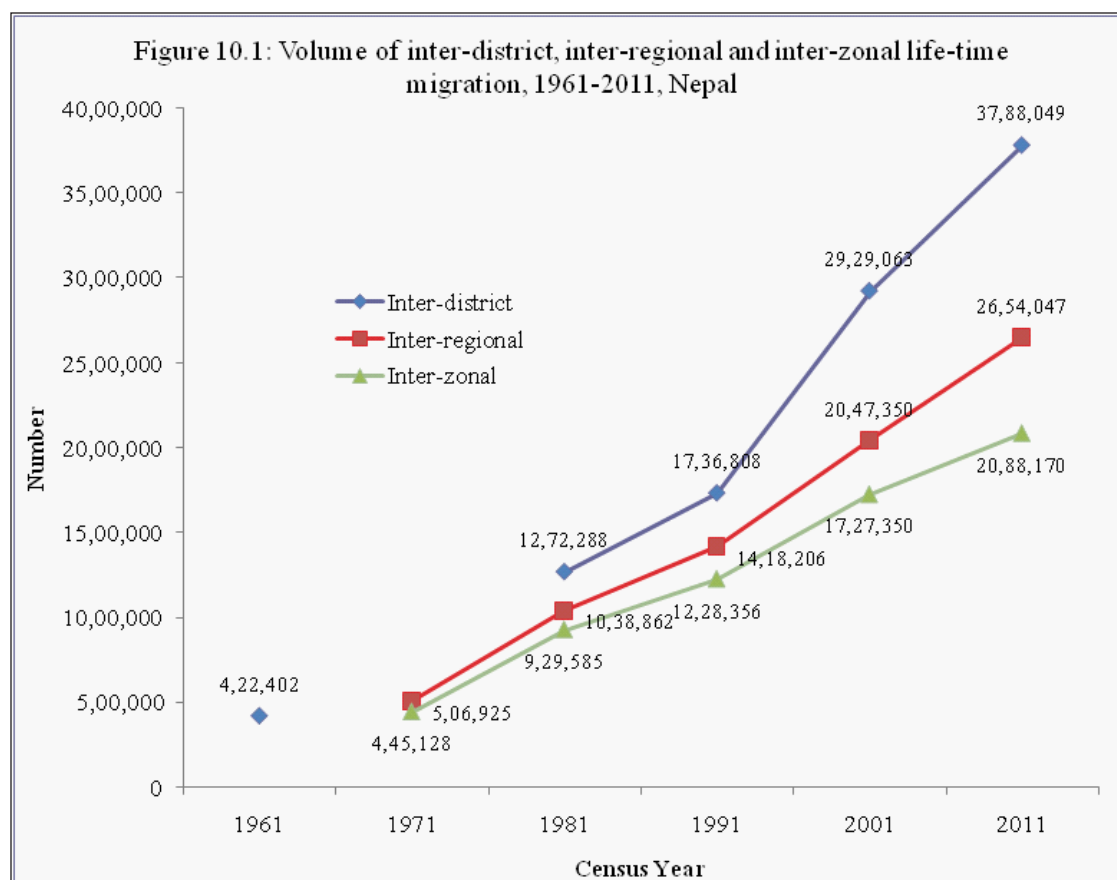
10.5.1 Trends in life-time migration: Nepal

In Nepal, the 1961 census collected data on internal migration for the first time. Figure 10.1 presents trends in the volume of lifetime migrants in Nepal for the last 50 year period from 1961-2011⁴ by districts, 15 eco-development regions and 3 ecological zones. The figure presents that there were 422,402 inter-district lifetime migrants in 1961, which increased to 3,788,049 in 2011. This shows nearly a nine-fold increase in the number of inter-district migrants during 1961-2011 in Nepal. The 1971⁵ census counted a total of 506,925 inter-regional migrants, which, with an increase of 5.2 fold reached 2,654,047 in 2011. During the same period, the number of inter-zonal life-time migrants increased by 4.7% from 445,128 in 1971 to 2,088,170 in 2011. Figure 10.1 shows that the inter-district lifetime migration line rises slowly until 1991 and then gets steeper thereafter, implying a more rapid increase in the number of lifetime migrants after 1991.

Table 10.2 reveals that the number of inter-district lifetime migrants in Nepal constituted less than 5% of the total native born population in 1961. This increased to 8.6% in 1981. It further increased to 13% in 2001 and nearly 15% in 2011. By eco-development region, the volume of lifetime migrants constituted 4.5% of the total native-born population in 1961, which increased to 10% in 2011. The volume of inter-zonal migration increased from 4% in 1961 to 8% in 2011.

⁴ Data on inter-district migrants for 1971 is not available.

⁵ Data on migrants for development region and ecological belt is not available for 1961.



Note: There were 55 districts in 1961, 10 districts in 1961 and 1971.

Source: KC, 2003; Population and Housing Census-2011 Database, CBS, 2014.

Table 10.2: Life-time migrants as percent of native born population

Year	Total Native Born	Migrants as a percent of native born		
		Inter-district	Inter-regional	Inter-zonal
1961	9,075,376	4.7	-	-
1971	11,218,535	-	4.5	4.0
1981	14,788,800	8.6	7.0	6.3
1991	18,046,302	9.6	7.8	6.8
2001	22,128,842	13.2	9.3	7.8
2011	25,524,611	14.8	10.4	8.2

Source: KC, 2003; Population and Housing Census-2011 Database, CBS, 2014.

10.5.2 Inter-zonal migration

Available data on lifetime migration for the last 40 years (1971-2011) indicate that hill continues to be the largest area of origin (sending area) of inter-zonal lifetime migrants (Figure 10.3), although the relative share of lifetime migrants with hill origin is continually declining (64% in 1981, 76% in 1991, 69% in 2001, and 63% in 2011). Over the same period, Mountain and Tarai zones continue to be the second and third largest areas of origin respectively with nearly equal numbers of out-migrants in 2011 (19% or 394,301 from Mountain and 18% or

382,598 from Tarai) (Figure 10.2). Although Tarai accounted for the least number of out-migrants, this zone shows the most rapid increase in the number of out-migrants during 1971-2011 (38.3 fold).

Tarai continues to be the largest area of destination of internal migrants since 1971, although this zone is experiencing a substantial decline in the relative share of migrants who come to this zone (92% in 1971 and 70% in 2011) (Figure 10.6). Tarai continues to be a common destination of migrants from both Mountain as well as Hills but the overwhelming majority of the migrants in Tarai are from the Hill. For example, of the total migrants who came to Tarai, 410,064 in 1971, 92% (or 376,076) were from the hills. This number increased by 3.4 fold in 2011 and reached 1,273,599. The relative share of Hill to Tarai migration, however, did not change substantially during the period 1971-2011 (92% in 1971 to 88% in 2011) [for 1971 data, KC (2003) and for 2011 data, Table 10.3].

Hills continue to be another preferred destination of inter-zonal migrants with a substantial increase in the number of migrants to this zone during 1971-2011. For example, the number of inter-zonal migrants in 1971 accounted for only 25,366 of the total population (or 6%), which reached 588,815 in 2011 (28%). This accounted for a 23.6 fold increase in the number of migrants to the hills [for 1971 data, KC (2003) and for 2011 data, Table 10.3].

During the 1971-1981 decade, a large majority of the in-migrants in the Hills were from Mountain zone (62% in 1971 and 79% in 1981), but the situation changed after 1981. The 1991 census data indicates that only 44% of the total in-migrants in the Hills were from Mountain, which declined to 35% in 2001. In these years, the number of migrants in the Hills who originated from Mountain declined. This decline is compensated by a corresponding increase in the number of migrants who originated from Tarai. The 2011 census however shows an increase of Mountain to Hill migration by 1.7 fold from 125,597 in 2001 to 213,714 in 2011. The same census further shows that almost all the migrants from Tarai (98% or 375,101 out of 382,598 in Table 10.3) were destined for the Hills.

A breakdown of the number of inter-zonal migrants by sex indicates that more than half of the inter-zonal migrants (54.3%) are females. The corresponding figure in 2001 was 51% (KC, 2003). The sex ratio of migrants is 84, implying that for every 100 female inter-zonal migrants, there are 84 male migrants. The comparative figure in 2001 census was 95.8.

Figure 10.2: Volume of inter-zonal out-migration, 1971-2011

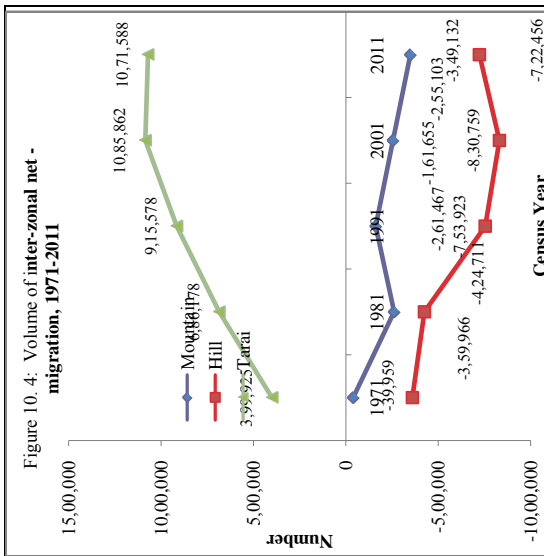
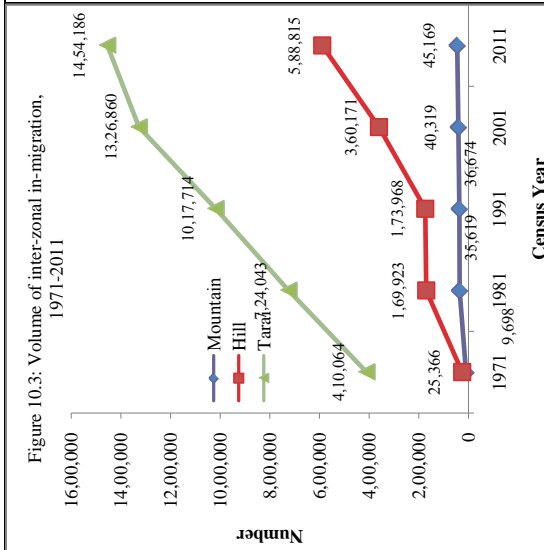
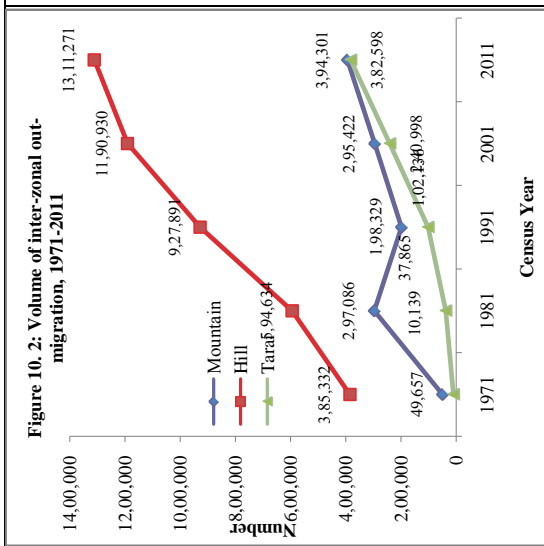


Figure 10.4: Volume of inter-zonal net migration, 1971-2011

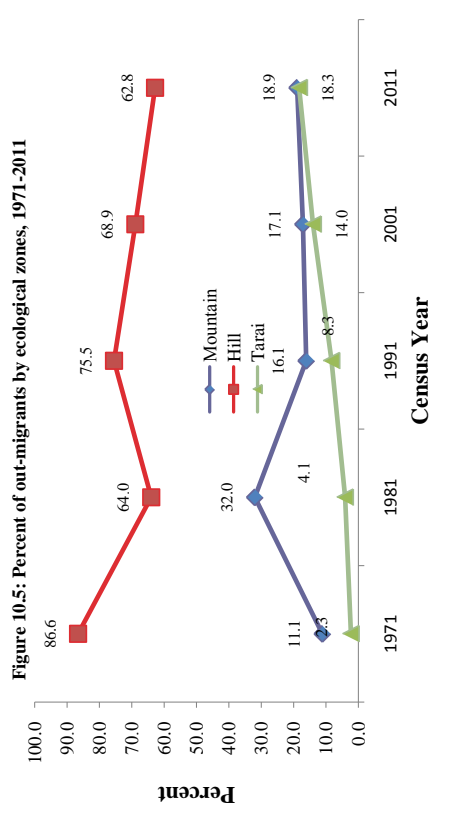


Figure 10.5: Percent of out-migrants by ecological zones, 1971-2011

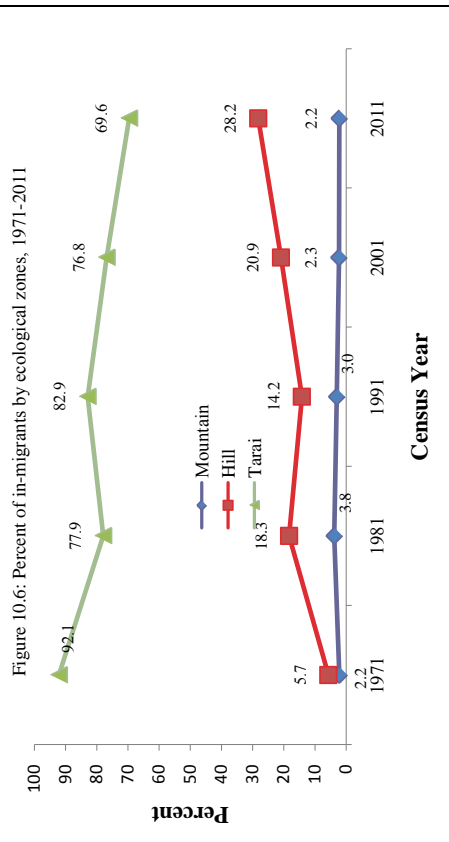


Figure 10.6: Percent of in-migrants by ecological zones, 1971-2011

Source: KC, 2003; Population and Housing Census-2011 Database, CBS, 2014.

Table 10.3: Inter-zonal life-time migration by sex, 2011

Place of enumeration	Nepal				% in-migrants
	Place of birth				
	Mountain	Hill	Tarai	Total	
Both Sexes					
Mountain	-	37,672	7,497	45,169	2.2
Hill	213,714	-	375,101	588,815	28.2
Tarai	180,587	1,273,599	-	1,454,186	69.6
Total	394,301	1,311,271	382,598	2,088,170	100.0
% out-migrants	18.9	62.8	18.3	100.0	
Net migration	-349,132	-722,456	1,071,588		
Male					
Mountain	-	9,555	3,878	13,433	1.4
Hill	98,533	-	187,784	286,317	30.0
Tarai	86,441	567,368	-	653,809	68.6
Total	184,974	576,923	191,662	953,559	100.0
% out-migrants	19.4	60.5	20.1	100.0	
Net migration	-171,541	-290,606	462,147		
Female					
Mountain	-	28,116	3,618	31,734	2.8
Hill	115,181	-	187,317	302,498	26.7
Tarai	94,146	706,231	-	800,377	70.5
Total	209,327	734,347	190,935	1,134,609	100.0
% out-migrants	18.4	64.7	16.8	100.0	
Net migration	-177,593	-431,849	609,442		

Note: District of origin not stated cases excluded.

Source: Population and Housing Census-2011 Database, CBS, 2014.

10.5.3 Inter-regional migration

In this section, regions are considered at two levels: five development regions and fifteen eco-development regions. Table 10.4 presents volumes of in, out and net migration for five development regions from the 2011 census. The table shows that there are 1,005,109 inter-regional migrants in Nepal in 2011. This volume of inter-regional migrants accounted for less than half of the inter-zonal migrants (inter-zonal migration is 2,088,170 in Table 10.3). This is indicative of the fact that in Nepal, inter-zonal migration predominates over inter-regional migration. In Nepal, development regions are composed of vertical divides an area consisting of a north to south boundary, while ecological regions are horizontal divides with west to east boundaries. In this context, any horizontal movement across the regional boundary constitutes inter-regional migration and vertical movements across the zonal boundary as inter-zonal migration. A smaller volume of inter-regional than inter-zonal migration further indicates that in Nepal horizontal migration (east to west, west to east) is less apparent than vertical migration (north to south, south to north).

A breakdown of the number of migrants by five development regions shows that the highest (70%) of the out-migration occurs from eastern (33%) and western (36%) regions. But central region appears to be the largest destination of inter-regional migrants as more than two-thirds of the inter-regional migrants (68% or 683,541) are

destined for this region. This region receives migrants from all regions but the overwhelming majority are from eastern (44%) and western (45%) regions. Western region is another large destination of inter-regional migrants, which accounted for 11% of the total inter-regional migrants. Central region is the largest gainer (55%) while all other regions, except far-western region, are losers.

Table 10.4: Volume of inter-regional lifetime migration (five development regions), 2011

Place of enumeration	Place of birth						
	Development regions					In-migrants	
	Eastern	Central	Western	Mid-western	Far-western	Total	Percent
Development regions							
Eastern	-	49,450	5,929	1,631	1,582	58,592	5.8
Central	300,705	-	310,200	45,351	27,285	683,541	68.0
Western	168,35	65,125	-	28,912	2,605	113,477	11.3
Mid-western	5,158	12,190	35,343	-	21,378	74,069	7.4
Far-western	6,033	8,001	9,119	52,277	-	75,430	7.5
Out-migrants	328,731	134,766	360,591	128,171	52,850	1,005,109	100.0
%	32.7	13.4	35.9	12.8	5.3	100.0	
Net migration	-270,139	548,775	-247,114	-54,102	22,580		
% net migration	-26.9	54.6	-24.6	-5.4	2.2		

Source: Population and Housing Census-2011 Database, CBS, 2014.

Table 10.5 presents the number of migrants by 15 eco-development regions for 2011. The Table shows that the highest number of out-migration occurs from western hill region (594,326). The number of out-migrants from this region accounted for 23% of the total inter-regional migrants (2,654,047). Eastern hill occupies second position as about 18% of the total out-migration occurs from this region. These two regions on the contrary had the lowest number of in-migrants (2-3%). Therefore, these two regions lose the largest number of population. Western hill lost 509,438 with a net loss of 19%. The Eastern hill lost 427,477 with a net loss of 16%. The previous censuses (1991 and 2001 censuses) also showed the highest net out-migration for these regions (KC, 2003).

Central hill appears to be the most common destination of inter-regional migration. In 2011, nearly 30% (or 784,113) of inter-regional migrants were found in this region. Central hill experienced a two-fold increase in the number of in-migrants during 2001-2011 and a five-fold increase during 1991-2011. More than 80% of the in-migrants in this region are from the five regions – western hill (20%), far-western Tarai (17%), Central Mountain (15%), eastern hill (15%) and eastern Tarai (14%). The volume of out-migration from this region (183,825) is much less than the volume of in-migration (784,133). Therefore, this region appears to be the largest region gaining population through the migration process. This region has gained 600,288 with a net in-migration of 23%. As compared to the 2001 census data (9%), the net in-migration in this region increased by 14 percentage points in 2011. Except central hill, all other mountain and hill regions demonstrate net out-migration. As described above, western and eastern region had the highest net-out migration in 2001 as well as 2011.

The 2011 census shows that the highest (61%) inter-regional migration took place to the Tarai region. The comparative figure for 2001 was 72% and 78% in 1991. A reduction in the relative share of in-migrants in Tarai is mainly due to a substantial increase in the number, as well as relative share, of in-migrants in central hill. Among Tarai regions, eastern Tarai received 489,933 (19%) of inter-regional migrants, followed by western Tarai (334,576 or 13%). Mid-western Tarai received the least number of inter-regional migrants (213,316 or 8%). Compared to 2001 data, the number of inter-regional migrants in all the Tarai regions has increased. The highest increase is observed in mid-western Tarai (29%), followed by western (13%) and eastern (12%) Tarai.

All the Tarai regions are net gainers, eastern and western Tarai being the two largest gaining regions. The eastern Tarai gained 315,363 with 12% of net in-migration. The corresponding figure for western Tarai was 283,043 (11%). Far-western Tarai also gained a nearly equal number (254,244) with net in-migration of 10%. When compared with 2001 census data, the net gain in eastern Tarai has increased substantially (2 fold) in 2011. A substantial decline in net gain is observed in central Tarai (1.5 fold).

Tarai region receives migrants mostly from contiguous hill regions (Table 10.6). For example, 68% of in-migration in eastern Tarai was from eastern hill. About three-fourths of migrants in central Tarai were from central and western hill. Eighty three percent of in-migrants in western Tarai were from western hill and 68% in mid-western region were from mid-western hill. Likewise, far-western region also received 60% of migrants from far-western hill. Migration from Tarai to Tarai region is very minimal.

The three districts of Kathmandu Valley (Kathmandu, Lalitpur and Bhaktapur) together constituted 29% (or 1,082,595) of the total inter-district migrants (see Table 10.6) in 2011. In Kathmandu Valley districts, the highest number of in-migrants (or 383,36530%) were from central hill. The second largest number of in-migrants in Kathmandu Valley districts were from western hill region 151,770 or (15%). Around 10% of in-migrants were from Central Mountain, eastern hill, eastern Tarai and central Tarai regions. Only less than 4% of in-migrants in Kathmandu Valley districts are from other regions.

Table 10.5: Volume of inter-regional life-time migration (15 eco-development regions), 2011

Zone/region	Mountain								Hill								Tarai			District not stated		In-migrants	
	EM	CM	WM	MWM	FWM	FWM	EH	CH	WH	WH	MWH	FWH	ET	CT	WT	MWT	FWT	District not stated	Number	%			
Mountain																							
Eastern	-	118	0	16	0	10,823	692	72	27	19	1,723	160	3	2	3	664	14,322	0.5					
Central	374	-	9	26	6	899	10,684	716	144	36	880	1,193	132	78	75	1,387	16,639	0.6					
Western	102	57	-	152	1	70	348	2,325	294	3	48	108	69	35	5	6	3,623	0.1					
Mid-western	14	51	5	-	1,576	101	121	506	2,772	610	373	113	75	786	216	190	7,509	0.3					
Far-western	8	8	8	1,640	-	65	162	104	152	5,923	212	73	24	111	999	382	9,871	0.4					
Total	498	234	22	1,834	1,583	11,958	12,007	3,723	3,389	6,591	3,236	1,647	303	1,012	1,298	2,629	51,964	1.9					
Hill																							
Eastern	19,848	386	16	20	27	-	6,468	802	226	48	27,148	2,320	98	67	25	3,492	60,991	2.3					
Central	34,507	117,992	3,487	4,829	4,731	117,929	-	159,751	17,727	9,590	110,129	131,673	22,985	19,262	11,547	17,974	784,113	29.5					
Western	1,074	2,057	2,213	342	265	5,084	22,461	-	7,014	371	4,760	14,524	10,937	2,867	594	10,325	84,888	3.2					
Mid-western	160	282	71	8,900	302	385	1,075	5,540	-	4,957	785	831	678	7,644	1,144	2,208	34,962	1.3					
Far-western	58	30	24	894	11,192	105	315	515	2,436	-	385	313	41	385	3,952	1,429	22,074	0.8					
Total	55,647	120,747	5,811	14,985	16,517	123,503	30,319	166,608	27,403	14,966	143,207	149,661	34,739	30,225	17,262	35,428	987,028	37.1					
Tarai																							
Eastern	95,941	1,865	43	158	307	334,529	17,714	4,098	411	490	-	19,727	797	704	663	12,486	489,933	18.5					
Central	1,724	13,021	406	182	198	13,585	106,626	111,620	1,310	239	20,678	-	11,094	1,793	863	12,619	295,958	11.2					
Western	573	892	757	197	104	2,118	8,959	276,282	12,211	440	3,006	15,719	-	5,800	822	6,696	334,576	12.6					
Mid-western	462	500	163	9,590	887	961	4,340	24,661	145,624	5,566	1,917	4,877	3,644	-	6,120	4,004	213,316	8.0					
Far-western	860	356	113	9,502	41,789	1,814	3,860	7,334	21,130	167,662	2,526	2,884	956	16,027	-	4,459	281,272	10.6					
Total	99,560	16,634	1,482	19,629	43,285	353,007	141,499	423,995	180,686	174,397	28,127	43,207	16,491	24,324	8,468	40,264	1,615,055	60.9					
Out-migrants	155,705	137,615	7,315	36,448	61,385	488,468	183,825	594,326	211,478	195,954	174,570	194,515	51,533	55,561	27,028	78,321	2,654,047	100.0					
%	5.9	5.2	0.3	1.4	2.3	18.4	6.9	22.4	8.0	7.4	6.6	7.3	1.9	2.1	1.0	3.0	100.0						
Net migration	-141,383	-120,976	-3,692	-28,939	-51,514	-427,477	600,288	-509,438	-176,516	-173,880	315,363	101,443	283,043	157,755	254,244								
% net migration	-5.4	-4.6	-0.2	-1.1	-1.9	-16.1	22.6	-19.2	-6.7	-6.6	11.9	3.9	10.7	5.9	9.6								

Note: EM=Eastern mountain, CM=Central mountain, WM=Western mountain, MWM=Mid-western mountain, FWM=Far-western mountain, EHF=Eastern hill, CH=Central hill, WH=Western hill, MWH=Mid-western hill, FWH=Far-western hill, ET=Eastern Tarai, CT=Central Tarai, WT=Western Tarai, MWT=Mid-western Tarai, FWT=Far-western Tarai.

Source: Population and Housing Census-2011 Database, CBS, 2014.

Map 10.1: Inter regional life-time migration flows (two major flows only), population census 2011

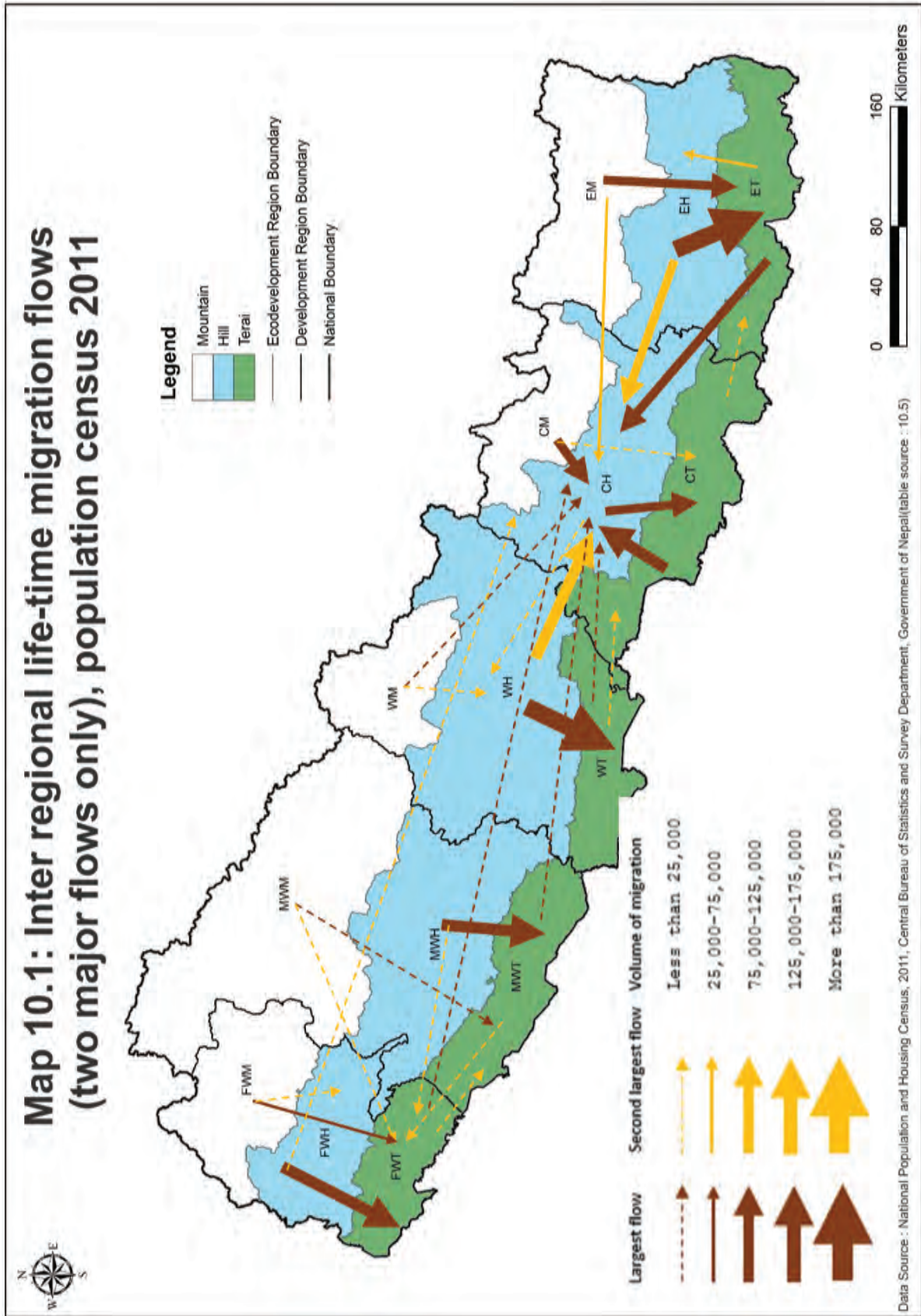


Table 10.6: Percent of in-migrants for major migration receiving regions

Sending regions	Receiving regions						Kathmandu Valley districts (inter-district migrants)	
	Central Hill	Eastern Tarai	Central Tarai	Western Tarai	Mid-western Tarai	Far-western Tarai	Number of in-migrants	Percent
Mountain								
Eastern	4.4	19.6	0.6	0.2	0.2	0.3	32,961	3.2
Central	15.0	0.4	4.4	0.3	0.2	0.1	104,434	10.3
Western	0.4	0.0	0.1	0.2	0.1	0.0	3,420	0.3
Mid-western	0.6	0.0	0.1	0.1	4.5	3.4	4,799	0.5
Far-western	0.6	0.1	0.1	0.0	0.4	14.9	4,653	0.5
Hill								
Eastern	15.0	68.3	4.6	0.6	0.5	0.6	106,508	10.5
Central	0.0	3.6	36.0	2.7	2.0	1.4	383,365	29.7
Western	20.4	0.8	37.7	82.6	11.6	2.6	151,770	14.9
Mid-western	2.3	0.1	0.4	3.6	68.3	7.5	17,134	1.7
Far-western	1.2	0.1	0.1	0.1	2.6	59.6	9,436	0.9
Tarai								
Eastern	14.0	0.0	7.0	0.9	0.9	0.9	104,215	10.3
Central	16.8	4.0	0.0	4.7	2.3	1.0	108,276	10.7
Western	2.9	0.2	3.7	0.0	1.7	0.3	21,685	2.1
Mid-western	2.5	0.1	0.6	1.7	0.0	5.7	18,654	1.8
Far-western	1.5	0.1	0.3	0.2	2.9	0.0	11,285	1.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	1,082,595* (29.2%)**	100.0
Number	784,113	489,933	295,958	334,576	213,316	281,272		

*includes district not stated cases.

**calculated as percent of inter-district lifetime migrants out of total lifetime migrants, Appendix 1.

Source: Population and Housing Census-2011 Database, CBS, 2014.

10.5.4 Intra-regional mobility

Intra-regional mobility refers to mobility within the region. A region consists of two or more than two districts and intra-regional mobility refers to inter-district mobility within the region. People involved in intra-regional mobility are also called short-distance migrants. Table 10.7 shows that intra-regional mobility (short-distance migration) accounted for more than 30% of total mobility (intra and inter-regional migration). Intra-regional mobility is very high in the central hill (71%) far exceeding that of inter-regional mobility (29%). This region consists of nine districts including the capital cities of Kathmandu, Lalitpur and Bhaktapur and most of the intra-regional mobility in this region represents mobility towards these three capital cities (85%)⁶.

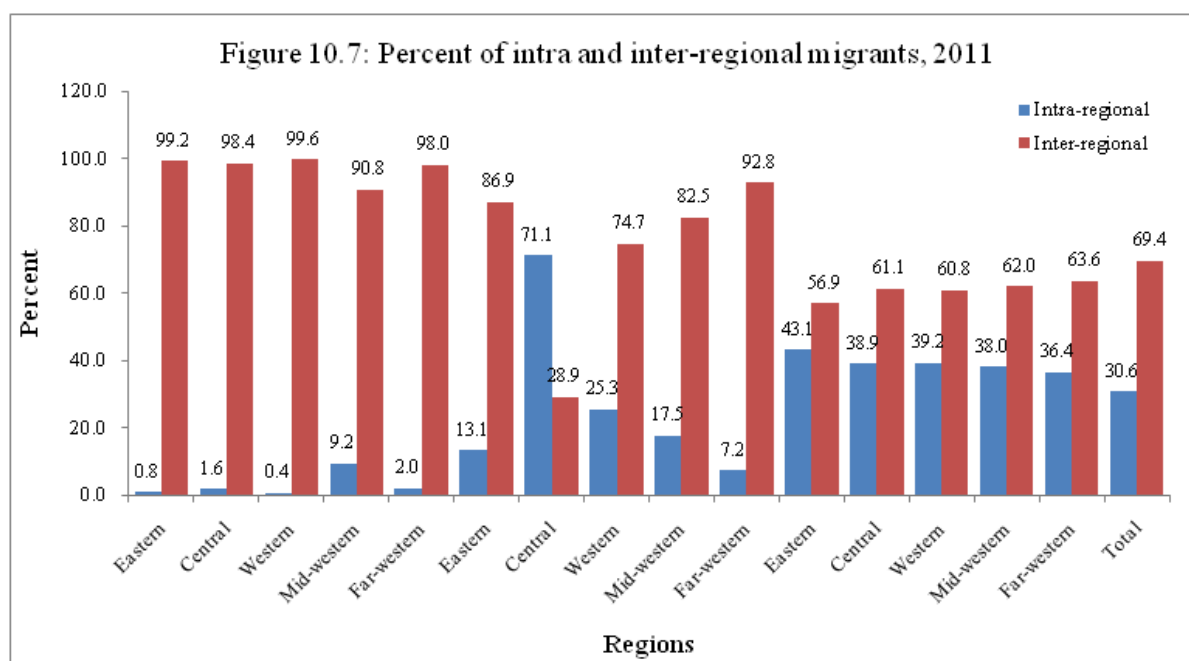
All other regions demonstrating high intra-regional mobility of population (36-43%) are from the Tarai regions (Table 10.7, Figure 10.7). Eastern Tarai is made up of five districts – Jhapa, Morang, Sunsari, Saptari and Siraha - and the highest (40%) of intra-regional mobility is directed to Morang district alone. Sunsari district ranks second

in receiving migrants (32%) from the same region it belongs to, i.e. eastern Tarai. Central Tarai, however, does not display intra-regional mobility to a particular district. Western Tarai is made up of 3 districts – Nawalparai, Rupendehi and Kapilbastu. More than half (51%) of the intra-regional mobility is directed to Rupendehi district. In Mid-western region, nearly 60% of the intra-regional mobility is directed to Banke district (there are three districts in mid-western region – Dang, Banke and Bardiya). Mid-western hill is made up of eleven districts and the highest (43%) of the intra-regional mobility is directed to Kaski district alone.

Table 10.7: Volume of intra-regional mobility by regions, 2011

Regions	Number			Percent		
	Movement within the region	Movement out of region (inter-regional migrants)	Total	Movement within the region	Movement out of region (inter-regional migrants)	Total
Nepal	1,134,002	2,575,726	3,709,728	30.6	69.4	100.0
Mountain						
Eastern	1,247	155,705	156,952	0.8	99.2	100.0
Central	2,276	137,615	139,891	1.6	98.4	100.0
Western	28	7,315	7,343	0.4	99.6	100.0
Mid-western	3,689	36,448	40,137	9.2	90.8	100.0
Far-western	1,249	61,385	62,634	2.0	98.0	100.0
Hill						
Eastern	73,371	488,468	561,839	13.1	86.9	100.0
Central	451,437	183,825	635,262	71.1	28.9	100.0
Western	201,781	594,326	796,107	25.3	74.7	100.0
Mid-western	44,846	211,478	256,324	17.5	82.5	100.0
Far-western	15,307	195,954	211,261	7.2	92.8	100.0
Tarai						
Eastern	132,245	174,570	306,815	43.1	56.9	100.0
Central	123,815	194,515	318,330	38.9	61.1	100.0
Western	33,156	51,533	84,689	39.2	60.8	100.0
Mid-western	34,118	55,561	89,679	38.0	62.0	100.0
Far-western	15,437	27,028	42,465	36.4	63.6	100.0

Source: Population and Housing Census-2011 Database, CBS, 2014.



Source: Population and Housing Census-2011 Database, CBS, 2014.

10.5.5 Inter-district migration

Appendix 10.1 presents the volume of inter-district lifetime migrants from the 2011 census. Of the total number of inter-district lifetime migrants (3,788,049), the highest 3.3% (or 126,943) originate from Syangja district, followed by Kavrepalanchowk (3.1%), Khotang (2.9%), and Bhojpur (2.8%). There are seven other districts that account for around 2% of the total out-migrants. The least number of out-migrants occurred from districts including Bajura, Jumla, Rasuwa, Mugu, Mustang, Humla, Manang, and Dolpa. These districts accounted for 0.3% or less of total out-migration. With regard to in-migration, the highest one-fifth of out-migrants (835,833 or 22%) are destined for Kathmandu district alone. Around 5% are destined for Morang, Jhapa, Rupendehi and Chitwan, followed by Kailali, Sunsari, Lalitpur, Kaski, Nawalparasi, Kanchanpur, Banke, Bhaktapur, Bardiya and Dang with around 2% of in-migrants. Districts like Salyan, Myagdi, Khotang, Okhaldhunga, Dailekh and Solukhumbu accounted for 0.1% or less of in-migrants. All these districts are from either mountain or hill districts.

In five of the districts, Bhojpur, Terhathum, Taplejung, Khotang, and Parbat, the number of out-migrants constituted 50% or more of the total population. Among these, the former four districts belong to eastern hill, and the latter to western hill. There are five other districts – Manang, Syangja, Okhaldhunga, Panchthar, and Ramechhap – in which the number of out-migrants constituted around 40% of their total population. Compared to these, all the Tarai districts, including Kathmandu, Lalitpur, Kaski and the three mountain districts (Mugu, Humla and Dolpa) demonstrate the least proportion of out-migrants, less than 10% of their population. With the exception of Mugu, Humla and Dolpa, all these districts belong to high in-migration districts.

Kathmandu district has the highest percentage of migrants in its population (48%). This is followed by Lalitpur (33%), Chitwan (32%), Bhaktapur (31%), Kanchanpur (27%), Kaski (25%) and Jhapa (25%). Around one-fifth of the population are migrants in Kailali, Morang, Sunsari, Rupendehi, and Manang. In 38 districts the migrant population constituted less than 5% of the population. Of them, 33 districts are mountain and hill districts. Only five are Tarai districts.

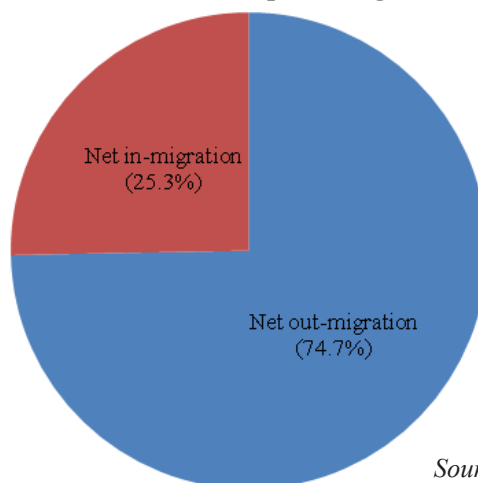
The 2011 census data indicate that 75% (56) of the districts have experienced net out-migration (see Table 10.8, Figure 10.8). Of them, 33 are from the hill. There are 16 mountain districts in total and all of them experienced net out-migration. Seven of the 20 Tarai districts experienced net out-migration. In total, there are 55 mountain and hill districts, out of which 49 (89%) experienced net out-migration. Districts like Bhojpur, Taplejung, Khotang and Terhathum, all from eastern mountain and hill, have the highest net out-migration (see Appendix 10.1). The net loss of the population in these districts is around 50%. Six of the other districts - Okhaldhunga, Syangja, Parbat, Ramechhap, Panchthar, Sankhuwasabha - lost 30-40 percent of their population. The other 18 districts lost 20-30 percent of their population.

In total, 25% (19) of the districts have experienced net in-migration (Table 10.8), out of which 13 are Tarai districts and the remaining six districts are from the hills. None of the mountain districts have experienced net in-migration. Of the districts experiencing net in-migration, Kathmandu district has the largest gain of 44%, others being Lalitpur (26%), Kanchanpur (23%), Chitwan (23%), and Bhaktapur (20%). Districts like Bara, Surkhet, Udayapur, Dang, and Kapilbastu have the lowest gain of 5 % or less. (Appendix 10.1).

Table 10.8: Number of districts according to net migration by ecological zone, 2011

Net migration status	Zone	District	Number of district	Percent
Net out – migration	Hill	Bhojpur, Khotang, Terhathum, Okhaldhunga, Syangja, Parbat, Ramechhap, Panchthar, Gulmi, Gorkha, Lamjung, Nuwakot, Baglung, Kavrepalanchowk, Palpa, Arghakhanchi, Dhankuta, Achham, Dhading, Baitadi, Doti, Myagdi, Dailekh, Salyan, Pyuthan, Sindhuli, Rolpa, Dadeldhura, Rukum, Jajarkot, Tanahu, Ilam, Makwanpur	33	44.0
	Mountain	Taplejung, Sankhuwasabha, Dolakha, Solukhumbu, Sindhupalchok, Manang, Mustang, Darchula, Rasuwa, Bajhang, Jumla, Kalikot, Bajura, Mugu, Humla, Dolpa	16	21.3
	Tarai	Saptari, Dhanusa, Siraha, Rautahat, Mahottari, Parsa, Sarlahi	7	9.4
	Total		56	74.7
Net in-migration	Tarai	Bara, Dang, Kapilbastu, Bardiya, Morang, Sunsari, Nawalparasi, Jhapa, Banke, Rupandehi, Kailali, Chitawan, Kanchanpur	13	17.3
	Hill	Surkhet, Udayapur, Kaski, Bhaktapur, Lalitpur, Kathmandu	6	8.0
	Total		19	25.3
	All Total		75	100.0

Source: Appendix 10.1.

Figure 10.8: Percent of districts experiencing in and out migration

Source: Table 10.8.

10.5.6 Rural-urban streams

From the 2001 census data, KC (2003) has indicated that, in Nepal, the major streams of internal migration are rural-to rural (68.2%) and rural-to-urban (25.5%). Urban-to-urban (2.8%) and urban-to-rural (3.5) are of lesser importance. The 2011 census also shows that rural-to-rural migration still predominates over other streams (Table 10.9). But compared to the 2001 census, there has been a noticeable decline in the proportion of migrants who move from rural to rural areas (68% in 2001 to 59% in 2011) in 2011, with a corresponding increase in the proportion who move from rural to urban areas (25.5% in 2001 to 33.5% in 2011).

The 2011 census further reveals that of the total migrants who originated from the rural areas of mountain and hill districts, more than 60% went to rural areas of other districts in other regions (see Table 10.9). As compared to other regions, the predominance of rural-to-rural migration stream was exceptionally high in mountain region (89%) in 2001 (KC, 2003). Tarai experienced a significant reduction in the scale of rural-to-rural migration stream during 2001-2011 (78% in 2001 and 50% in 2011). Hill region, on the contrary, shows an apparent increase in the scale of rural-to-rural migration stream (52% in 2001 and 62% in 2011).

Table 10.9: Distribution of inter-district life-time migrants by rural-urban streams, 2011

Region	Number	Rural-Urban	Urban-Urban	Rural-Rural	Urban-Rural	Total
Nepal	3,230,939	33.5	4.5	59.2	2.9	100.0
Mountain						
Eastern	141,160	28.7	1.0	69.2	1.0	100.0
Central	119,358	48.5	1.8	48.6	1.2	100.0
Western	6,376	64.2	NA	35.8	NA	100.0
Mid-western	35,545	22.8	NA	77.2	NA	100.0
Far-western	54,972	31.3	NA	68.7	NA	100.0
Total	357,411	35.8	1.0	62.4	0.8	100.0
Hill						
Eastern	512,577	31.0	1.0	66.9	1.1	100.0

Region	Number	Rural-Urban	Urban-Urban	Rural-Rural	Urban-Rural	Total
Central	541,086	35.6	9.4	49.2	5.7	100.0
Western	689,852	36.4	2.4	59.5	1.6	100.0
Mid-western	225,626	20.0	0.8	78.3	1.0	100.0
Far-western	188,280	25.4	2.1	70.9	1.7	100.0
Total	2,157,420	32.3	3.6	61.6	2.5	100.0
Tarai						
Eastern	268,506	38.6	10.2	45.8	5.4	100.0
Central	261,654	37.0	7.9	50.6	4.5	100.0
Western	71,496	36.1	7.5	51.6	4.7	100.0
Mid-western	77,380	27.8	6.5	61.2	4.5	100.0
Far-western	37,071	27.9	13.3	49.5	9.3	100.0
Total	716,109	36.0	8.8	50.0	5.1	100.0

Note: NS cases excluded. NA=not applicable because there is no urban centers in western, mid-western, and far-western regions.

Source: Population and Housing Census-2011 Database, CBS, 2014.

10.5.7 Migration to urban areas

The 2011 population census provides data on internal migration for 58 designated urban localities and it is necessary to analyse them to understand migration flow to the urban localities. Table 10.10 presents data on the volume of lifetime migrants who go to urban areas by region of urban localities (towns). The table reveals that urban areas of Nepal have a total population of 4,523,820, of which, 4,361,457 (96%) are native born and 162,363 (4%) are foreign born. Internal migrants make up nearly 30% (1,283,491) of the total native born population in urban areas. Migration to urban areas occurs predominantly from rural areas (84%). Distribution of urban-ward migrants by regions of towns indicates that Kathmandu Valley towns are the most common destination of urban-ward migration from both rural as well as urban areas. Forty six percent of the total urban-ward migrations from rural areas and 58 % from urban areas were destined for Kathmandu Valley towns. The highest proportion of the foreign born population, however, was destined for Tarai towns (61% or 98,256).

Table 10.10 further indicates that more-than one-third of the native born population in Kathmandu valley towns (43%) are migrants, of which 25% are migrants from rural areas of other districts and 8% are from urban areas. Mountain towns have the lowest proportion of migrant population (6% from rural areas and 1% from urban areas). In hill and Tarai, migrants constitute around one-fifth of their native population.

A further breakdown of the urban-ward migration data by 58 municipal areas indicate that the migrant population in three of the municipalities: Kathmandu Metropolitan (48%), Madhyapur Thimi (45%) and Butwal (49%) constitutes nearly half of the native born population (Appendix 10.2). This is followed by Bharatpur (43%), Itahari (44%), Dharan (42%), Lalitpur (38%) and Kirtipur (37%). Among these, the former three municipalities are from Tarai districts and the latter two are from the Kathmandu Valley. Rajbiraj and Lahan, from eastern Tarai districts, and Janakpur, Jaleswor, Malangawa, Gaur, Kalaiya, and Rajbiraj, from central Tarai districts, have the least proportion of migrants in their population at less than 10%. There are another eleven municipalities from mountain and hill regions with a low proportion of migrant population.

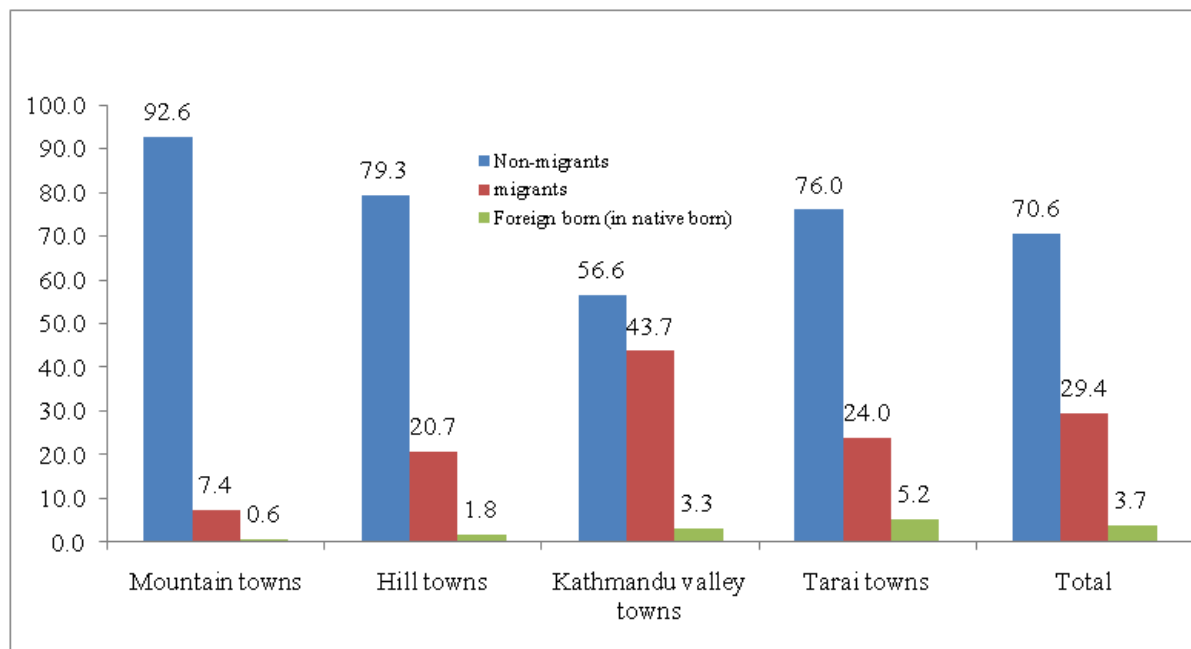
Table 10.10: Inter-district migrants to urban areas

Regions	Total population	Native born	Non-migrants	Number of Migrants			Non-migrants	Percent as of native born			Born in Foreign Countries (% of native born)	
				Rural	Urban	Total Migrants		Migrants			Number	%
								Rural	Urban	Total migrants		
Mountain towns	49,995	49,712	46,042	3,136 (85.4)	534 (14.6)	3,670 (100.0)	92.6	6.3	1.1	7.4	283	0.6
Col%	1.1	1.1	1.5	0.3	0.3	0.3						0.2
Hill towns	1,003,126	985,714	781,975	175,939 (86.4)	27,800 (13.6)	203,739 (100.0)	79.3	17.8	2.8	20.7	17,412	1.8
Col%	22.2	22.6	25.4	16.3	13.8	15.9						10.7
Kathmandu valley towns	1,464,984	1,418,572	800,042	500,765 (81.0)	117,765 (9.0)	618,530 (100.0)	56.4	35.3	8.3	43.6	46,412	3.3
Col%	32.4	32.5	26.0	46.3	58.4	48.2						28.6
Tarai towns	2,005,715	1,907,459	1,449,907	402,000 (87.0)	55,552 (13.0)	457,552 (100.0)	76.0	21.1	2.9	24.0	98,256	5.2
Col%	44.3	43.7	47.1	37.2	27.5	35.6						60.6
Total	4,523,820	4,361,457	3,077,966	1,081,840 (84.0)	201,651 (14.0)	1,283,491 (100.0)	70.6	24.8	4.6	29.4	162,363	3.7
Col%	100.0	100.0	100.0	100.0	100.0	100.0						100.0

Note: Numbers in parentheses refer to percentage.

Source: Appendix 2.

Figure 10.9: Migrant, non-migrant and foreign born population in urban areas, 2011



Source: Table 10.10

10.5.8 Period migration

Period migration helps understand migration patterns five years before the census. In order to understand migration patterns five years before the census, the 2011 census asked a question on ‘where was [the person] lived five years ago’? This question was asked to all persons aged five years and above.

Table 10.11 shows that 1,095,359 (91%) persons’ district of residence was different from their district of current residence and 110,237 were living in foreign countries five years before the census. Nearly two-thirds (73%) of those who were living in different districts were living in rural areas. This indicates that migration flow five years before the census was predominately to rural areas. Such a predominance of migration is seen from almost all the regions with some variation. A large majority (84%) of those who were living in foreign countries were living in India. This indicates that migration to India predominated over other countries five years before the census. The proportion of those who went to India, however, varied significantly according to regions of origin with fewer people going to India from five of the regions: eastern and central mountain, western mountain, and eastern, central and western hills. As compared to other regions, migrants from these regions went to other countries other than India.

Table 10.11: Distribution of inter-district migrants aged five years and above according to the place of residence (rural, urban, and foreign country) five years prior to census

Regions of origin	Non-migrants as % of native born	Total	Rural	Urban	Not Stated	Foreign Country				Place Not Stated
						Total	India	Other Countries	Country not stated	
Total	93.6	1,095,359	73.0	11.0	16.0	110,237	84.7	12.7	2.6	301,637
Mountain										
Eastern	98.0	4,881	69.6	14.8	15.6	819	45.4	51.6	2.9	1,254
Central	97.8	6,722	60.5	22.0	17.5	501	66.9	32.9	0.2	3,034
Western	90.5	1,490	77.2	11.5	11.2	35	28.6	71.4	0.0	13
Mid-western	97.9	4,762	76.0	12.9	11.2	314	91.1	3.8	5.1	1,823
Far-western	98.0	3,901	62.0	10.9	27.2	676	96.3	2.5	1.2	3,454
Hill										
Eastern	96.5	38,376	78.2	10.4	11.4	2,691	64.5	30.6	4.8	9,018
Central	87.2	437,801	67.4	15.3	17.3	21,010	68.7	28.4	2.8	56,781
Western	94.7	97,723	73.9	10.0	16.1	10,885	77.3	19.9	2.7	25,149
Mid-western	97.0	25,591	77.9	6.5	15.6	2,813	91.1	6.6	2.3	15,010
Far-western	97.9	10,252	74.4	11.6	14.0	951	90.2	6.1	3.7	4,668
Tarai										
Eastern	94.1	146,370	80.3	9.4	10.3	19,480	89.1	8.6	2.3	35,909
Central	95.0	97,337	70.5	8.0	21.5	21,812	91.4	6.1	2.5	90,615
Western	92.7	92,442	76.8	5.3	17.9	16,613	92.6	5.1	2.3	29,251
Mid-western	93.5	65,460	80.7	5.6	13.7	6,291	93.8	3.8	2.5	14,284
Far-western	92.8	62,252	81.5	4.9	13.6	5,346	95.8	1.5	2.7	11,374
% of Total		90.9				9.1				

Source: Population and Housing Census-2011 District Report, Individual Tables Part VI, Table 28 & 30, CBS, 2014.

10.5.9 Duration of stay

Information on duration of stay is useful for understanding timing of migration. In general, those migrants who have been living in the place of enumeration during the last one period are known as “most recent” migration, those migrants living for the last 5 years period are known as “recent” migrants, and those living longer than a 5 year period are known as “longer-term” or permanent nature of migration. The 2011 census solicited information on duration of stay in the place of enumeration by asking a question about “How long [name] has been staying here”? The question was directed to all persons whose district of enumeration was different from their district of birth. Table 10.12 presents classification of inter-district migrants according to duration of stay in the district of enumeration. The table reveals that the highest (44%) of migrants had been living in the district of enumeration for more than 10 years, 26% for the last 1-5 years and 19% had been living in the district of enumeration for the last 6 to 10 years. In total, 4% of the migrants are classified as “most recent” migrants, as they lived in the district of enumeration for the last one-year period.

The proportion of “most recent” migrants by rural and urban areas does not vary considerably (4% in rural areas and 5% in urban areas). However, as compared to rural areas (27%), urban areas had a much higher proportion of “recent” migrants who migrated during the last 5 years period (37%). This indicates that a higher proportion of migrants (67%) who go to rural areas have a tendency to live longer and permanently in the place of destination than those who migrate to urban areas (59%). Mountain region has the highest proportion of “most recent” migrants (7%), followed by hills (5%). The proportion of “most recent” migrants is found to be lowest in the Tarai region (3%). As compared to other regions (approximately 60%), a higher proportion of migrants to the Tarai region tend to stay for a longer time. Except in mountain region, male and female migrants do not vary considerably in terms of length of stay in the place of destination.

Table 10.12: Distribution of inter-district migrants by duration of stay in the place of enumeration

Duration of migration	Number	Total	Length of stay (%)				
			< 1 yr	1-5 yr	6-10 yrs	10&+yrs	NS
Total	3,788,070	100.0	4.3	25.9	19.2	44.2	6.4
Sex							
Males	1,612,927	100.0	4.6	27.5	19.7	43.4	4.8
Females	2,175,143	100.0	4.1	24.8	18.8	44.8	7.5
Rural/urban residence							
Rural	2,358,421	100.0	4.0	22.6	17.1	48.9	7.4
Male	904,682	100.0	4.2	23.4	17.4	49.4	5.5
Female	1,453,739	100.0	3.8	22.0	16.9	48.6	8.6
Urban	1,429,649	100.0	4.9	31.5	22.7	36.3	4.6
Male	708,245	100.0	5.0	32.8	22.7	35.7	3.8
Female	721,404	100.0	4.7	30.3	22.7	37.0	5.4
Ecological Regions							
Mountain	60,459	100.0	7.2	24.9	13.8	44.7	9.3
Male	16,560	100.0	12.7	35.4	13.5	30.4	8.0
Female	43,898	100.0	5.2	20.9	14.0	50.1	9.8
Hill	1,773,771	100.0	5.2	31.1	21.8	36.2	5.7
Male	781,701	100.0	5.7	34.2	23.2	32.7	4.2
Female	992,070	100.0	4.8	28.6	20.8	39.0	6.8
Tarai	1,953,840	100.0	3.4	21.3	17.0	51.4	6.9
Male	814,666	100.0	3.4	20.9	16.6	53.9	5.3
Female	1,139,175	100.0	3.4	21.6	17.3	49.6	8.0

Source: Population and Housing Census-2011 District Report, Individual Tables Part V, Table 23, CBS, 2014.

10.5.10 Reasons for migration

Table 10.13 presents the distribution of inter-district migrants by reasons for migration according to background characteristics. The 2011 census solicited information on seven main reasons for migration including one more category on “Others”. The 2011 census question on reasons for migration was related to “main reason of staying in the district of enumeration”. Table 10.13 reveals that overall the highest, 24% of migrants, stayed in the district of enumeration due to marriage. A further breakdown of the data by sex indicates that marriage migration predominantly occurs among females. About 15% of migrants were staying in the current district for agriculture, 11 % for service, and 6% for business purposes. All these three reasons are economic reasons. Overall, one-fifth of migrants reportedly migrated as dependents.

Migration for agriculture (21%) predominates over all other economic migration in rural areas, whereas service-oriented migration predominates in urban areas (17%). Agricultural migration also predominates in the Tarai over other types of economic migration. As in urban areas, service-oriented migration predominates over all other economic migration in Mountain and Hills.

Economic migration favours males more than the females as half of migrant males were staying in the place of enumeration for economic reasons (agriculture, business and service). The comparative figure for females is just 18%. The predominance of economic migration among males is evident almost equally in the foreign-born population, rural-urban residence as well as all the ecological zones. Surprisingly, it is much more evident in Mountain zone where 62% of migrant males were staying in this zone for economic purposes, of them, the largest numbers, 40%, stayed there for services.

Table 10.13: Distribution of inter-district migrants by reasons for migration

Background characteristics	Number	Reasons for migration: inter-district migrants									
		Total	Agriculture	Business	Service	Study	Marriage	Dependent	Conflict	Others	Reasons not stated
Nepal	3,788,070	100.0	14.9	5.9	10.9	13.4	23.6	20.4	0.6	4.7	5.8
Sex											
Males	1,612,927	100.0	19.6	9.6	20.5	18.9	0.9	19.0	0.7	5.9	5.0
Females	2,175,143	100.0	11.4	3.2	3.7	9.3	40.4	21.4	0.5	3.8	6.3
Foreign Born											
Both sexes	479,625	100.0	5.6	7.3	6.3	4.4	45.8	17.0	0.4	3.0	10.2
Males	141,165	100.0	10.0	19.8	18.2	7.8	2.5	25.8	0.7	6.4	8.8
Females	338,460	100.0	3.8	2.0	1.4	2.9	63.8	13.4	0.3	1.6	10.7
Rural/urban residence											
<i>Rural</i>	2,358,421	100.0	21.1	4.3	7.0	8.1	28.5	20.1	0.6	4.2	6.1
Male	904,682	100.0	30.8	7.4	14.7	11.8	1.2	22.2	0.8	6.0	5.2
Female	1,453,739	100.0	15.0	2.4	2.3	5.8	45.5	18.9	0.4	3.1	6.7
<i>Urban</i>	1,429,649	100.0	4.8	8.6	17.2	22.1	15.5	20.7	0.5	5.4	5.2
Male	708,245	100.0	5.4	12.4	28.0	27.9	0.5	14.9	0.6	5.7	4.6
Female	721,404	100.0	4.1	4.8	6.6	16.4	30.2	26.4	0.5	5.1	5.7

Background characteristics	Number	Reasons for migration: inter-district migrants									
		Total	Agriculture	Business	Service	Study	Marriage	Deepen-dent	Conflict	Others	Reasons not stated
Ecological Regions											
<i>Mountain</i>	60,459	100.0	4.9	5.5	13.2	4.0	52.5	7.7	0.3	3.2	8.8
Male	16,560	100.0	7.7	13.0	40.9	7.8	2.9	10.8	0.4	7.5	9.0
Female	43,898	100.0	3.8	2.7	2.7	2.6	71.2	6.5	0.2	1.6	8.7
<i>Hill</i>	1,773,771	100.0	5.0	7.9	16.5	19.7	24.2	15.4	0.5	4.9	5.9
Male	781,701	100.0	6.2	12.2	29.5	27.3	0.9	12.5	0.6	5.8	5.1
Female	992,070	100.0	4.1	4.5	6.3	13.8	42.5	17.7	0.4	4.2	6.6
<i>Tarai</i>	1,953,840	100.0	24.2	4.2	5.6	7.9	22.2	25.2	0.7	4.5	5.5
Male	814,666	100.0	32.8	7.0	11.5	11.0	0.9	25.3	0.9	5.9	4.8
Female	1,139,175	100.0	18.1	2.2	1.4	5.7	37.4	25.2	0.5	3.5	6.1

Source: Population and Housing Census-2011 District Report, Individual Tables Part V, Table 24, CBS, 2014.

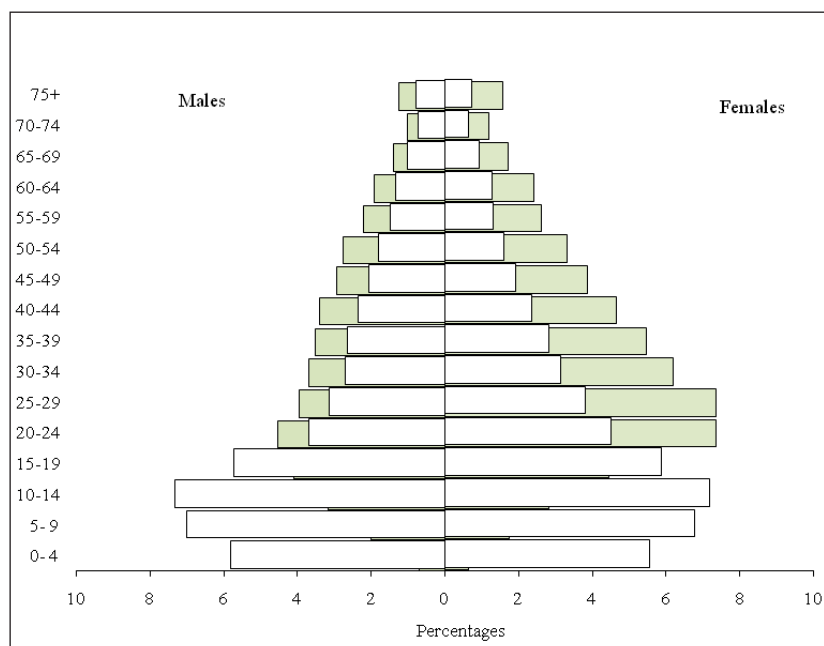
10.5.11 Demographic and socio-economic characteristics of migrants

10.5.11.1 Age-sex composition

Figure 10.10 shows the age-sex pyramid for the migrant (inter-district) and non-migrant (living in the district of birth) population. Based on Figure 10.10, the following basic differences in the age-sex distribution of migrant and non-migrant populations are observed.

- There is a broad-based age-sex pyramid for non-migrants with slight bulging in 5-14 ages.
- There is a narrow-based age-sex pyramid for migrants with bulging in young ages, especially age 20-24 and above.
- Up to the ages 15-19 years, the percentage of non-migrant population far exceeds that of the migrant population
- An opposite trend can be observed in ages 20-24 and above.
- Particularly in ages 20-24 and above, the percentage of migrant females exceeds that of migrant males, but such a difference is almost non-existent among non-migrants

The broad-based pyramid for the non-migrant population in children (5-14 years) indicates a relatively higher concentration of population in child ages. This is mainly due to high fertility in the past. Migration is generally said to be age selective, implying that people from youth/adult ages are more likely to migrate than other ages. Bulging of the age-sex pyramid of migrants in youth ages indicates age selectivity of migration. The sex ratio of migrants (Table 10.14) reveals that migration in Nepal favours females more than the males. A higher mobility of females may be attributed to marriage migration (40%) rather than economic migration (18%) (See Table 10.13 above). The number of males at child ages in the migrant population far exceeds that of females, but thereafter an opposite trend is observed.

Figure 10.10: Age-sex pyramid migrants (shaded) & non-migrant population, 2011, Nepal

Source: Table 10.14.

Table 10.14: Age-sex composition of inter-district migrants

	Migrant			Non-migrant		
	Male	Female	Sex ratio	Male	Female	Sex ratio
Age group						
00 - 04	0.7	0.6	110.2	5.8	5.5	104.8
05 - 09	2.0	1.7	115.1	7.0	6.8	103.3
10 - 14	3.2	2.8	112.2	7.3	7.2	101.8
15 - 19	4.1	4.5	92.4	5.7	5.9	97.2
20 - 24	4.5	7.4	61.6	3.7	4.5	81.8
25 - 29	4.0	7.4	53.8	3.1	3.8	82.7
30 - 34	3.7	6.2	59.7	2.7	3.1	86.3
35 - 39	3.5	5.5	64.2	2.7	2.8	94.4
40 - 44	3.4	4.7	72.8	2.4	2.4	99.9
45 - 49	3.0	3.9	76.3	2.1	1.9	106.7
50 - 54	2.8	3.3	83.0	1.8	1.6	111.6
55 - 59	2.2	2.6	84.6	1.5	1.3	112.2
60 - 64	1.9	2.4	79.3	1.3	1.3	103.4
65 - 69	1.4	1.7	80.7	1.0	0.9	110.4
70 - 74	1.0	1.2	84.0	0.7	0.7	110.9
75 & +	1.3	1.6	79.4	0.8	0.7	104.2
Nepal	42.6	57.4	74.2	49.6	50.4	98.2
Number	1,612,927	2,175,144		10,771,188	10,965,353	

Source: Population and Housing Census-2011 District Report, Individual Tables Part V, Table 21, CBS, 2014.

10.5.11.2 Educational characteristics by migration status

Educational characteristics analysed here are the literacy status of migrants and educational attainment (see Table 10.15). The 2001 census defined literacy in terms of a persons' ability to read and write in any language. The question was directed to all persons aged five years and above. Table 10.15 reveals that the level of literacy is comparatively higher among male migrants (84%) than that of non-migrant males (74%). However, migrant and non-migrant females do not differ significantly in terms of levels of literacy (60% migrants and 58% non-migrant females). The data shows that gender differentials in the level of literacy are very wide in migrants, as well as non-migrants. Such a differential is found to be less pronounced among non-migrants.

Educational attainment greatly varies by migration status of the population with higher levels of educational attainment among migrants. For example, 54% of migrant males who are literate have attained lower secondary to SLC level of education. The comparative figure for non-migrants is 42%. Likewise, the number of males with SLC and above level of education is much higher among migrants than non-migrant males (26% migrants and 9% non-migrants). The level of educational attainment between migrants and non-migrant females closely corresponds with the educational attainment of their migrant and non-migrant male counterparts.

Table 10.15: Literacy and educational attainment by migration status

Literacy/ educational attainment	Migrants				Non-migrants			
	Male	%	Female	%	Male	%	Female	%
Literacy								
Illiterate	253,313	16.0	852,173	39.6	2,480,885	26.1	4,125,226	42.3
Literate	1,332,376	84.0	1,297,010	60.3	7,020,418	73.8	5,624,484	57.6
Literacy not stated	428	0.0	1,622	0.1	5,800	0.1	9,266	0.1
Total	1,586,117	100.0	2,150,804	100.0	9,507,103	100.0	9,758,977	100.0
Educational attainment								
Beginners	21,005	1.6	18,534	1.4	200,746	2.9	166,389	3.0
Primary(1-5)	298,017	22.4	310,239	23.9	2,943,433	41.9	2,514,993	44.7
Lower secondary(6-8)	216,283	16.2	246,405	19.0	1,474,042	21.0	1,212,083	21.6
Secondary(9-10)	161,920	12.2	178,651	13.8	828,636	11.8	616,263	11.0
SLC & equiv.	204,994	15.4	206,545	15.9	668,676	9.5	470,666	8.4
Intermediate & equiv.	176,044	13.2	151,103	11.7	403,840	5.8	262,173	4.7
Graduate & equiv.	117,694	8.8	61,052	4.7	178,952	2.5	81,174	1.4
Post graduate, equiv. & above	58,747	4.4	17,924	1.4	56,858	0.8	19,274	0.3
Others	960	0.1	909	0.1	7,378	0.1	6,357	0.1
Non-formal education	71,939	5.4	99,963	7.7	225,753	3.2	247,854	4.4
Level not stated	4,774	0.4	5,685	0.4	32,103	0.5	27,259	0.5
Total	1,332,376	100.0	1,297,010	100.0	7,020,418	100.0	5,624,484	100.0

Source: Population and Housing Census-2011 Database, CBS, 2014.

10.5.11.3 Occupation by migration status

Table 10.16 shows the classification of migrants (inter-district) and non-migrants by type of main occupation. The table shows that the main occupation of the majority of non-migrant males (56%) is agriculture, forestry and fishery-related work. Compared to this, a higher proportion of non-migrant females (78%) pursue agriculture related work as their main occupation. The table further reveals that migrant males are far less likely to pursue agriculture-related jobs (30%) than non-migrant males as well as females. However, compared to males, a much higher proportion of females pursue agriculture as their main occupation. Besides agriculture, about 18% of migrant males are engaged in services, and another 14% in craft and related trades. Nearly 8% of migrant males are employed in professional activities and an equal proportion in elementary work. A much lower proportion of migrant females, and non-migrants of both sexes, are involved in such economic activities. This is mainly due to their higher involvement in agricultural-related work.

Table 10.16: Occupation by migration status

Occupation	Migrants				Non-migrants			
	Male	%	Female	%	Male	%	Female	%
Armed forces	11,793	1.2	888	0.1	10,288	0.2	896	0.0
Managers	40,172	4.0	20,005	2.2	49,844	1.1	25,671	0.8
Professionals	78,814	7.9	42,981	4.8	178,047	3.9	85,689	2.6
Technicians and associate professional	62,575	6.3	20,170	2.2	94,496	2.1	25,093	0.8
Office assistance	25,915	2.6	15,387	1.7	61,981	1.4	20,934	0.6
Service & sale workers	177,772	17.9	99,141	11.0	367,038	8.1	139,625	4.3
Skilled agriculture, forestry & fishery workers	293,172	29.5	541,538	60.3	2,530,598	55.8	2,533,695	77.8
Craft and related trades workers	139,641	14.1	58,030	6.5	473,691	10.4	97,997	3.0
Plant & machine operators & assemblers	57,938	5.8	6,102	0.7	141,169	3.1	9,116	0.3
Elementary occupations	78,497	7.9	78,157	8.7	521,073	11.5	277,521	8.5
Not stated	27,305	2.7	16,207	1.8	109,035	2.4	41,569	1.3
Total	993,594	100.0	898,604	100.0	4,537,258	100.0	3,257,806	100.0

Source: Population and Housing Census-2011 Database, CBS, 2014.

10.5.11.4 Caste/ethnicity and migration

Table 10.17 presents two basic measures on caste/ethnicity and migration, percentage distribution of migrants by caste/ethnicity and sex [col. (3) and (8)] and the percentage of migrants of the total population by sex [col (5) and (10)]. The latter is more a measure of the level of mobility. Disaggregated data are presented for only 23 caste/ethnic groups whose population size is 100,000 and above.

The table reveals that, nearly half of migrants, males as well as females, are from two caste/ethnic groups: Chhetree and Hill Brahmin. These are the two largest caste/ethnic groups in Nepal in terms of population size and therefore the highest number of migrants from these groups is expected. These caste/ethnic groups, especially Hill Brahmin, have the highest proportion of migrants in their populations (29% among males and 32% among

females). This indicates that males as well as females from the Hill Brahmin have the highest mobility. This is followed by females from Thakuri community (24%), Gurung (23%), Newar and Limbu (22%) and Rai (21%). Compared to this, the male population in other caste/ethnic groups consists of a slightly lower proportion of the migrant population (18-20%).

Caste/ethnic groups with small population sizes like Sarki, TeliChamar/Harijan/Ram, Koiri/Kushwaha, Kurmi, Sanyasi/Dashnami, Dhanuk, Musahar, Dusadh/Pasawan/Pasi each accounted for less than 1% of the total male as well as female migrants. These groups had the lowest proportion of migrants in their populations (less than 6%). This indicates very low population mobility in these groups. However, Sanyasi/Dashnami is an exception to this as about 13% of its males and 20% of its females are migrants. Tharu, Musalman and Yadav also demonstrate low population mobility.

Table 10.17: Caste/ethnic composition of inter-district migrants, 2011

Caste/ethnic (1)	Male					Female				
	Total population (2)	% (3)	Migrants (4)	% in total population of the group (5)	% of total migrants (6)	Total population (7)	% (8)	Migrants (9)	% in total population of the group (10)	% of total migrants (11)
Nepal	12,646,815	100.0	1,612,927	12.8	100.0	13,607,013	100.0	2,175,143	16.0	100.0
Chhetree	2,037,954	16.1	356,398	17.5	22.1	2,292,646	16.8	467,400	20.4	21.5
Brahman – Hill	1,517,046	12.0	442,929	29.2	27.5	1,673,137	12.3	540,450	32.3	24.8
Magar	854,061	6.8	113,249	13.3	7.0	1,009,448	7.4	155,484	15.4	7.1
Tharu	842,620	6.7	42,206	5.0	2.6	885,398	6.5	55,310	6.2	2.5
Tamang	731,984	5.8	110,271	15.1	6.8	793,043	5.8	134,697	17.0	6.2
Newar	646,716	5.1	104,560	16.2	6.5	687,908	5.1	151,026	22.0	6.9
Musalman	577,024	4.6	16,273	2.8	1.0	577,097	4.2	22,736	3.9	1.0
Kami	573,869	4.5	62,730	10.9	3.9	666,214	4.9	94,448	14.2	4.3
Yadav	544,448	4.3	12,884	2.4	0.8	509,480	3.7	22,324	4.4	1.0
Rai	286,846	2.3	53,118	18.5	3.3	322,227	2.4	68,247	21.2	3.1
Gurung	232,291	1.8	46,774	20.1	2.9	282,324	2.1	63,599	22.5	2.9
Damai/Dholi	218,204	1.7	26,241	12.0	1.6	252,751	1.9	41,895	16.6	1.9
Limbu	178,278	1.4	30,435	17.1	1.9	208,839	1.5	45,707	21.9	2.1
Thakuri	200,554	1.6	35,119	17.5	2.2	222,192	1.6	53,514	24.1	2.5
Sarki	170,194	1.3	10,793	6.3	0.7	201,264	1.5	22,829	11.3	1.0
Teli	190,893	1.5	8,630	4.5	0.5	179,025	1.3	11,119	6.2	0.5
Chamar/Harijan/Ram	164,752	1.3	1,854	1.1	0.1	166,038	1.2	6,316	3.8	0.3
Koiri/Kushwaha	157,510	1.2	5,891	3.7	0.4	148,250	1.1	9,290	6.3	0.4
Kurmi	116,495	0.9	1,701	1.5	0.1	110,685	0.8	4,574	4.1	0.2
Sanyasi/Dashnami	105,455	0.8	14,151	13.4	0.9	118,308	0.9	23,139	19.6	1.1
Dhanuk	110,996	0.9	3,416	3.1	0.2	111,300	0.8	6,548	5.9	0.3
Musahar	117,321	0.9	1,108	0.9	0.1	116,241	0.9	4,655	4.0	0.2
Dusadh/Pasawan/Pasi	106,263	0.8	1,190	1.1	0.1	102,775	0.8	4,449	4.3	0.2
Others	1,965,040	15.5	111,007	5.6	6.9	1,970,421	14.5	165,388	8.4	7.6

Source: Population and Housing Census-2011 Database, CBS, 2014.

10.6 Current migration

10.6.1 Migration rates

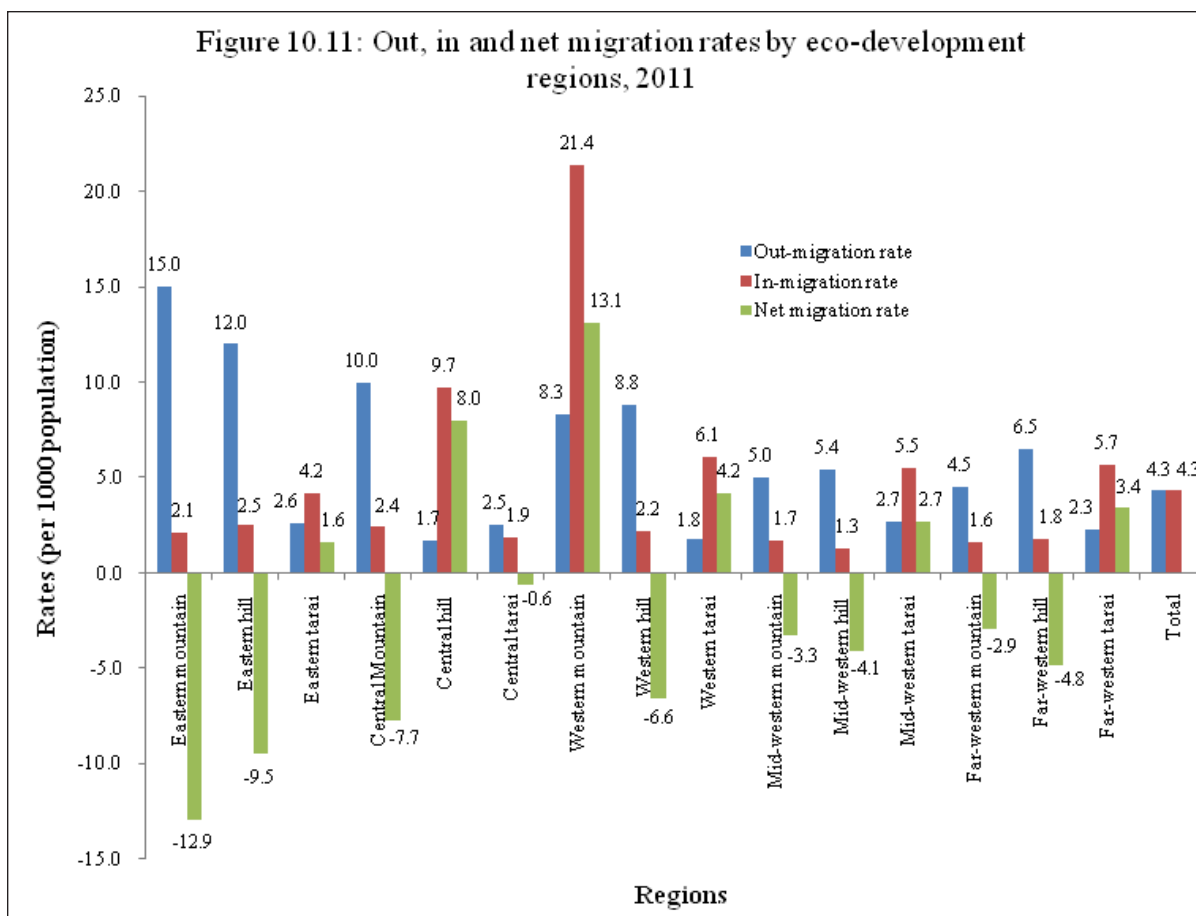
The number of inter-regional migrants during the last one-year period preceding the 2011 census accounted for 113,379 persons, which constituted 4 persons per 1,000 populations in 2001 (see Figure 10.11). This indicates that in every 1,000 population, an average of 4 persons will migrate every year crossing regional boundary. Eastern mountain has the highest out-migration rate of 15 persons per 1,000 populations, followed by eastern hill (12 per 1,000 populations), and central mountain (10 per 1,000 populations). All the Tarai regions have the lowest out-migration rate of around 2 persons per 1,000 populations. Western mountain region has the highest in-migration rate of around 21 persons per 1,000 populations. Central hill is second in terms of in-migration (10 persons per 1,000 populations). This is generally expected because central hill region consists of Kathmandu Valley, which includes the capital cities of Kathmandu, Lalipur and Bhaktapur.

With the exception of central Tarai, all other Tarai regions show higher in-migration rates than that of Mountain and Hills. The data on net migration rates further indicates that eastern mountain (-13 per 1,000 population) and eastern hill (-10 per 1000 population) regions have the highest net out-migration rate, implying that these two regions are the largest regions that are losing population. Each year, eastern mountain loses 13 persons per 1000 population and eastern region loses 10 persons per 1,000 populations.

The 2011 census counted 160,682 inter-district migrants during the one-year period preceding the census (Appendix 10.4). Inter-district migration rates for the country are estimated to be 6 persons per 1,000 populations. This indicates that, on average, every year 6 persons per 1,000 populations migrate from one district to another. Hill and Mountain districts, especially eastern, central and western regions, demonstrate higher out-migration rate than districts from other regions. Khotang Bhojpur and Terhathum from eastern hill, Taplejung from eastern mountain and Syangja from western hill are the five districts with the highest out-migration rates. The annual average number of out-migration from these district ranges from 18 in Syangjato 23 in Khotang. There are 27 districts, mostly from mountain, particularly mid-western mountain, Tarai, and Kathmandu Valley, in which, the out-migration rate is less than five. The five districts with the lowest out-migration rates are: Kapilbastu, Kathmandu, Rupendehi, Lalipur and Dolpa.

Districts with high out-migration rates generally have low in-migration rates. Therefore, in general, districts with high out-migration rates are also the districts with net-out migrations and losing population more rapidly through the migration process. Districts like Khotang, Bhojpur, Taplejung, Terhathum, and Okhaldhunga from eastern mountain and hill, Ramechhap from central hill, Gorkha, Arghakhanchi, and Lamjung from western hill have the highest net out-migration. The average annual number of population loss in these districts ranges from 14-21 persons, with the highest average loss in Khotang, Bhojpur and Taplejung. Bhaktapur (+25), Mustang (+24), Kathmandu (+22), Lalitpur (+19), Mustang (24), Kaski (+16) have the highest net-in-migration rates. The average annual gain is highest in Bhaktapur (+25) followed by Mustang (+24), Kathmandu (+22), Lalitpur (+19), and Kaski (+16).

In order to assess levels of current migration in Kathmandu Valley district, three districts of Kathmandu Valley have been classified as separate categories under Kathmandu Valley. The data indicates that more than one-third of current migrants (55,059 or 34%) go to Kathmandu Valley. Out-migration in Kathmandu Valley is just 2 persons per 1,000 populations and in-migration is as high as 22 persons per 1,000 populations. Hence Kathmandu Valley has a net gain of 20 persons per year per 1,000 populations.



Source: Appendix 10.3

10.6.2 Current migration stream

Appendix 10.3 presents a breakdown of current migration data for the 15 eco-development regions. The data indicates that the highest 22% (or 24,808) of total migrants came from western hill during the last one-year period preceding the survey. This is followed by eastern hill (17% or 19,198) and central Tarai (10% or 11,538). The relative data of the eco-development region in terms of origin of recent migrants does not differ much when compared with the lifetime migration data (22% western hill, 18% eastern hill and 7% central Tarai, Table 10.5 above). When the proportionate number of in-migrants who go to different regions is considered, the relative importance of central hill region has increased in recent times. Migration flow in recent times is directed more to the central hill, this region alone accounted for 38% of inter-regional migrants in recent times as compared to around 29% of the inter-regional lifetime migrants who went to this region (Table 10.5 above). Compared to the lifetime migration data, the proportion of recent migrants who went to all the Tarai regions has decreased. This indicates that the relative importance of all Tarai regions has decreased in recent time with an increase in the relative importance of central hill (Table 10.5 and Appendix 10.3).

Table 10.18 shows the top five districts of migrants for districts ranked in the top ten in terms of their in-migration rate. The table shows that Bhaktapur is ranked first in terms of its in-migration rate, followed by Mustang and Kathmandu. The other districts which fall in the top ten are: Lalitpur, Manang, Kaski, Chitwan, Sunsari, Morang and Rupendehi. In these districts, migrants come from almost all districts but, as shown in Table 10.18, the majority of migrants are from five districts. The exception here is the three districts of Kathmandu Valley and Chitwan in which a much lower proportion of migrants are from the top five source districts. This is an indicator of the fact that these districts receive migrants from more numbers of districts and source districts are diversified.

Table 10.18: Top five source districts for the districts ranked at top ten positions in terms of in-migration rate

Rank (based on in-migration rate)	Districts	Top five source districts	% of in-migrants from top five source districts
1	Bhaktapur	Kavrepalanchowk (12.2%), Kathmandu (8.5%), Ramechhap (8.2%), Sindhupalchowk (6.9%), Dolakha (4.4%)	40.1
2	Mustang	Myagdi (15.3%), Baglung (11.3%), Solukhumbu (9.8%), Rolpa (8.6%), Kaski (5.8%)	50.9
3	Kathmandu	Nuwakot (5.1%), Dhading (4.5%), Kavrepalanchowk (4.2%), Sindhupalchowk (4.1%), Gorkha (3.6%)	21.6
4	Lalitpur	Kavrepalanchowk (6.5%), Makawanpur (6.5%), Kathmandu (5.5%), Ramechhap (5.4%), Sarlahi (3.7%)	27.7
5	Manang	Gorkha (45.3%), Lamjung (16.0%), Rukum (7.5%), Kathmandu (3.8%), Dhading (2.8%)	75.5
6	Kaski	Syangja (21.6%), Tanahun (9.9%), Parbat (9.8%), Gorkha (5.4%), Lamjung (4.7%)	51.3
7	Chitwan	Gorkha (14.0%), Nawalparasi (8.8%), Tanahun (7.4%), Dhading (6.9%), Lamjung (6.5%)	43.7
8	Sunsari	Morang (16.2%), Bhojpur (14.8%), Khotang (11.7%), Jhapa (9.7%), Dhankuta (6.7%)	59.0
9	Morang	Sunsari (14.3%), Bhojpur (11.4%), Khotang (10.4%), Jhapa (9.9%), Dhankuta (9.0)	54.9
10	Rupandehi	Palpa (20.5%), Gulmi (18.0%), Arghakhanchi (10.9%), Syangja (10.0%), Nawalparasi (8.2%)	67.7

Source: Appendix 10.4.

Table 10.19 shows the top five destination districts of migrants who originate from districts ranked in the top ten in terms of out-migration rates. The table shows that Khotang is in first place in terms of out-migration rates, followed by Bhojpur and Taplejung. The other districts which fall in the top ten in order are: Terhathum, Syangja, Gorkha, Parbat, Okhaldhunga, Ramechhap, and Arghakhanchi. The table also shows that a large majority of migrants (66-84%) originating from these districts go to five districts ranked as top five destination districts. For example, 84% of migrants who originate from Ramechhap go to Kathmandu, Bhaktapur, Lalitpur, Sindhuli and Kavrepalanchowk out of which nearly 40% migrate to Kathmandu district alone. Likewise, more or less the same proportion of migrants from Taplejung migrate to Jhapa district alone (41%). It is interesting to note that Kathmandu district is the most common destination of migrants from all the districts with high out-migration rates.

Table 10.19: Top five destination districts for the districts ranked at top ten positions in terms of out-migration rate

Rank (based on out-migration rate)	Districts	Top five destination districts	% of in-migrants from top five source districts
1	Khotang	Kathmandu (21.8%), Udayapur (19.4%), Morang (18.4%), Sunsari (17.3%), Lalitpur (4.2%)	81.1
2	Bhojpur	Sunsari (27.0%), Morang (24.7%), Kathmandu (12.4%), Jhapa (7.8%), Udayapur (7.3%)	79.1
3	Taplejung	Jhapa (41.4%), Kathmandu (9.4%), Sunsari (8.2%), Panchthar (8.1%), Morang (7.6%)	74.7
4	Terhathum	Morang (23.5%), Jhapa (23.4%), Sunsari (14.8%), Kathmandu (10.3%), Dhankuta (8.3%)	80.4
5	Syangja	Kaski (32.7%), Rupandehi (14.8%), Kathmandu (12.0%), Nawalparasi (10.9%), Chitwan (5.6%)	76.0
6	Gorkha	Kathmandu (29.4%), Chitawan (23.9%), Kaski (8.9%), Tanahun (7.4%), Lalitpur (5.9%)	75.5
7	Parbat	Kaski (30.3%), Kathmandu (17.9%), Nawalparasi (11.5%), Rupandehi (8.4%), Chitawan (7.4%)	75.5
8	Okhaldhunga	Kathmandu (30.8%), Lalitpur (11.4%), Morang (8.9%), Udayapur (7.6%), Bhaktapur (6.8%)	65.5
9	Ramechhap	Kathmandu (37.9%), Bhaktapur (19.4%), Lalitpur (15.2%), Sindhuli (6.0%), Kavrepalanchowk (5.8%)	84.3
10	Argkhanchi	Kapibastu (28.3%), Rupandehi (26.7%), Kathmandu (15.2%), Gulmi (6.2%), Pyuthan (3.8%)	80.1

Source: Appendix 10.4.

10.7 Conclusions

Over the last 40 years, the volume of lifetime migrants has been continuously increasing but it has increased more rapidly after 1991. This rise is largely associated with the expansion of employment opportunities in the informal sector after the restoration of democracy. Most migrants in Nepal originate from the hills (63%) and go to the Tarai (70%). Tarai also appears to be the largest gainer of population through the migration process, the hills being the highest loser.

Although most out-migrations are from the hills, its relative share is declining due to a gradual increase of migrants with Tarai origin. Over the same period, the proportion of migrants who went to Tarai has declined with a gradual increase in the relative share of in-migrants in the hills. This implies a shifting pattern of migration between the hills and Tarai.

Most migration to Tarai occurs from contiguous hill regions, implying that hill migration generally has a common destination to contiguous areas of the Tarai region. Most migrations from eastern hill go to eastern Tarai, from central hill to central Tarai, from western hill to western Tarai, from mid-western hill to mid-western Tarai and from far-western hill to far-western Tara. Considering districts as places of destination, the migration flow from hill region is mostly concentrated to a few districts of the Tarai. Migration from the eastern hills is mainly to three Tarai districts, Jhapa, Morang, and Sunsari; from western hill to Nawalparasi, Rupendehi and Kapilbastu; from

mid-western hill to Dang, Banke, Bardiya, and from far-western hill to Kailali and Kanchanpur. In addition, two other clusters of hill districts experiencing high in-migration are identified, Kaski (western hill) and another cluster of districts, Lalitpur, Kathmandu, and Bhaktapur (central hill). The central Tarai is an exception to this as this region experienced a substantial reduction in the number of in-migrants during the 2001-2011 period and five of the seven districts of this region experienced net out-migration. Only Chitwan district from this region accounted for high in-migration (37% in total population), others accounted for around 4%-7%.

Districts showing higher out-migration in general show lower in-migration and vice versa. Therefore, districts with higher out-migration rates have higher net out-migration, hence a higher net loss of population. Districts with higher in-migration rates have a higher net gain. Four of the districts from eastern mountain and hill regions - Bhojpur, Taplejung, Khotang and Terhathum—have the highest net loss of population. Due to high net out-migration, these districts experience negative population growth implying that population size in these districts has declined during 2001-2011. These districts have medium Human Development Index (HDI) (NPC & UNDP, 2014). As expected, five districts with the highest net in-migration are districts with high HDI values; Kathmandu, Lalitpur, Chitwan, and Bhaktapur, with the exception of Kanchanpur which has a high net in-migration but not a high HDI value.

Most migration in Nepal takes place from rural to rural areas. The period migration data also indicates that the rural-to-rural stream predominated over all other migration streams in the five-year period before the census. However, the relative importance of the rural-to-rural stream has declined during 2001-2011 as rural to urban migration is gradually increasing. This is indicative of the fact that internal migration in Nepal is gradually shifting to a rural-urban stream. Such shifting patterns of migration are generally expected with the increasing level of urbanisation, and the growth of market centres where better employment opportunities are available.

Migration data for designated urban areas further indicate that urban-ward migration is predominately from rural areas, and towns of Kathmandu Valley are the most common destination of urban-ward migration. This is generally expected because as capital cities, Kathmandu Valley towns have better infrastructures and employment opportunities. Migration to urban areas is least evident among people from the hills and central Tarai.

Nepal's internal migration is predominantly longer-term migration, irrespective of region, type of residence, and gender. "Most recent" migration, i.e. migration during the last one-year period, constituted only 4% of total migrants. Female migration is mainly due to marriage, but economic migration is the main reason among males. A comparison of age structure between migrants and the non-migrant population reveals that internal migration in Nepal favours youth ages. Internal migration is also sex selective as it favours females more than males, mainly due to high marriage migration among females. A large majority of internal migrants in Nepal are literate and have a higher educational attainment than non-migrants. The majority of male migrants are engaged more in non-agricultural occupations, whereas the majority of migrant females are engaged in agricultural occupations. Internal migration also favours more socio-economically advanced populations (Brahmin and Chhetree) than backward caste/ethnic groups (Sarki, Teli, Chamar/Harijan/Ram, Kori/Kuswadiya) (for position on human development indicates of each caste/ethnic group, see Gurung et al., 2012).

Finally, this chapter presents patterns of current migration based on migration data for the one-year period preceding the census. The current migration data indicates that the average annual number of migrants in Nepal is 4 persons per 1,000 populations. However, there is a significant variation in the average annual number of migration by region with the highest average annual number of out-migration in eastern mountain and hills and the lowest in the Tarai region. Eastern mountain and hills are the largest regions to lose population every year. The average annual number of in-migration is highest in central mountain and hill. Kathmandu Valley is the most common destination of inter-district current migrants as nearly 38% of current migrants go to the central hill, out of which 34% are based in the three districts of Kathmandu Valley. This provides a slightly different picture when compared with inter-district lifetime migrants who go to Kathmandu Valley (29% in Table 10.6 above). From this, it can be concluded that in recent times, the migration flow in Nepal is directed more to the central hills, especially to the three districts of Kathmandu Valley.

10.8 Policy implications

It is argued that internal migration in Nepal is mainly due to regional imbalances in the distribution of resources, opportunities, services and poverty, unemployment, difficult livelihoods and food scarcity of households (KC, 2014). The 2011 census data as well as past census data indicate that in Nepal most internal migration occurs from hills to Tarai and rural to urban areas. Accordingly, efforts are being made to minimise hill to Tarai and rural to urban migration flows through a number of policy interventions, such as regionally balanced distribution of physical infrastructure, socio-economic services, and the development of small towns and satellite cities in rural and backward regions. Despite this, the migration process has not been properly managed and is still high (NPC, 2007).

Migration is a process of population and labour force transition from one area to another. The adverse effect of uncontrolled migration is it can create labour shortages in the place of origin and a surplus of labour in the place of destination. With the increasing number of in and out of country migrants, Nepal may face these problems as many agricultural households in the hills are facing shortages of agricultural labour. Furthermore, an increasing inflow of migration generally leads to a shortage of basic services in the place of destination.

In this context, based on the findings of this chapter, the following recommendations are made for policy interventions.

- As migration flow from mountain and hills to Tarai continues to be the largest migration stream, it should still be the focus in migration management policies. The data indicates that the propensity to migrate varies widely according to region, district and rural/urban residence. In this context, a strategy to rank areas by propensity to migrate, underlying causes of migration and its impact on the local economy should be undertaken before launching any intervention programmes. In this context, a policy adopted by The Thirteenth Plan (2013/14-2015/16) to conduct a study on reasons for internal and international migration in Nepal in highly relevant (NPC, 2010).
- The lifetime, as well as current migration data from the various censuses, indicates that the highest number of out-migration occurs from the eastern and western hill regions. Districts from these regions show a very high loss of population through the migration process (up to 54% in terms of lifetime migration and 21 persons per year per 1,000 population). Any migration management programme of the country should prioritise districts with high out-migration rates with the aim of minimising out-migration from these districts.
- The current migration data indicates that migration flow in recent times is more diverted to urban areas. If the same trend continues in the future, urban-ward migration will increase more rapidly. Therefore, minimising urban-ward migration should still be the highest concern in migration management policies. In this regard, special attention should be given to minimising migration flow to the urban areas of Kathmandu Valley.
- Although migration flow in recent times is more diverted to urban areas, Tarai still continues to be the largest destination of migrants. However, out-migration from Tarai is still much smaller than that of mountain and hills, but it is increasing much more rapidly. A high proportion of migrants from Tarai prefer to go to another district of the Tarai region (around 40%). The data indicates that Tarai is a common destination of migrants from all the regions. In this context, the high in-flow of migration to Tarai should still get priority in migration management policy. Appropriate programmes to divert mountain and hill migration to other areas should be adopted so that migration flow to Tarai is minimised. There is a strong indication that Tarai migration will increase very rapidly in the future. In this context, a policy to manage the flow of Tarai migration is required.

- Based on the current migration data, clusters of districts in Tarai regions can be identified where the majority of migration flow from the contiguous mountain and hill region is directed. Morang and Sunsari in eastern region, Chitwan in central region, Nawalparasi, Rupendehi in western region, Dang, Banke and Bardiya in mid-western region and Kailali and Kanchanpur in far-western region form such clusters of districts. Only two such areas have been identified in the hills (three districts of Kathmandu and Kaski) with no such areas in mountain. This indicates that there are very few attractive places for migrants in mountain and hills. In this context, any migration management policies to develop satellite and small town promotion programmes should concentrate more on mountain and hills.

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Appendix

Appendix 10.1: Number and percent of life-time Migrants in total population and net migration (in ascending order by net migration)

District	Total population	Number		Percent		% in total population		Net migration
		Out-migrants	In-migrants	Out-migrants	In-migrants	out-migration	In-migration	
Bhojpur	182,459	104,863	7,275	2.8	0.2	57.5	4.0	-53.5
Taplejung	127,461	71,620	4,162	1.9	0.1	56.2	3.3	-52.9
Khotang	206,312	109,811	4,979	2.9	0.1	53.2	2.4	-50.8
Terhathum	101,577	57,684	8,806	1.5	0.2	56.8	8.7	-48.1
Okhaldhunga	147,984	62,739	4,375	1.7	0.1	42.4	3.0	-39.4
Syangja	289,148	126,493	17,139	3.3	0.5	43.7	5.9	-37.8
Parbat	146,590	68,543	14,848	1.8	0.4	46.8	10.1	-36.6
Ramechhap	202,646	80,572	6,707	2.1	0.2	39.8	3.3	-36.5
Panchthar	191,817	77,403	9,410	2.0	0.2	40.4	4.9	-35.4
Sankhuwasabha	158,742	54,161	6,617	1.4	0.2	34.1	4.2	-30.0
Gulmi	280,160	95,633	15,021	2.5	0.4	34.1	5.4	-28.8
Gorkha	271,061	87,404	12,204	2.3	0.3	32.2	4.5	-27.7
Lamjung	167,724	57,023	11,952	1.5	0.3	34.0	7.1	-26.9
Nuwakot	277,471	79,698	7,601	2.1	0.2	28.7	2.7	-26.0
Dolakha	186,557	54,709	6,276	1.4	0.2	29.3	3.4	-26.0
Solukhumbu	105,886	31,171	4,126	0.8	0.1	29.4	3.9	-25.5
Baglung	268,613	78,513	11,390	2.1	0.3	29.2	4.2	-25.0
Kavrepalanchowk	381,937	119,048	26,127	3.1	0.7	31.2	6.8	-24.3
Palpa	261,180	81,852	19,836	2.2	0.5	31.3	7.6	-23.7
Sindhupalchok	287,798	76,611	8,743	2.0	0.2	26.6	3.0	-23.6
Arghakhanchi	197,632	55,295	8,864	1.5	0.2	28.0	4.5	-23.5
Dhankuta	163,412	54,223	16,222	1.4	0.4	33.2	9.9	-23.3
Manang	6,538	2,862	1,381	0.1	0.0	43.8	21.1	-22.7
Achham	257,477	63,728	6,495	1.7	0.2	24.8	2.5	-22.2
Dhading	336,067	90,414	15,925	2.4	0.4	26.9	4.7	-22.2
Baitadi	250,898	61,205	6,131	1.6	0.2	24.4	2.4	-22.0
Doti	211,746	52,950	7,267	1.4	0.2	25.0	3.4	-21.6
Myagdi	113,641	28,577	5,376	0.8	0.1	25.1	4.7	-20.4
Dailekh	261,770	55,000	4,243	1.5	0.1	21.0	1.6	-19.4
Mustang	13,452	4,481	2,264	0.1	0.1	33.3	16.8	-16.5
Salyan	242,444	44,664	5,467	1.2	0.1	18.4	2.3	-16.2
Darchula	133,274	23,924	3,548	0.6	0.1	18.0	2.7	-15.3
Rasuwa	43,300	8,571	2,509	0.2	0.1	19.8	5.8	-14.0
Pyuthan	228,102	37,759	6,726	1.0	0.2	16.6	2.9	-13.6
Sindhuli	296,192	60,632	22,377	1.6	0.6	20.5	7.6	-12.9
Rolpa	224,506	31,434	3,730	0.8	0.1	14.0	1.7	-12.3
Dadeldhura	142,094	33,378	16,059	0.9	0.4	23.5	11.3	-12.2
Bajhang	195,159	24,848	3,118	0.7	0.1	12.7	1.6	-11.1
Rukum	208,567	25,761	3,082	0.7	0.1	12.4	1.5	-10.9

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District	Total population	Number		Percent		% in total population		Net migration
		Out-migrants	In-migrants	Out-migrants	In-migrants	out-migration	In-migration	
Jajarkot	171,304	20,430	2,082	0.5	0.1	11.9	1.2	-10.7
Tanahu	323,288	67,970	34,713	1.8	0.9	21.0	10.7	-10.3
Jumla	108,921	13,785	3,270	0.4	0.1	12.7	3.0	-9.7
Kalikot	136,948	16,798	3,602	0.4	0.1	12.3	2.6	-9.6
Ilam	290,254	53,291	25,378	1.4	0.7	18.4	8.7	-9.6
Bajura	134,912	13,862	4,072	0.4	0.1	10.3	3.0	-7.3
Mugu	55,286	4,642	1,179	0.1	0.0	8.4	2.1	-6.3
Saptari	639,284	50,007	16,061	1.3	0.4	7.8	2.5	-5.3
Dhanusa	754,777	56,958	30,075	1.5	0.8	7.5	4.0	-3.6
Siraha	637,328	39,941	19,265	1.1	0.5	6.3	3.0	-3.2
Makwanpur	420,477	68,729	56,244	1.8	1.5	16.3	13.4	-3.0
Humla	50,858	2,977	1,628	0.1	0.0	5.9	3.2	-2.7
Dolpa	36,700	1,935	1,329	0.1	0.0	5.3	3.6	-1.7
Rautahat	686,722	38,428	28,475	1.0	0.8	5.6	4.1	-1.4
Mahottari	627,580	39,180	31,292	1.0	0.8	6.2	5.0	-1.3
Parsa	601,017	35,264	28,631	0.9	0.8	5.9	4.8	-1.1
Sarlahi	769,729	52,836	51,281	1.4	1.4	6.9	6.7	-0.2
Bara	687,708	40,866	51,186	1.1	1.4	5.9	7.4	1.5
Surkhet	350,804	41,276	52,270	1.1	1.4	11.8	14.9	3.1
Udayapur	317,532	41,825	54,425	1.1	1.4	13.2	17.1	4.0
Dang	552,583	48,305	71,788	1.3	1.9	8.7	13.0	4.2
Kapilbastu	571,936	15,591	48,468	0.4	1.3	2.7	8.5	5.7
Bardiya	426,576	25,954	74,375	0.7	2.0	6.1	17.4	11.4
Morang	965,370	82,597	210,348	2.2	5.6	8.6	21.8	13.2
Sunsari	763,487	59,827	164,740	1.6	4.3	7.8	21.6	13.7
Nawalparasi	643,508	35,156	124,406	0.9	3.3	5.5	19.3	13.9
Jhapa	812,650	74,443	199,278	2.0	5.3	9.2	24.5	15.4
Kaski	492,098	48,804	125,001	1.3	3.3	9.9	25.4	15.5
Banke	491,313	15,420	97,267	0.4	2.6	3.1	19.8	16.7
Rupandehi	880,196	33,942	188,162	0.9	5.0	3.9	21.4	17.5
Kailali	775,709	25,794	170,114	0.7	4.5	3.3	21.9	18.6
Bhaktapur	304,651	31,662	93,633	0.8	2.5	10.4	30.7	20.3
Chitawan	579,984	54,798	186,214	1.4	4.9	9.4	32.1	22.7
Kanchanpur	451,248	16,671	122,136	0.4	3.2	3.7	27.1	23.4
Lalitpur	468,132	32,711	153,129	0.9	4.0	7.0	32.7	25.7
Kathmandu	1,744,240	71,796	835,833	1.9	22.1	4.1	47.9	43.8
Total	26,494,504	3,709,728	3,709,728	97.9	97.9	14.0	14.0	0.0
District not stated	-	78,321	78,321	2.1	2.1			
All Total	-	3788049	3788049	100.0	100.0			
Three districts of Kathmandu	2517023	136169	1082595	3.7	29.2	5.4	43.0	37.6
% of total migrants		3.7	29.2					

Source: Population and Housing Census-2011 Database, CBS, 2014.

Appendix 10.2: In-migration to urban areas

Zones/districts	Municipalities	Total population	Native born	%	Same district	%	Born in other districts				Born in foreign country	Total %	Born in (%)	
							Rural	Urban	%	Total (Number)				
Mountain districts	Mountain towns	49,995	49,712	99.4	46,042	92.6	3,136	6.3	534	1.1	3,670	7.4	283	0.6
	Col%	1.1	1.1		1.5		0.3	0.3					0.2	
Sankhuwasabha	Khandbari Municipality	26,658	26,494	99.4	23,979	90.5	2,236	8.4	279	1.1	2,515	9.5	164	0.6
Dolakha	Bhimeshor Municipality	23,337	23,218	99.5	22,063	95.0	900	3.9	255	1.1	1,155	5.0	119	0.5
Hill districts	Hill towns	1,003,126	985,714	98.3	781,975	79.3	175,939	17.8	27,800	2.8	203,739	20.7	17,412	1.7
	Col %	22.2	22.6		25.4		16.3	13.8					10.7	
Ilam	Ilam Municipality	19,427	19,146	98.6	16,091	84.0	2,700	14.1	355	1.9	3,055	16.0	281	1.4
Dhankuta	Dhankuta Municipality	28,364	28,049	98.9	22,265	79.4	4,771	17.0	1,013	3.6	5,784	20.6	315	1.1
Udayapur	Triyuga Municipality	71,405	70,886	99.3	56,445	79.6	13,257	18.7	1,184	1.7	14,441	20.4	519	0.7
Sindhuli	Kamalimai Municipality	41,117	40,814	99.3	34,302	84.0	5,827	14.3	685	1.7	6,512	16.0	303	0.7
Kavrepalanchowk	Banepa Municipality	24,894	24,674	99.1	20,578	83.4	2,870	11.6	1,226	5.0	4,096	16.6	220	0.9
Kavrepalanchowk	Dhulikhel Municipality	16,263	16,183	99.5	13,990	86.4	1,599	9.9	594	3.7	2,193	13.6	80	0.5
Kavrepalanchowk	Panauti Municipality	28,312	28,215	99.7	25,947	92.0	1,648	5.8	620	2.2	2,268	8.0	97	0.3
Nuwakot	Bidur Municipality	27,953	27,699	99.1	25,803	93.2	1,462	5.3	434	1.6	1,896	6.8	254	0.9
Makawanpur	Hetauda Municipality	85,653	83,762	97.8	58,812	70.2	19,978	23.9	4,972	5.9	24,950	29.8	1,891	2.2
Gorkha	Gorkha Municipality	33,865	33,547	99.1	30,861	92.0	2,324	6.9	362	1.1	2,686	8.0	318	0.9
Tanahu	Byas Municipality	43,615	42,827	98.2	38,344	89.5	3,838	9.0	645	1.5	4,483	10.5	788	1.8
Syangja	Putalibazar Municipality	31,338	30,949	98.8	29,256	94.5	1,305	4.2	388	1.3	1,693	5.5	389	1.2
Syangja	Waling Municipality	24,199	23,951	99.0	22,659	94.6	1,120	4.7	172	0.7	1,292	5.4	248	1.0
Kaski	Lekhnath Municipality	59,498	58,742	98.7	47,892	81.5	9,774	16.6	1,076	1.8	10,850	18.5	756	1.3
Kaski	Pokhara Sub-Metropolitan City	264,991	256,153	96.7	167,040	65.2	78,841	30.8	10,272	4.0	89,113	34.8	8,838	3.3
Baglung	Baglung Municipality	30,763	30,368	98.7	26,306	86.6	3,284	10.8	778	2.6	4,062	13.4	395	1.3
Palpa	Tansen Municipality	31,161	30,616	98.3	25,648	83.8	4,116	13.4	852	2.8	4,968	16.2	545	1.7
Surkhet	Birendranagar Municipality	52,137	51,537	98.8	36,849	71.5	13,416	26.0	1,272	2.5	14,688	28.5	600	1.2
Darilekh	Narayan Municipality	21,995	21,964	99.9	21,414	97.5	416	1.9	134	0.6	550	2.5	31	0.1
Doti	DipayalSilgadhi Municipality	26,508	26,345	99.4	24,311	92.3	1,698	6.4	336	1.3	2,034	7.7	163	0.6
Dadeldhura	Arnaigadhi Municipality	22,241	22,167	99.7	20,754	93.6	1,129	5.1	284	1.3	1,413	6.4	74	0.3
Baitadi	Dasharathchanda Municipality	17,427	17,120	98.2	16,408	95.8	566	3.3	146	0.9	712	4.2	307	1.8
Kathmandu valley districts	Kathmandu valley towns	1,464,984	1,418,572	96.8	800,042	56.4	500,765	35.3	117,765	8.3	618,530	43.6	46,412	3.2
	Col %	32.4	32.5		26.0		46.3	58.4					28.6	
Lalitpur	Lalitpur Sub-metropolitan city	226,728	219,543	96.8	136,706	62.3	61,862	28.2	20,975	9.6	82,837	37.7	7,185	3.2
Bhaktapur	Bhaktapur Municipality	83,658	83,127	99.4	71,150	85.6	9,076	10.9	2,901	3.5	11,977	14.4	531	0.6
Bhaktapur	MadhyapurThimi Municipality	84,142	83,405	99.1	45,743	54.8	29,526	35.4	8,136	9.8	37,662	45.2	737	0.9
Kathmandu	Kathmandu Metropolitan City	1,003,285	965,875	96.3	504,769	52.3	379,680	39.3	81,426	8.4	461,106	47.7	37,410	3.7
Kathmandu	Kirtipur Municipality	67,171	66,622	99.2	41,674	62.6	20,621	31.0	4,327	6.5	24,948	37.4	549	0.8

Appendix 10.2 continues....

Zones/Districts	Municipalities	Total population	Native born	%	Same district	%	Born in Other Districts				Born in foreign country (%)			
							Rural	Urban	%	Total (Number)		Total %		
Tarai districts	Nepal	4,523,820	4,361,457	96.4	3,077,966	70.6	1,081,840	201,651	4.6	1,283,491	29.4	162,363	3.7	
	Tarai towns	2,005,715	1,907,459	95.1	1,449,907	76.0	402,000	55,552	2.9	457,552	24.0	98,256	4.9	
	Col %	44.3	43.7		47.1		37.2		27.5			60.5		
Jhapa	Bhadrapur Municipality	18,646	16,766	89.9	13,848	82.6	2,381	14.2	537	3.2	2,918	17.4	1,880	10.1
Jhapa	Damak Municipality	75,743	72,154	95.3	46,163	64.0	24,167	33.5	1,824	2.5	25,991	36.0	3,589	4.7
Jhapa	Mechinagar Municipality	57,909	53,727	92.8	42,478	79.1	10,139	18.9	1,110	2.1	11,249	20.9	4,182	7.2
Morang	Biratnagar Sub-Metropolitan City	204,949	191,436	93.4	146,619	76.6	37,603	19.6	7,214	3.8	44,817	23.4	13,513	6.6
Sunsari	Dharan Municipality	119,915	114,511	95.5	67,006	58.5	43,359	37.9	4,146	3.6	47,505	41.5	5,404	4.5
Sunsari	Inaruwa Municipality	28,923	27,906	96.5	23,039	82.6	4,334	15.5	533	1.9	4,867	17.4	1,017	3.5
Sunsari	Itahari Municipality	76,869	74,193	96.5	41,273	55.6	30,525	41.1	2,395	3.2	32,920	44.4	2,676	3.5
Saptari	Rajbiraj Municipality	38,241	36,718	96.0	35,769	97.4	669	1.8	280	0.8	949	2.6	1,523	4.0
Siraha	Lahan Municipality	33,927	33,064	97.5	31,201	94.4	1,679	5.1	184	0.6	1,863	5.6	863	2.5
Siraha	Siraha Municipality	28,831	27,821	96.5	27,200	97.8	537	1.9	84	0.3	621	2.2	1,010	3.5
Dhanusha	Janakpur Municipality	98,446	94,733	96.2	87,750	92.6	6,328	6.7	655	0.7	6,983	7.4	3,713	3.8
Mahottari	Jaleshor Municipality	24,765	22,962	92.7	22,059	96.1	742	3.2	161	0.7	903	3.9	1,803	7.3
Sarlahi	Malangawa Municipality	25,143	23,809	94.7	23,221	97.5	454	1.9	134	0.6	588	2.5	1,334	5.3
Rautahat	Gaur Municipality	35,370	32,993	93.3	32,645	98.9	280	0.8	68	0.2	348	1.1	2,377	6.7
Bara	Kalya Municipality	43,137	41,392	96.0	40,052	96.8	1,013	2.4	327	0.8	1,340	3.2	1,745	4.0
Parsa	Birgunj Sub-Metropolitan City	139,068	129,069	92.8	118,952	92.2	8,404	6.5	1,713	1.3	10,117	7.8	9,999	7.2
Chitwan	Bharatpur Municipality	147,777	139,866	94.6	79,791	57.0	54,305	38.8	5,770	4.1	60,075	43.0	7,911	5.4
Chitwan	Ramanagar Municipality	46,607	44,846	96.2	29,869	66.6	13,573	30.3	1,404	3.1	14,977	33.4	1,761	3.8
Nawalparasi	Ramgram Municipality	28,973	27,295	94.2	25,280	92.6	1,794	6.6	221	0.8	2,015	7.4	1,678	5.8
Rupendehi	Butwal Municipality	120,982	114,018	94.2	58,500	51.3	48,393	42.4	7,125	6.2	55,518	48.7	6,964	5.8
Rupendehi	Siddharthnagar Municipality	64,566	59,238	91.7	48,376	81.7	8,591	14.5	2,271	3.8	10,862	18.3	5,328	8.3
Kapilvastu	Kapilvastu Municipality	30,890	29,169	94.4	27,723	95.0	1,186	4.1	260	0.9	1,446	5.0	1,721	5.6
Dang	Ghorahi Municipality	65,107	64,177	98.6	51,588	80.4	9,705	15.1	2,884	4.5	12,589	19.6	930	1.4
Dang	Tulsipur Municipality	52,224	51,613	98.8	41,421	80.3	8,104	15.7	2,088	4.0	10,192	19.7	611	1.2
Banke	Nepalgunj Municipality	73,779	69,589	94.3	55,089	79.2	12,071	17.3	2,429	3.5	14,500	20.8	4,190	5.7
Bardiya	Gulariya Municipality	57,232	55,214	96.5	49,245	89.2	5,344	9.7	625	1.1	5,969	10.8	2,018	3.5
Kailali	Dhangadhi Municipality	104,047	100,126	96.2	67,710	67.6	29,237	29.2	3,179	3.2	32,416	32.4	3,921	3.8
Kailali	Tikapur Municipality	56,983	55,349	97.1	41,027	74.1	12,943	23.4	1,379	2.5	14,322	25.9	1,634	2.9
Kanchanpur	Bhimdatta Municipality	106,666	103,705	97.2	75,013	72.3	24,140	23.3	4,552	4.4	28,692	27.7	2,961	2.8

Source: Population and Housing Census-2011 Database, CBS, 2014.

Appendix 10.3: In, out and net migration rate for 15 eco-development regions, 2011

Regions	Eastern			Central			Western			Mid-western			Far-western			Total in-migrants	% in-migrants	In-migration rate
	EM	EH	ET	CM	CH	CT	WM	WH	WT	MWM	MWH	MWT	FWM	FMH	FWT			
Eastern																		
Mountain	-	403	277	9	95	28	0	7	0	0	3	1	0	0	0	823	0.7	2.1
Hill	1,106	-	1,791	21	601	186	0	174	11	8	62	8	0	10	9	3,987	3.5	2.5
Tarai	2,900	11,117	-	74	823	683	0	187	96	10	33	48	17	8	69	16,065	14.2	4.2
Central																		
Mountain	13	65	94	-	678	153	0	108	21	9	1	22	0	16	43	1,223	1.1	2.4
Hill	1,708	6,447	5,940	4,680	-	8,085	42	9,031	1,477	507	1,564	1,371	309	724	1,063	42,948	37.9	9.7
Tarai	57	342	713	191	2,439	-	0	3,708	867	41	98	206	41	8	65	8,776	7.7	1.9
Western																		
Mountain	32	12	5	4	55	14	-	224	22	2	50	7	0	0	1	428	0.4	21.4
Hill	10	559	493	158	1,787	1,140	82	-	897	26	553	369	73	62	102	6,311	5.6	2.2
Tarai	8	60	186	33	433	845	25	9,898	-	67	444	548	12	62	59	12,680	11.2	6.1
Mid-western																		
Mountain	2	16	45	10	14	3	1	64	11	-	201	202	42	13	44	668	0.6	1.7
Hill	8	36	43	9	76	110	0	405	73	418	-	760	49	112	73	2,172	1.9	1.3
Tarai	16	113	113	0	179	136	0	626	268	376	5,452	-	40	161	535	8,015	7.1	5.5
Far-western																		
Mountain	0	0	8	0	40	32	0	24	0	120	49	16	-	159	273	721	0.6	1.6
Hill	13	4	29	5	76	25	8	157	7	37	183	99	331	-	542	1,516	1.3	1.8
Tarai	0	24	89	8	97	98	8	195	32	317	406	320	1,163	4,289	-	7,046	6.2	5.7
Total out-migrants	5,873	19,198	9,826	5,202	7,393	11,538	166	24,808	3,782	1,938	9,099	3,977	2,077	5,624	2,878	113,379	100.0	4.3
% out-migrants	5.2	16.9	8.7	4.6	6.5	10.2	0.1	21.9	3.3	1.7	8.0	3.5	1.8	5.0	2.5	100.0		
Out-migration rate	15.0	12.0	2.6	10.0	1.7	2.5	8.3	8.8	1.8	5.0	5.4	2.7	4.5	6.5	2.3	4.3		
Net migration rate	-12.9	-9.5	1.6	-7.7	8.0	-0.6	13.1	-6.6	4.2	-3.3	-4.1	2.7	-2.9	-4.8	3.4			

Note: 1) EM=Eastern mountain, EH=Eastern hill, ET=Eastern Tarai, CM=Central mountain, CH=Central hill, CT=Central Tarai, WM=Western mountain, WH=Western hill, WT=Western Tarai, MWM=Mid-western mountain, MWH=Mid-western Tarai, MWT=Mid-western hill, FWM=Far-western mountain, FMH=Far-western hill, FWT=Far-western Tarai.

2) District not stated cases excluded.

Source: Population and Housing Census-2011 Database, CBS, 2014.

Appendix 10.4: Net migration rate by districts (in ascending order by net migration rate)

District	Total population	Out-migrants	% out-migrants	In-migrants	% in-migrants	Out-migration rate	In-migration rate	Net-migration rate
Khotang	206,312	4,742	3.0	317	0.2	23.0	1.5	-21.4
Bhojpur	182,459	3,859	2.4	623	0.4	21.1	3.4	-17.7
Taplejung	127,461	2,469	1.5	259	0.2	19.4	2.0	-17.3
Terhathum	101,577	1,935	1.2	317	0.2	19.0	3.1	-15.9
Okhaldhunga	147,984	2,465	1.5	178	0.1	16.7	1.2	-15.5
Syangja	289,148	5,252	3.3	798	0.5	18.2	2.8	-15.4
Ramechhap	202,646	3,268	2.0	208	0.1	16.1	1.0	-15.1
Gorkha	271,061	4,817	3.0	833	0.5	17.8	3.1	-14.7
Arghakhanchi	197,632	3,168	2.0	344	0.2	16.0	1.7	-14.3
Sankhuwasabha	158,742	2,263	1.4	465	0.3	14.3	2.9	-11.3
Lamjung	167,724	2,459	1.5	583	0.4	14.7	3.5	-11.2
Panchthar	191,817	2,905	1.8	793	0.5	15.1	4.1	-11.0
Parbat	146,590	2,562	1.6	1,026	0.6	17.5	7.0	-10.5
Gulmi	280,160	3,562	2.2	785	0.5	12.7	2.8	-9.9
Solukhumbu	105,886	1,194	0.7	152	0.1	11.3	1.4	-9.8
Palpa	261,180	3,594	2.2	1,191	0.7	13.8	4.6	-9.2
Nuwakot	277,471	2,950	1.8	433	0.3	10.6	1.6	-9.1
Baglung	268,613	2,880	1.8	658	0.4	10.7	2.4	-8.3
Dhading	336,067	3,877	2.4	1,103	0.7	11.5	3.3	-8.3
Sindhupalchok	287,798	3,026	1.9	694	0.4	10.5	2.4	-8.1
Dolakha	186,557	1,894	1.2	522	0.3	10.2	2.8	-7.4
Myagdi	113,641	1,057	0.7	320	0.2	9.3	2.8	-6.5
Sindhuli	296,192	2,888	1.8	1,006	0.6	9.8	3.4	-6.4
Rasuwa	43,300	433	0.3	158	0.1	10.0	3.6	-6.4
Dailekh	261,770	1,971	1.2	341	0.2	7.5	1.3	-6.2
Kavrepalanchok	381,937	3,981	2.5	1,624	1.0	10.4	4.3	-6.2
Salyan	242,444	1,793	1.1	338	0.2	7.4	1.4	-6.0
Mugu	55,286	388	0.2	70	0.0	7.0	1.3	-5.8
Kalikot	136,948	987	0.6	211	0.1	7.2	1.5	-5.7
Baitadi	250,898	1,640	1.0	251	0.2	6.5	1.0	-5.5
Doti	211,746	1,744	1.1	591	0.4	8.2	2.8	-5.4
Jajarkot	171,304	1,006	0.6	80	0.0	5.9	0.5	-5.4
Rukum	208,567	1,288	0.8	217	0.1	6.2	1.0	-5.1
Tanahu	323,288	3,213	2.0	1,684	1.0	9.9	5.2	-4.7
Dhankuta	163,412	2,044	1.3	1,273	0.8	12.5	7.8	-4.7
Dadeldhura	142,094	1,259	0.8	612	0.4	8.9	4.3	-4.6
Rolpa	224,506	1,300	0.8	302	0.2	5.8	1.3	-4.4
Pyuthan	228,102	1,521	0.9	556	0.3	6.7	2.4	-4.2
Bajhang	195,159	873	0.5	131	0.1	4.5	0.7	-3.8
Makwanpur	420,477	3,387	2.1	1,813	1.1	8.1	4.3	-3.7
Achham	257,477	1,418	0.9	499	0.3	5.5	1.9	-3.6
Saptari	639,284	2,574	1.6	326	0.2	4.0	0.5	-3.5
Darchula	133,274	720	0.4	287	0.2	5.4	2.2	-3.2

District	Total population	Out-migrants	% out-migrants	In-migrants	% in-migrants	Out-migration rate	In-migration rate	Net-migration rate
Sarlahi	769,729	2,804	1.7	896	0.6	3.6	1.2	-2.5
Rautahat	686,722	1,947	1.2	301	0.2	2.8	0.4	-2.4
Bara	687,708	2,345	1.5	697	0.4	3.4	1.0	-2.4
Ilam	290,254	2,098	1.3	1,448	0.9	7.2	5.0	-2.2
Siraha	637,328	1,684	1.0	358	0.2	2.6	0.6	-2.1
Parsa	601,017	1,653	1.0	420	0.3	2.8	0.7	-2.1
Dhanusa	754,777	1,892	1.2	499	0.3	2.5	0.7	-1.8
Jumla	108,921	455	0.3	300	0.2	4.2	2.8	-1.4
Bajura	134,912	531	0.3	350	0.2	3.9	2.6	-1.3
Humla	50,858	197	0.1	132	0.1	3.9	2.6	-1.3
Mahottari	627,580	1,284	0.8	750	0.5	2.0	1.2	-0.9
Udayapur	317,532	2,740	1.7	2,628	1.6	8.6	8.3	-0.4
Surkhet	350,804	2,114	1.3	2,232	1.4	6.0	6.4	0.3
Dolpa	36,700	83	0.1	127	0.1	2.3	3.5	1.2
Bardiya	426,576	2,206	1.4	2,742	1.7	5.2	6.4	1.3
Kapilbastu	571,936	937	0.6	1,833	1.1	1.6	3.2	1.6
Dang	552,583	2,032	1.3	2,903	1.8	3.7	5.3	1.6
Jhapa	812,650	4,244	2.6	6,475	4.0	5.2	8.0	2.7
Kanchanpur	451,248	1,290	0.8	2,541	1.6	2.9	5.6	2.8
Nawalparasi	643,508	2,658	1.7	4,800	3.0	4.1	7.5	3.3
Kailali	775,709	2,112	1.3	5,029	3.1	2.7	6.5	3.8
Morang	965,370	4,452	2.8	8,279	5.2	4.6	8.6	4.0
Sunsari	763,487	3,241	2.0	6,996	4.4	4.2	9.2	4.9
Banke	491,313	1,281	0.8	3,912	2.4	2.6	8.0	5.4
Rupandehi	880,196	1,743	1.1	7,603	4.7	2.0	8.6	6.7
Manang	6,538	48	0.0	106	0.1	7.3	16.2	8.9
Chitawan	579,984	2,506	1.6	8,106	5.0	4.3	14.0	9.7
Kaski	492,098	2,017	1.3	7,862	4.9	4.1	16.0	11.9
Mustang	13,452	122	0.1	326	0.2	9.1	24.2	15.2
Lalitpur	468,132	1,056	0.7	9,062	5.6	2.3	19.4	17.1
Kathmandu	1,744,240	3,362	2.1	38,448	23.9	1.9	22.0	20.1
Bhaktapur	304,651	922	0.6	7,549	4.7	3.0	24.8	21.8
Total	26,494,504	160,682	100.0	160,682	100.0	6.1	6.1	0.0
District of origin not stated	-	2,320	1.4	2,320	1.4			
Three district of Kathmandu valley	2,517,023	5,340	3.3	55,059	34.3	2.1	21.9	19.8

Source: Population and Housing Census-2011 Database, CBS, 2014.

CHAPTER 11

NATIONAL POPULATION CENSUS 2011: A BRIEF ACCOUNT OF OPERATIONAL ASPECT

Uttam Narayan Malla *

Abstract

The National Population Census of 2011, the eleventh in the history of the country, marks 100 years of census taking in Nepal. The main objective of this chapter is to provide descriptions of the operational aspects of the census of 2011, covering preparation and fieldwork activities, and processing, analysis and dissemination of the results. The census of 2011 was conducted at a time when the country was going through an unprecedented political transition. The country was attempting to construct a new 'law of the land' and naturally, there were overwhelming expectations on the information from the census from all segments of Nepalese society. Despite all these challenges, the Central Bureau of Statistics has been successful in conducting the census, accessing all Village Development Committees and municipalities and providing reliable socio-economic data. The census was conducted with minimum external assistance. It can be concluded that the Nepalese people are aware of the importance of the census and provided full cooperation to the census staff undertaking the census of 2011, ensuring it was a success. The CBS has proved its capacity to undertake such a huge statistical operation. The chapter recommends early mapping exercises, use of Intelligent Character Recognition or a similar technology for data capturing, and the use of more female enumerators in the next census.

11.1 Introduction

Nepal has been conducting population censuses almost every ten years since 1911. The National Population Census 2011 (census 2011) was the eleventh population census in the history of census taking in Nepal. Every census has its own features, influenced by prevailing factors. The census of 2011 was undertaken at a historical juncture when social and political courses were going through unprecedented change, specifically, from a 'Monarchy' to a 'Republic'. The election of the Constituent Assembly and efforts to restructure the state into a federal system had raised aspirations among all castes, ethnic groups and regions, keen to establish their own identity and also to make improvements in their livelihoods. Accordingly, the demand for information was overwhelmingly higher than previous censuses. Meanwhile, the country has been experiencing a drastic change in its demographic picture mainly due to the continuous out-migration of the young population to the Middle East, East Asia and other western countries. During, and in the aftermath of the decade long conflict, a substantial proportion of the population has shifted from rural areas to the Kathmandu valley or to the nearest urban centre,

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resulting in a change in social and economic conditions in both rural and urban Nepal. A rapid decline in fertility, a shortage of work force in rural areas, and at the same time, pervasive unemployment in the country are the most pertinent issues in Nepal today. The census of 2011 was implemented amid this situation and the management of the census faced new challenges.

11.2 Legal basis of the Census 2011

A legal provision for the census is important in giving authority to census operations. The Statistics Act 1958 and Statistics Regulations, 1984 empowers the Director General of the Central Bureau of Statistics to issue, by a notified order, a direction for the collection of statistics concerning any matter as provided in the notified order. The Director General may by himself or through any other officer, issue a written notification and require any person to submit any information, details and statistics, in such format and within such time as may be specified in the notification. The following arrangements may be made by a notified order pursuant to sub-section (1).

- (a) Specify the details of information to be collected;
- (b) Appoint or designate officers authorised to collect information, prescribe the functions, duties and powers of such officers, and prescribe procedures for the exercise and carrying out of such functions, duties and powers of such officers; and
- (c) Provide for all other contingent situations or make such provisions that in the opinion of the Government of Nepal would facilitate the collection of statistics to be collected pursuant to such an order.

Notified order of the Government of Nepal

The Notified Order of the Government of Nepal on National Population 2011 (Nepal Gazette 6 June 2011, Nepal Rajpatra, Jestha 23, 2068) issued directions to collect demographic, social and economic information as per the census pro-forma (Annex 1, 2 and 3 of the Gazette). The CBS, as per the 'notified order', was empowered to recruit officers and other staff for the census. The 'order' explained the functions, duties and powers of the census staff, and directed all departments and offices of the Government of Nepal, VDCs, municipalities, non-government organisations and all citizens to provide support and co-operation to census staff.

11.3 Objectives.

The objectives of the census of 2011 were as follows:

1. To collect data related to the size, distribution and composition of households and individuals who usually reside in Nepal.
2. To make basic benchmark data available for socio-economic planning and other uses.
3. To collect data required to address gender empowerment and social inclusion.
4. To collect information on a household's access to facilities and amenities and other household characteristics.
5. To provide a reliable sampling frame for national surveys.
6. To collect, process and produce household and population data at the lowest administrative level e.g. wards, VDCs/municipalities and districts.

11.4 Concept and definition of ‘Census’

Population census : The term “census” implies that each individual and each set of living quarters is enumerated separately and that these characteristics are separately recorded. A population census is the process of collecting, compiling, evaluating, analysing and publishing or otherwise disseminating, demographic, economic and social data pertaining, at a specified time, to all persons in a country or in a well delineated part of a country. ²

Housing census: A housing census is the total process of collecting, compiling, evaluating, analysing and publishing or otherwise disseminating, statistical data pertaining, at a specified time, to all living quarters and occupants thereof in a country or in a well delineated part of a country. The census must provide information on the supply of housing units together with information on the structural characteristics and facilities that have a bearing upon the maintenance of privacy and health and the development of normal family living conditions. Sufficient demographic, social and economic data concerning occupants must be collected to furnish a description of housing conditions and also to provide basic data for analysing the causes of housing deficiencies and for studying possibilities for remedial action. In this connection, data obtained as part of the population census, including data on homeless persons, are often used in the presentation and analysis of the results of the housing census.

In the census of 2011, abandoned houses were not listed. Public buildings, if no households were residing there, were also not listed. Nevertheless, supervisors and enumerators were instructed to visit all kinds of housing structures, including public buildings, factories, shopping complexes, temporary sheltering places for squatters etc. Also, they were instructed to visit structures under construction as well. Housing structures that were temporarily vacant were listed by supervisors and also visited by enumerators.

‘Modified de’ jure’: In the census of 2011, a person was counted at his/her usual place of residence. The usual place of residence is defined as a place where a person had been living or intends to live for at least six months. A person absent from their usual place of residence for a short period for the purpose of treatment or pilgrimage or similar causes is treated as present in their usual place of residence. Persons away or absent from their birth place or usual place of residence for employment or study or business purposes are considered absent population and are not counted in the total population. However, homeless or mobile populations were counted at the place where they were traced on the census day of enumeration of 22 June 2011. This method is termed as ‘modified de jure’.

Institutional households such as hostels, barracks, cantonments, orphanages, geriatric homes, rehabilitation centres, mental hospitals, prisons etc. were visited in both stages of the field work e.g. listing and census enumeration. Listing of households and enumeration of individuals were accomplished either with the help of the staff of such institutional households or by training the staff themselves. Refugee camps were not covered in the census and so, residents of such camps were not counted in the census. However, refugees residing outside camps were enumerated at their usual place of residence.

Foreign citizens working in embassies, foreign diplomatic offices, missions etc. in Nepal were not covered in the census. However, foreign citizens working with national or international organisations, business establishments or engaged in business activities were counted.

11.5 Importance of the National Population Census 2011

Major source of information for development planning : The size and characteristics of a population is basic to the production and distribution of material wealth. In order to plan for, and implement, economic and social development, administrative activities or scientific research, it is necessary to have reliable data and details of the size, distribution and composition of the population. The population census is a primary source of these basic benchmark statistics, covering not only the settled population but also homeless persons and nomadic

groups. The census of 2011 provided data on persons and households for a wide variety of geographical units, for each and every settlement, wards of VDCs/municipalities to districts and helped to assess the latest socio-economic situation and prepare national as well as local level plans.

Comprehensive social and ethnographic database :The census of 2011 is the only source of comprehensive data on caste and ethnicity in Nepal as the vital registration system has low coverage and there has not been any other socio-economic census. Nepal started collecting data on caste and ethnicity in 1991 and the census of 2011 is the third to include questions on caste and ethnicity. Questions on mother tongue and citizenship were asked in all previous censuses.

A basis for the delineation of the electoral constituencies :The census was a basis for the delineation of constituencies for the election of the Constituent Assembly held in 2014. A commission for the delineation of the electoral constituencies was formed in order to create or amend the area of electoral constituencies. The census, as per the interim constitution of Nepal, provided the size of the population of all administrative units up to the ward level.

Source of data on pseudo-poverty :The census of 2011 collected information on housing, household facilities and amenities of all households of Nepal. Information on the type of house, availability of toilet, drinking water and electricity in the house, availability of mobile, TV and other facilities etc., is poverty related information. These poverty pseudo-indicators are important for assessing and monitoring the poverty situation at sub-district levels.

A sampling frame for national surveys: Nepal has conducted periodic surveys such as the Nepal Living Standard Survey, the Nepal Labour Force Survey, the Nepal Demographic and Health Survey, the Nepal Multi Indicator Cluster Survey (NMICS) and many other sampling surveys. The census of 2011 provided a complete list of wards, VDCs and municipalities for all the 75 districts of Nepal, with the number of households and population, which can be a frame for future sample surveys in Nepal.

In planning the census of 2011, every opportunity for developing the relationship between the population and agricultural census was explored. Consideration was given to the possibility of collecting additional agricultural information as part of the population census, which would prepare a frame of agricultural holdings of the household sector for the subsequent agricultural census of 2012. This was undertaken as part of the pre-census listing exercise by adding additional questions in the listing schedule of the census of 2011. Furthermore, an additional question on whether a member of a household was engaged in their own-account non-agricultural production activities was also asked with a purpose to provide a frame to conduct a survey on such own account activities.

11.6 Operation stages of the Census of 2011

Census operations include three main stages e.g. pre-census, census (fieldwork) and post-census. The first stage (planning and preparatory stages) involves management of financial and human resources, census mapping, preparation of census questionnaires and manuals, a pilot census, reproduction of census materials and transportation to the districts, training, publicity, preparing data processing plans, etc. The second stage, or the fieldwork, is the most crucial in terms of time and quality. During this second stage all census officers, supervisors and enumerators are sent to the field and the collection of data from households and individuals takes place. The third stage or the post census phase involves safe return of completed census questionnaires and other materials to the centre from District Census Offices, a post enumeration survey (PES), data processing, preparation of the census results, analysis and dissemination.

11.7 Pre-census activities

11.7.1 Census planning

Planning of the census of 2011 began in 2007/08 when preparatory activities also started. A project document with details of census activities, a calendar of operation (details and a timeline of all activities for the three stages of the census) and cost estimates were prepared. Exploring financial resources was the major activity of the year. A provision of international technical assistance was also envisaged in the plan, as the management had foreseen the challenges related to the demand for increased data due to the tremendous aspirations of the people. A series of meetings with development partners were held with the CBS, the National Planning Commission of Nepal and UNFPA. Previously, UNFPA had been the coordinating agency of other UN agencies present in the country. Preliminary discussions with stakeholders, including census experts, demographers, statisticians, politicians, social scientists, business communities, representatives of castes and ethnic organisations and groups were held in order to understand their expectations and collect their input during the planning stage. A census 2011 steering committee was formed in the same year.

11.7.2 Management of financial resources

A census requires a huge amount of financial resources and the Government of Nepal suggested that the CBS consult with development partners for financial and technical assistance at the beginning of preparations for the census in the fiscal year 2007. Accordingly, a series of meetings with the donor community were held. However, most development partners present in the meetings said that they had already committed, or disbursed, substantial amounts of funds for the implementation of the peace process of Nepal and so, limited resources were available for the census. Meanwhile, questions were also raised about the feasibility of the implementation of the census amid political uncertainties. The CBS had expected an escalation in cost due to the increasing number of additional questions that were to be included in the census questionnaire. It was natural to expect more and more identity related information coming out of the census, notwithstanding the objectives and capacity of the census methodology. Managing the demand for more and more information from the census was, in fact, directly related to the cost of the census.

The problem of the resource gap was not solved until the last moment when a request was sent to the NPC to alter the provision of financial resources from external to internal in order to ensure the timely reproduction and transportation of census materials to all districts. Finally, the Government of Nepal said that they would provide the required resources for the census operation. Approximately, NRs. 1433 million was spent over the seven years of the census operations, approximately USD 19 Million. The cost of enumerating an individual was approximately USD 0.68 (cents). The approximate expenditure of the census operations at different stages is detailed in Table 11.1.

Table 11.1: Approximate expenditure of the census 2011 by major activities (In million NRs.)

Activities	GoN	External	Total	Remarks
Total	1,310	123	1,433	
Pre census activities (Census mapping, pilot census, printing of questionnaire, manuals, classifications, publicity materials,, procurement of other census materials, vehicles, computers etc.)	157	58	315	Denmark, UNFPA, UNDP, UN Women, UNICEF
Census taking (field work) (Remuneration for supervisors and enumerators, other costs of field offices, census publicity etc.)	1,028	40	1,068	UNFPA, UNDP, UN Women, UNICEF
Post Census activities (Data processing, data analysis and dissemination, capacity development etc.)	125	25	150	UNFPA

USD 19.00 million (NRs. 1,433 million/75.13=19.07)

Census cost per person = USD 0.72

11.7.3 Organizational structure of the Census of 2011

A Steering Committee, headed by the Honourable Vice Chairman of the National Planning Commission (NPC), was formed to provide guidance to the CBS to ensure the smooth operation of all census activities. The committee consisted of Honourable members of the NPC, seven secretaries from various ministries, and representatives of the Dalit Commission, the Women's Commission and the Janajati Pratisthaan. The Director General (DG) of the CBS was the Secretary. The Steering Committee invited experts and distinguished persons for consultations in meetings.

A Technical Committee was formed under the chairmanship of the Director General of the CBS. Special thematic committees were formed for questionnaire design, publicity and data processing. Various working groups were formed for drafting questionnaires and manuals, formation of economic classifications, post enumeration surveys, monitoring of data processing, and classifications of caste ethnicity, language and religion. The Population Section of the Social Statistics Division took charge of the census operations. The District Census Coordination Committee, under the chairmanship of the Chief District Officer (CDO), was formed with members from officers in charge of district offices and representatives of political parties. The committee provided guidance and monitored fieldwork at the district level.

Figure 11.1: Organisational structure of the census 2011

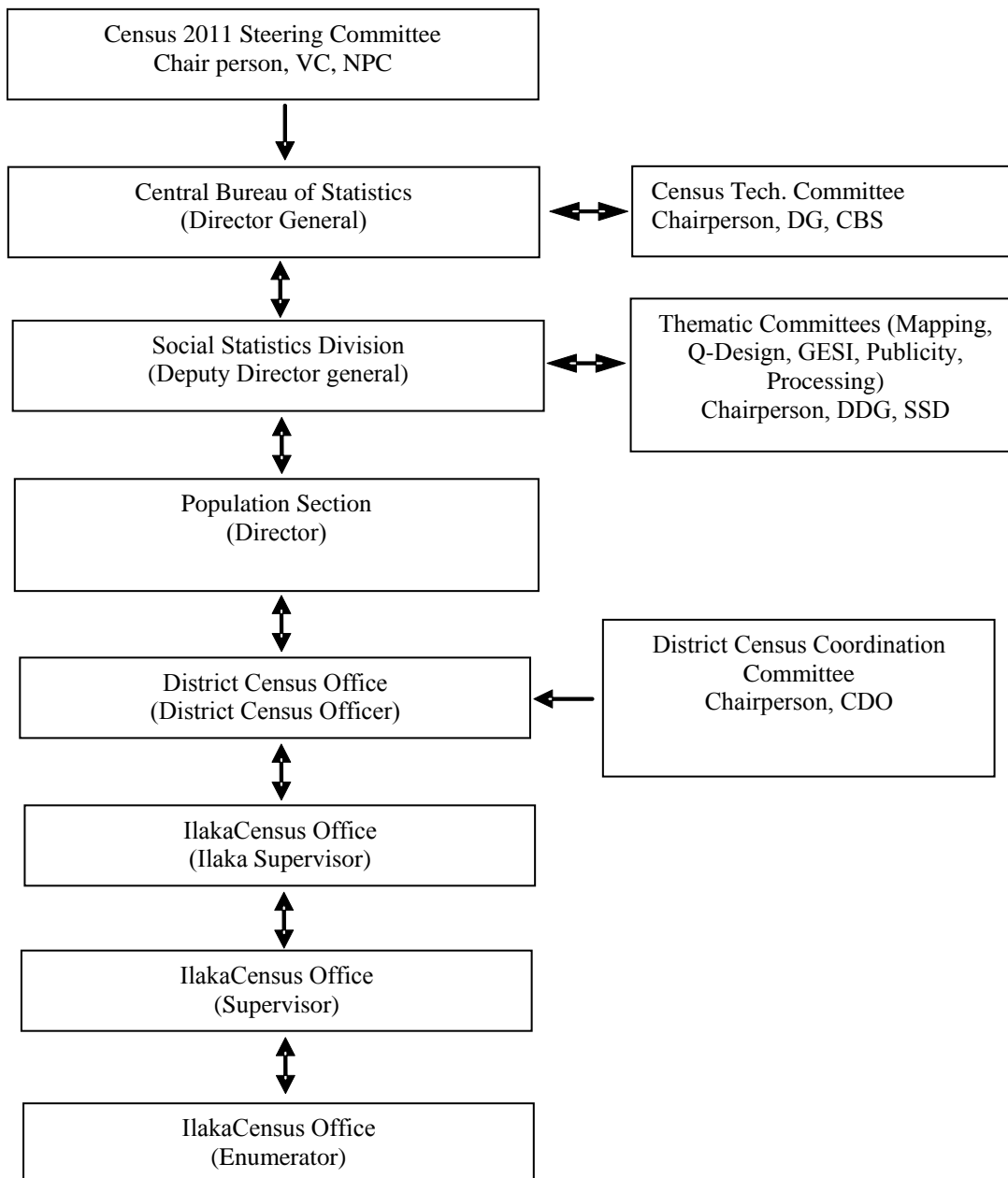


Table 11.2: District Census Coordination Committee

1.	Chief District Officer	Chair person
2.	Local Development Officer	Member
3.	Chief, District Police Office	Member
4.	District Education Officer	Member
5.	Chief, District Public/Health Office	Member
6.	Chief, District Agriculture Development Office	Member
7.	Chief, District Treasury Controllers Office	Member
8.	Chief, Women and Children Office	Member
9.	District Census Officer	Member
10.	Invitees (up to 4 persons)	

11.7.4 Census mapping

Preparation of the Enumeration Area maps (EA) began in the fiscal year 2008-2009, two years before the census year, by the Geographic Information Section (GIS) of the CBS. Meetings, symposiums and consultations were conducted intensively during nine months in 2008/09. EA maps were prepared to improve the coverage of the enumeration. Orthophoto, a database of digital maps provided by the Department of Survey, was used to prepare VDC maps with ward boundaries that helped enumerators to identify the area they were assigned to enumerate. Staff of the thirty three (33) Branch Statistics Offices (BSO) primarily completed field surveys and field verifications. Village Development Committee (VDC) maps were prepared on a scale of 1:50,000. The scale of EA maps varied from 1:10,000 to 1:20,000. The district level maps were prepared on a scale of 1:150,000. Eighty-one books (81) containing maps on EA and VDCs were prepared and given to District Census Offices. There were four books of EA maps for Kathmandu district and two for Lalitpur district. Fifty books of EA maps were prepared for each of the fifty-eight municipalities. Altogether, Rs. 20.0 million was spent on census mapping, of which NRs. 10 million was provided by the Government of Denmark, Rs. 5 million by UNFPA and Rs. 5 million by the Government of Nepal.

Due to the limited time and resources, not all VDC maps were updated with changed features. However, large VDCs with urban characteristics were selected and updated with amended features and ward boundaries. In municipalities, EAs were delineated according to the number of households, ranging from 200 to 450 depending upon the availability of clear features marking boundaries. Based on the mapping exercises and projected population of districts, Kathmandu was divided into three EAs, and Lalitpur, Morang and Rupandehi into two census districts, for field operation purposes. Altogether, there were 80 census districts in 75 administrative districts. In populated urban areas or municipalities, EA maps were prepared by creating sub-wards based on the number of households. For example, Kathmandu municipality had as many as 1,012 sub-wards or EAs. Ward no. 34 of Kathmandu Municipality alone had 84 EAs. Each EA map was prepared with clearly demarcated EA boundaries such as roads, lanes, rivers and other remarkable features.

However, EA maps were not free from error as they were prepared at least a year before the census. VDC maps did not have new features and there were rapid changes in municipalities from the time the maps were prepared until the time that fieldwork took place which could not be included. Census staff, particularly in the Kathmandu valley and other rapidly changing urban centres, had difficulty in tracing newly developed parts. A substantial number of additional supervisors and enumerators had to be assigned to those areas where listing operations was on going.

11.7.5 Pilot census

Pretesting of the census questionnaire was conducted in the Kathmandu valley, surrounding districts and in the rural part of the Tarai. After pretesting, the pilot census was conducted in seven districts (Jumla, Doti, Banke, Kathmandu, Syangja, Mahottari, and Ilam) to ensure familiarisation with all census procedures. Altogether, 10,000 households were interviewed in seven districts. In addition, the number of questions, and wording and ranking of the answers were tested. For example, the answer to a question on religion, which was ranked as 'supposed to be of big number' in the census 2001, was questioned in discussions held on various occasions. Therefore, the list of religions was ranked by alphabetical order in the pilot census. However, this structure had to be changed after the pilot census, and the question on caste, religion, mother tongue and second language were left open ended. The pilot census resulted in an update of the Nepal Standard Industrial Classification (NSIC) and the Nepal Standard Occupation Classification (NSOC) used for coding while data were processed and tabulated. Also, the quality of paper for the census questionnaire was also tested.

11.7.6 Census questionnaire and manuals

Taking into account political uncertainties, general strikes, and transport service disruptions it was decided to complete the task of bulk printing of the census questionnaire a year before the census of 2011 was undertaken. Therefore the questionnaire had to be finalised within this time frame. Finalising the contents of the census questionnaire was the most time consuming and challenging task of the census as it was a concern of all stakeholders. Various caste and ethnic groups wanted information on their socio-economic situation from the census. Gender specialists had requested that all possible gender related data were collected. The Ministry of Education wanted to collect data on functional literacy. The Ministry of Health and Population, supported by the World Health Organization, wanted to include questions on maternal mortality. The Ministry of Women Children and Social Welfare had a list of questions on the status of children that they wanted to include. The Food and Agriculture Organization (FAO) of Nepal had special recommendations¹ regarding the use of the population census as a frame for the agriculture census. The census questionnaire had its own limitation in terms of time, cost and maintenance of data quality, therefore, it was hard to decide on the number of questions to include.

The CBS had its own experiences of the structure of questionnaires from previous censuses. The questionnaire of the census of 2001 was considered to be the longest to date. In 2001, the questions on household information were divided into Forms 1 and 2, which were subject to sampling and non-sampling errors as Form 2 was administered on a sampling basis. Most crucial was the structure of the questionnaire. Form 2, administered, on a sample basis was in a different book, which created difficulties for enumerators in the field and key entry operators, as they had to match Form 2 with the same household in Form 1. To avoid this problem reoccurring, the structure of the questionnaire book was modified for the census of 2011, by keeping both Schedule 1 and Schedule 2 in the same book, which minimised the problem of a mismatch during data entry. Based on the demands for data, recommendations made in meetings and symposiums and the experiences of the pilot census, the number, size and structure of the census questionnaire for the census 2011 was finally decided.

In the Listing schedule it was decided:

1. To include a separate code for the third sex.
2. To add a column for caste of the head of the household.
3. To include questions on the area of land holding and the holding of livestock by type.
4. To continue with questions on own account non-agricultural activities not registered and operated without paid employees.

The items included in the listing schedule are detailed in Table 11.3.

¹ Dr. Mukesh Srivastava, consultant from FAO, Rome had recommended to integrate the agriculture census with the population census and suggested including questions on livestock by type in the listing schedule.

Table 11.3: Census items of listing schedule

S. No.	Items	S. No.	Items	Remark
1	District	14	Cow/Ox	New
2	Village/Municipality	15	Buffalo	New
3	Ward No.	16	Yak/Nak/Chauri	New
4	EA	17	Horse/Donkeys/Mules	New
5	Village/Locality/Tole	18	Sheep	New
6	Serial No of House	19	Goats/ Chyangra	New
7	Serial No of Household	20	Pigs	New
8	Name of the head of household	21	Other animals	New
9	Surname	22	Poultry	New
10	Caste	23	Ducks	New
11	Household members: 1.Total 2. Male 3.Female 4.Third sex	24	Other birds	New
12	Holding of land: 1.Yes. 2. No. 3. If Yes, area	25	If a household operates its own account small business other than agriculture which is not registered and does not have paid employees. 1. Yes 2.No	Continued, shifted from Form 1
13	Holding of livestock 1. Yes 2. No If yes,	26	If Yes, 1. Cottage manufacturing 2.Trade 3.Transportation 4. Services 5. Others	Continued, shifted from Form 1

Changes made in the Schedule-1/Form 1 which was administered for complete enumeration were as follows:

1. Questions on household facilities that were included in Schedule-2 in the census 2001 were moved to Schedule- 1 for complete enumeration.
2. The number of floors and age of the house were added and the type of structure of the house was expanded.
3. A block of questions on maternal mortality was added and screening questions were arranged as per the recommendations of WHO.
4. Reasons for being absent in the household were expanded.
5. Questions on marital status, literacy and education were also moved to Schedule-1 for complete enumeration.
6. Questions on literacy and level of education were asked to all persons aged 5 years and above. A person who can both read and write in any language is defined as a 'literate'.
7. Classifications of occupation and industry were revised following the International Standard Classification of all Economic Activities (ISIC Rev 4.0).
8. Questions on caste, mother tongue, religion, occupation and industry were designed as open-ended questions.

Schedule 1 (Form 1) was administered for complete enumeration. Items related to housing, household facilities, property in the name of a female member of the household, death and maternal mortality and absent members of households were included in the section on 'household information' in Schedule 1. Similarly, the name of

household members, relationship to the head, sex, age, marital status, caste, religion, mother tongue and second language, disability and education were included in the 'Individual section' of Schedule I. Details of the questions and answer categories are given in Tables 11.4 and 11.5.

Table 11.4: Census items on household information in Schedule I (Form 1)

S. No.	Items	Remarks
1-8	Identification of Household	Continued
9	Sex of the Head of Household	Continued
	Household Information	Continued
1	Ownership of the house: 1. Own 2. Bricks 3. Institutional 4. Others	Continued
2	Structure of the house	
2.1	Foundation: 1. Mud bonded Stone/Bricks 2. Cement bonded 3. Concrete pillars 4. Wooden pillar 5. others	New
2.2	Outer Wall: 1. Mud bonded Stone/Bricks 2. Cement bonded 3. Wooden Planks 4. Bamboo/trees 5. Raw bricks 6. Others	New
2.3	Roofing: 1. Straw/Thatch 2. Galvanised sheet 3. Tile/slates 4. Concrete slab 5. Wooden 6. Clay 7. Others	New
2.4	Number of floors	New
2.5	Age of the house	New
3	Main source of drinking water 1. Tap/Pipe 2. Tube well/hand pump 3. Covered well 4. Open well 5. Spout water 6. River/stream 7. Others	Shifted from F2
4	Usual type of fuel used for cooking: 1. Wood 2. Kerosene 3. L.P. Gas 4. Gobar/ Guintha 5. Gobar gas 6. Electricity 7. Others	Shifted from F2
5	Usual source of lighting: 1. Electricity 2. Kerosene 3. Gobar gas 4. Solar 5. Others	Shifted from F2
6	Type of toilet: 1. Flush modern 2. Flushed to safety tank 3. Ordinary 4. No toilet	Shifted from F2
7	Household facilities: 1. Radio 2. TV 3. Cable TV 4. Computer 5. Internet 6. Telephone 7. Mobile phone 8. Car 9. Motor bike 10. Cycle 11. Other vehicle 12. Refrigerator 13. None	Shifted from F2
8	Ownership of house in the name of female member: 1. Yes 2. No	Continued
9	Ownership of land in the name of female member: 1. Yes 2. No	Continued
10	Total area of house and land in the name of female member of the household	Continued
11	Death in last 12 months: 1. Yes 2. No	
12	Sex, Cause of death, Age at the time of death, Condition at the time of death if a deceased person is a female of age 15-49 (1. Pregnant 2. Maternity 3 to 6 weeks after delivery 4. Others)	Expanded
13	If an absent member is abroad: 1. Yes 2. No 3. Do not know	New
14	Details of an absent member abroad: Sex, Age, Level of education, Duration of absence, Purpose of migration, Country of destination	Expanded

Table 11.5: Census items of individual information in Schedule I (Form 1.)

	Schedule I, Individual Information	Continued
1	S. No.:	
2	Name and surname of usual member of household	
	Surname of usual member of household	Added
3	Relationship to the head of household	Continued
4	Sex	Continued
5	Age	Continued
6	Caste/Ethnicity: (Open)	Continued
7	Marital Status of all members aged 10 and over: 1. Not married 2. Married 3. Polygamy 4. Remarried 5. Widow 6. Divorced 7. Separated	Shifted from F2
8	Age at first marriage	Shifted to F1
9	Religion: (Open question)	Continued
10	Mother and second language: (Open question)	Continued
11	Citizenship: 1. Nepalese 2. Indian 3. Chinese 4. Others	Continued
12	Prevalence of physical and mental disability: 1. No Disability 2. Physical disability 3. Blind 4. Deaf 5. Blind and Deaf -both 6. Speech disability 7. Mental disability 8. Intellectual Disability 9. Multiple disability	Screening question added and answer category expanded
13	Ability to read and write: 1. Can read and write 2. Can read only 3. Cannot read and write	Shifted to F1
14	Current attendance of school: 1. Yes 2. No	Continued
15	Level of education: 1. Level completed, Specify ...2. If above SLC, specify area...	Continued

Schedule II (Form 2) that was administered on a sample basis in the VDCs of 69 districts and 28 municipalities contained questions on migration, fertility, economic activities and living arrangements of children. The items and answer categories of schedule II are detailed in Table 11.6

Table 11.6: Census items of individual information in Schedule II (Form 2)

S. No.	Items	Remarks
1	Place of birth: 1. Same district 2. Other dist. 2.1 VDC. 2.2 Municipality 2.3 Other country	Expanded
2	If place of birth is different, Duration of stay in the same district	
3	Main reason of staying in the district, if other than place of birth: 1. Agri. 2. Trade 3. Salaried job 4. Study 5. Marriage 6. Dependent 7. Conflict 8. Others	Expanded
4	Residence five years before	Continued
5	Live births of children ever born, asked to married women of age 15-49: 1. Son and daughter living together, 2. Son and daughter living elsewhere, 3. Son and daughter dead	Continued
6	Births in past 12 months 1. Yes 2. No. If yes: son and daughter, year and month of birth	Continued
7	Usual activities of past 12 months: 1. Number of months engaged in Agri/own, 2. Paid jobs 3. Own non-agri 4. Extended eco activities 5. Seeking job 6. Household chores 7. Study (student) 8. Not active	Expanded
8	Occupation usual (open ended)	Continued
9	Industry usual (open ended)	Continued

10	Employment status: 1. Employer 2. Employee 3. Own work 4. Helping in own family job	Continued
11	Reason for not being economically active: 1. Study 2. Household chores 3. Old age 4. Living on pension or other source of income 5. Disability 6. Sick 7. Others	Expanded
12	Living arrangement of children under 16 years of age: 1. Parents 2. Mother 3. Father 4. Father and Step Mother 5. Mother and Step Father 6. Other relatives 7. Employer 8. Others	Continued

The following instruction manuals were prepared.

1. Census Officer's manual
2. Supervisor's manual
3. Ilaka Supervisor's manual
4. Enumeration manual
5. Census mapping manual
6. Manual on disability information
7. Manual on extended economic activities
8. Training manual
9. Manual for coding
10. Manual for editing
11. Manual on data and verification

11.7.7 Census logistics

Printing census materials was a huge task. Also, this activity had to abide by the 'Public Procurement Act and Regulation' of the Government of Nepal. Initially the Department of Printing was requested to carry out the printing of census materials. However, the department was uncertain that it would be able to complete the printing and the CBS called for an open bid for the printing of census questionnaires.

Management of logistics is one of the greatest undertakings in census operations. Managing logistics involved taking into account that the census was being undertaken in the raining season and the difficult terrains in certain areas of the country. In addition, a special quality of paper for printing the questionnaire was procured by the CBS. Ultimately, the completed questionnaires were not affected by moisture or rough handling in the field, despite a delay in coding, editing and data entry operations. One hundred thousand special pens, 45,000 bags, 45,000 umbrellas, and 9,000 calculators were procured for field staff. Fifteen million sheets of questionnaires, 60,000 enumerators' manuals, 15,000 supervisors' manuals, 10,000, District Census Officers' manuals, and 100,000 notepads were printed almost a year before the census fieldwork. Besides the administrative manuals, special manuals for the use of maps, collecting information on disability, and gender and social inclusion, amongst others, were also printed. Stationary, including appointment letters of supervisor and enumerators, letterheads, stamps, training materials, and flip charts were also procured. Altogether, nearly 250 tons of paper was used for census activities.

Packing materials at the EA level and transporting it in time was also a challenge. The packing of questionnaires, manuals, maps and other materials for all field staff was completed at the centre to ensure all materials reached supervisors and enumerators before fieldwork began. On average, twenty per cent of extra questionnaires, based on projected population, were dispatched to 80 census districts. Extra materials were sent to different levels in the districts. These supplies were transported to 67 districts by road and air dropped in to nine remote districts, namely, Bajhang, Bajura, Humla, Dolpa, Mugu, Jajarkot, Manang, Khotang, and Solokhumbu by private airlines.

After completion of the field work, completed forms and census documents from eight remote districts were airlifted by army helicopters. Questionnaires from all wards, VDCs and districts were thoroughly checked and verified, to ensure that they had all been received, before they were properly stored at the census warehouse. A special control form was designed to ensure the receipt of questionnaires from each and every ward of VDCs and municipalities of all census districts.

The preparation and printing of all instruction manuals, notepads, letterheads, and publicity materials was completed a year before the census field work as was the procurement of umbrellas, bags, pens etc. for all field staff. A logistics team, with twenty supporting staff, was based in the census warehouse. An estimate of required materials, based on projected populations of all VDCs, was prepared and accordingly, the packing of materials was completed. The CBS has permanent Branch Statistics Offices (BSOs) in 33 districts, so census materials were sent to BSOs in the first instance. The procurement of 8,000 calculators became problematic at the last minute. The process for procurement was cancelled as the specifications of calculators did not meet those requested. UNFPA Nepal generously arranged the procurement of 8,000 solar panelled calculators and provided these to the CBS in time for the fieldwork.

11.7.8 Census publicity

All media extended cooperation to the CBS for census publicity. All national dailies, weekly papers, magazines, TV channels, and radios carried census messages to the public throughout the period of the fieldwork. In this census, local FM radios that transmitted messages in local languages had the most impact. Radio jingles, posters, stickers, and pamphlets for different target groups were also produced and distributed. Text messages sent through mobile phone networks were effective. An official census website was launched to provide respondents and census staff with easy access to all census tools and Information, Education and Communication (IEC) materials. School students, local cultural groups, various religious groups, caste and ethnic communities also broadcast messages voluntarily. The publicity campaign was successful in reaching target audiences across the country.

Table 11.7: Type of publicity media used in the census

Electronic Media	Print media	Stage Media etc.
TV Advertisements and plays	Daily, weekly newspapers, magazines,	Plays
Radio advertisements	Posters,	Cultural programmes
Jingles	Pamphlets for students and special groups	Group rallies with Panchaibaaja, Dhimebaaja, Dholak, Nagara etc.
Live discussions, interviews on TVs and Radios	Stickers	Haat Baajar publicity
Local FMs	Postal stamps	Talk programmes
SMS	Postcards	Talk competitions in schools
	Census caps	Miking
	Flex Banners	
	Hoarding boards	

*Source: Manual of Instructions for District Census Officers
An introduction to National Population Census 2011*

11.7.9 Census training

A crucial task to be completed before the census was training. A cascade of training approach was implemented from the centre to districts. A training manual was prepared for use by District Census Officers. The manual included teaching methods, with examples to clarify concepts and definitions used in the census questionnaires,

and additional manuals. Potential resource persons and practical exercises and training schedules were also included in the manual. Training schedules with the sequences of topics to be covered in each session for each type of training were also detailed.

UNFPA, UN Women Nepal, association of differently able persons and Janajati Pratisthan assisted with the training, providing experts to facilitate the training programme at the centre.

Table 11.8: Census training programs, 2011

S. No.	Type of training	Number of Trainees			No. of events	No. of groups	Days	Training location	Training period
		Male	Female	Total					
1	Training of Master Trainers	17	4	21	1	1	15	Centre, (Kavre)	27 Jan - 9 Feb. 2011
2	Training of District Census Officers	85	3	88	1	3	20	Centre, Lalitpur	17 Feb- 7 March 2011
3	Training of Assistants and Ilaka Supervisor	80	6	86	1	3	15	Centre, Lalitpur	17 Feb-4 March 2011
4	Training of Ilaka Supervisor	280	40	320	80	80	8	District Census Office	16 April - 23 May 2011
5	Training of Census Supervisor	400	65	465	80	80	7	District Census Office	5 May - 11 May 2011
6	Training of Trainers for Census Supervisor	4,750	3,159	7,909	80	240	2	District Census Office	5 June -6 June 2011
7	Training of Census enumerators	17,860	12,933	30,793	240	720	7	Ilaka Census Office	8 June -14 June 2011

Source: Central Bureau of Statistics, "Enumeration Manual, National Population Census 2011"

11.7.10 Human resource management

District Census Offices (DCOs) were established from March 16, 2011. In the first phase, census supervisors were recruited. Census activities involved staff from two sources, the majority were school teachers while others were seconded from other government offices in the respective districts. Altogether, forty thousand census staff were sent to the field, and approximately half of them were school teachers. Female Community Health Volunteers also took part in field work. Supervisors were hired for two months. DCOs were instructed to recruit at least 40% of females of the total number of enumerators for each district. Those who spoke the local language and were familiar with localities and local cultures were given priority. The total workforce for field work activities in the districts is detailed in Table 11.9.

Table 11.9: Total staff engaged in census in districts

S.No.	Human resource	Number
1.	District Census Officers	80
2.	Area Census Supervisors (Recruited from Centre)	80
3.	Area Census Supervisors (Recruited in Districts)	198
4.	Accountant	80
5.	Office Helpers (at District)	160
6.	Office Helpers (at Area Census Offices)	289
7.	Additional Management Staff (District Census Office)	320
8.	Additional Management Staff (Area Census Offices)	267
9.	Field Supervisors	7,909
10.	Enumerators	30,793
	CBS Staff (at Centre)	129
Total		40,305

The staff at District Census Offices came from the CBS and their thirty-three Branch Statistics Offices or were seconded from other offices in the districts. Eighty Census Officers and eighty Area Census Supervisors were recruited by the CBS, while other staff were recruited in the districts. Census officers, supervisors and other staff seconded from other offices were provided with a census special allowance equivalent to 120% of their initial salary in addition to their monthly pay from their respective offices. However, other staff recruited on a contract basis for the census period, were paid an amount equivalent to 150% of the initial salary of their respective position, but were not paid a salary. (see Table 11.10). The Government of Nepal decided to provide insurance for all census staff with a maximum of Rs. 50,000 for injury and Rs. 200,000 in the case of death. There were 2 cases of death and nearly 100 cases of dog bites reported during the period of the field work.

Table 11.10: Tenure and census special allowance for field staff in districts

S. No	Position and class	Tenure	Census special allowance per month
1	District Census Officer	Max. 4 months	120% of initial scale of their salary
2	Area Supervisor Non gazetted Class I (to be placed by CBS HQ)	Max.4 months	120% or 150% of initial scale of their salary *
3	Area Supervisor Non gazetted Class I (to be recruited in districts)	Max. 3 months	120% or 150% of initial scale of their salary
4	Supervisor and field supervisor (Non-gazetted Class I)	Max. 2 months	120% or 150% of initial scale of their salary
5	Enumerator (Non-gazetted Class II)	Max. 1 months	120% or 150% of initial scale of their salary
6	Accountant/ Asst. Acct. (Non-gazetted Class I and II)	Max. 4 months	120% or 150% of the initial scale of the salary
7	Office Assistants	Max. 4 months	120% or 150% of initial scale of their salary

Source: Manual of instructions for DCOs

* 120% for staff seconded from other offices and 150 % for staff recruited on a contract basis who Do not get a salary.

Human resource management, the shipment of census materials, training and census taking are 'prime tasks' of all census operations and were all completed in 2011. The recruitment of District Census Offices (DCOs), DCO assistants, Ilaka supervisors and some assistant accountants was also completed. The cascade of training was a major task to be completed before sending staff to the field. DCOs were established and concurrently, District Census Coordination Committees (DCCC) were formed in all districts. An extensive publicity campaign was conducted by the CBS and DCOs. Materials printed and provided by other organisations were dispatched to the districts. Special manuals on disability and extended economic activities were also shipped to the district.

11.8 Census taking in 2011

11.8.1 Fieldwork

Census operations were carried out in two phases: Household listing and individual enumeration. Listing of households, after the training of 7,909 Supervisors, began from May 15, 2011 and ended on June 1, 2011. The listing operation was completed within the stipulated time without any disruption in all 3,915 VDCs and 58 municipalities. Supervisors who did household listing were instructed to transcribe the list of households onto a separate transcription form. The purpose of creating a separate transcription form was to assign tasks to the enumerators and draw samples of households to be interviewed administering Form-2.

The recruitment and training of enumerators was completed by the second week of June 2011. Finally, the individual enumeration or 'census taking' began on 17 June 2011 (3 Asadh 2068) by nearly thirty one thousand enumerators (30,793), and ended on 27 June, 2011 after observing 22 June 2011 as the census day. On the census day, a statement from the Rt. Honourable President Dr. Ram Baran Yadav was broadcast live on television channels. Enumeration was completed on the same day with the Rt. Honourable President, the Prime Minister and all prominent personalities of Nepal. Immediately after the fieldwork, each enumerator had to complete a 'control form' that included the number of households, population by sex, and institutional population by ward/VDC. Supervisors had to check the completion of the form for all wards in the VDC or municipality. Supervisors and enumerators submitted completed forms and forms not used to the DCO.

11.8.2 Sampling in the census

Sampling in censuses was first introduced in Nepal in 2001. An increasing demand for more information from the census of 2011 had forced the CBS to compromise with a long questionnaire that was divided into two parts e.g. Form-1 and Form-2, the latter being the long form to be administered on a sample basis. Samples were drawn from the listing schedule prepared a month before the census. Six districts with a small population were completely enumerated using Form-2. In addition twenty-eight municipalities were completely enumerated using Form-2. Form-2 was used on a sample basis in 69 districts and 30 municipalities.

Table 11.11: Districts and municipalities under sample enumeration

Districts	Complete enumeration done using Form -1 and Form -2		Sample enumeration with Form-2 Complete enumeration with Form-1	
	6 districts (Rasuwa, Manang, Mustang, Dolpa, Mugu and Humla)		69 districts	
Municipalities	1. Ilam Muni.	15. Banepa	1. Mechinagar	16. Ratna Nagar
	2. Bhadrapur	16. Dhulikhel	2. Damak	17. Birgunj
	3. Dhankuta	17. Gorkha	3. Kamalamai	18. Hetauda
	4. Kahandbari	18. Waling	4. Biratnagar	19. Lekhnath
	5. Inruwa	19. Bidur	5. Itahari	20. Byas
	6. Rajbiraj	20. Baglung	6. Dharan	21. PutalajBajar
	7. Lahan	21. Kapilvastu	7. Dhankuta	22. Pokhara
	8. Siraha	22. Tansen	8. Janakpur	23. Butwal
	9. Jaleswor	23. Ramgram	9. Triyuga	24. Siddhartha Nagar
	10. Gaur	24. Narayan	10. Kathamndu	25. Ghorahi
	11. Malangawa	25. Dipyal	11. Lalitpur	26. Tulsipur
	12. Kalaiya	26. Amargadhi	12. Bhaktapur	27. Nepalgunj
	13. Bhimeswor	27. Tikapur	13. Kirtipur	28. Gulariya
	14. Panauti	28. Dasarathchand	14. Madhyapur	29. Birendra Nagar
			15. Bharatpur	30. Bhimdutta

Source: Enumeration Manual of the census 2011, CBS

The sample enumeration only covered private households; institutional populations were not covered. Seventy-five districts were treated as strata, although the number of census districts was eighty. VDCs and municipalities in districts were treated as domains. There were 36,337 wards in the country at the time of the census. However, EAs were created for big wards in municipalities and therefore the total number of EAs was around 40,000. Household Listing Transmission Forms created by supervisors immediately after the listing operation were used as the sampling frame and households were the sampling units. The list of selected households was given to the enumerators. Every eighth household was selected on the basis of systematic sampling and the sampling interval was eight. A random number table was provided to every supervisor to obtain the random start and enumerators were instructed to select every eighth households, where enumerators were to use Form-2 for interview. In the case where new households were found that were not on the list, the selection was continued on the same basis.

Altogether, 8,61,696 households or 15.9% of the total households, and more than 4.1 million population or 15.6% of the total population, were covered under Form 2. However, virtual sample households and sample population were 652,230 (12.5%) and 3,134,638 (12.3 %) respectively (see Table 11.12).

Table 11.12: Households and population covered under Form-2*

	Households	Population	Covered under Form-2*		Fraction (in %)	
			Households	Population	Households	Population
a. 6 Districts completely enumerated	41,198	206,134	40,983	200,414		
b. 69 Districts enumerated on sample basis	5,386,104	26,288,370				
c. 28 Municipalities completely enumerated	168,268	797,196	152,893	703,023		
d. 30 Municipalities (enumerated on sample basis)	879,029	3,726,624	111,127	459,220	12.6	12.3
e. Total Urban (c+d)	1,047,297	4,523,820	264,020	1,162,243	25.2	25.7
f. 69 Districts (Rural)	4,338,807	21,764,550	536,564	2,675,228	12.4	12.3
g. Total Sampling applied (d+f)	5,217,836	25,491,174	647,691	3,134,448	12.4	12.3
Nepal (a+c+d+f)	5,427,302	26,494,504	841,567	4,037,885	15.5	15.2

*Institutional household and population were not covered under Form-2

The estimates were prepared and aggregated from the ward or EA level to VDC/municipality and then, to district level. For 69 districts, estimates were prepared for rural and urban areas separately, depending upon the sampling schemes. In districts where municipalities were completely enumerated, estimates were required for rural areas only. The estimation procedure for districts, where municipalities were treated differently based on sample and complete enumeration, was different. The formula of the ratio method, used for the estimation purpose was as follows:

$$Y'_{hi} = \sum \frac{y_{hij}}{x_{hij}} X_{hij}$$

Where,

- y'_{hi} = the ratio estimator for the population with a certain characteristic in the i^{th} domain and in the h^{th} district.
- y_{hij} = number of persons with a certain characteristic in the j^{th} tabulation group, in the i^{th} domain and in the h^{th} district.
- x_{hij} = total number persons found in the sample in the j^{th} tabulation group, in the i^{th} domain and in the h^{th} district, and
- X_{hij} = total number of persons in the 100 percent count, found in the j^{th} tabulation group, in the i^{th} domain and in the h^{th} district.

The main control variables for the majority of tabulations for persons were age and sex. The weights for sample data were computed by dividing the 100 per cent counts for the same tabulation groups in the domain by sample counts for the same tabulation groups in the domain.

11.8.3 Independent observation of census operation by civil society

A committee composed of independent demographers, university professors and lecturers, civil society and representatives of various ethnic groups undertook an independent observation of the census fieldwork. The observation exercise was implemented as a project financed by UNFPA Nepal. The project employed 340 observers who went to 77 census districts. The observers were trained and provided with a structured questionnaire to interview census staff and selected respondents as well. However, they were instructed not to interfere while census interviews were taking place in the field. The independent observation of the census of 2011 was the first of its kind in Nepal.

11.9 Post census activities

11.9.1. Receiving completed forms

The first activity was to bring all census materials safely back from the districts. This activity was challenging because of the incessant rain during monsoon. Most districts in the western and far western regions shipped census materials by land. The Nepal Army air lifted census materials from six districts (Jumla, Humla, Dolpa, Mugu, Jajarkot and Khotang). However, air lifting by the Nepal Army was delayed by two months because of their engagement in disaster relief operations in the Koshi region of Eastern Nepal. This caused a delay in the publication of the preliminary results of the census. Special vehicles were arranged to transport census materials back from nine districts of eastern Nepal. However, there were situations where drivers were harassed by local youth because of their suspicions that vehicles were carrying illegal substances. The packed sacks were shown to TV journalists in districts and in Kathmandu to assure them that census materials were being carried in these vehicles. Twenty staff at the census warehouse at Babar Mahal in Kathmandu were kept on standby day and night to receive census forms.

11.9.2 Census processing

To ensure quality of the data processing operation, taking into account the CBS's capacity to complete this, it was decided to outsource this operation as in the case of the census of 2001. However, a processing site and computers were provided to the contractor, so that both quality and confidentiality were maintained, and the data processing operation was strictly under the control of the CBS. Manuals for coding, editing and key entry operation were prepared, and training and key entry operations were monitored and supervised by the core team at the CBS. Despite a delay in awarding the contract, the whole operation was completed in six months from the date the contract was signed. Approximately six hundred data processing staff, plus experts, were involved in coding, editing, key entry operations and verification. In order to monitor and supervise the processing, a team from the CBS was based at the processing site. Also, a committee was formed to follow up the progress and monitor the quality of data entry in terms of completeness of entries and consistency of the prime tables.

CSPRO, an integrated software developed for data entry, editing, verification and tabulation was used for data processing (key entry, editing and verification). However, CSPRO, SPSS and STATA were used for tabulations. Range and consistency checks were completed thoroughly during the processing operation. The captured data were further cleaned with the assistance of international experts. New classifications of occupation and industry were prepared based on ISOC and ISIC (Rev. 4). Similarly, classifications of caste/ethnicity, religion and language were prepared based on the recommendations of academics and subject matter specialists.

Tabulation of caste and mother tongue took longer than expected, as identification of caste/ethnic groups and mother tongue were very time consuming. A team of experts and academics were formed to examine the entries. Finally, it was decided to list all castes that were tabulated in the previous census and castes that had frequencies over one thousand persons.

11.9.3 Post enumeration survey

The field work of the Post Enumeration Survey (PES) was conducted in September 2011, three months after the main census. UNFPA Nepal provided technical assistance of one international consultant and one national consultant to conduct the PES. The international consultant prepared a sampling design and a PES questionnaire. Initially, the sampling design was prepared using the census of 2001. This was later updated by using the preliminary results of the census of 2011 and accordingly, sampling weights were calculated. The sample size for this survey, owing to time constraints, was fixed at 10,000 households. Under enumeration rate was estimated to be around 3.63% in the census of 2011 compared to 5.3% in 2001. The rate was higher in urban areas, especially in the urban areas of Kathmandu valley. The PES report flagged up the problem of matching information to individuals between the census and PES. Therefore, it was suggested that the PES should be conducted immediately after the census in order to minimise the effect of migration especially in urban areas. Therefore, the preparation for the PES should begin in tandem with the census.

Table 11.13: Sample size and under enumeration rate in Censuses 2001 and 2011*

Areas	Census 2001			Census 2011		
	No. of EAs/ wards selected for PES	Total no. of households in PES	Net omission rate (in %)	EAs/wards selected for PES	Total no. of households in PES	Net omission rate (in %)
Urban	8	2,506		35	7,000	4.2
Kath. Valley	4	1,370		20	4,000	
Other urban	4	1,136		15	3,000	
Rural	46	5,287		15	3,000	3.5
Mountain +Hill	30	2,741		10	2,000	
Tarai	16	2,546		5	1,000	
Total	54	7,793	5.3	50	10,000	3.6

*Source: Report on Post Enumeration Survey 2011, CBS

11.9.4 Management of census results and analysis

Finalising census results in time was also a challenge, as there were demands from government and non-government sectors for quick results. There has been a tradition of bringing out the preliminary results of the census as soon as possible. A team in the CBS began with the processing operation, while a separate team, made up of ten key entry operators and three officers, began the process to publish the preliminary results. The best option to publish the preliminary results as soon as possible was to use the 'control form' completed by each enumerator immediately after the fieldwork was finished. The purpose of the use of the control form in the field was to check and ensure that all completed forms from all enumerators were received. Submission of control forms along with census forms was obligatory for supervisors and enumerators in order to receive remuneration. Control forms contained information about the number of houses, households, and population by sex by each EA/ward. Preliminary results that contained the total number of houses, households, present population, and also absent population were released in September 2011. The publication on the preliminary results provided a brief analysis of sex ratio, household size, and intercensal growth rates by districts. The preliminary results captured

the attention of data users from all stakeholders as the population count was well below the projected population and accordingly, the growth rate had declined sharply. There was a small discrepancy between the preliminary results and the main results that was largely due to errors in transcribing the information from census forms to the control forms.

The final results of the census were released in different phases. In the first phase, a national report with the details of individual information from Form-1, a report on VDC and municipalities that contained data on household, population, institutional population, and a summary report in Nepali were released in November 2012. It took longer than expected to bring out the results from Form-2 as estimates had to be prepared by applying weights and distribute by age and sex for all variables in Form-2. A sample data set was made available for researchers. UNFPA provided experts from the International Program Center of the US Bureau of Census, to verify the census process and validate the results.

Table 11.14: Publications of census results

S. No	Census Publications	Language	Publication type
1.	Preliminary results of National Population 2011	English	Print, CD and Website
2.	National Report (One volume based on information of Form-1)	English	Print, CD and Website
3.	Population by VDCs and Municipalities (One volume)	English	Print, CD and Website
4.	Summary of National Report	Nepali	Print, CD and Website
5.	National Report (three volumes based on Form-2)	English	Print, CD and Website
6.	Census results by Wards of VDCs and Municipalities	English	Print, CD and Website
7.	Demographic indicators of Nepal	English	Print, CD and Website
8.	Statistical Reports of 75 districts (75 Volumes)	English	Uploaded in website
9.	Micro-data of Census 2011	English	CD
10.	Population Projection of Nepal (2011-2031)	English	Print, CD and Website
11.	Population Monograph (3 Volumes)	English	Print

11.10 Features of the census 2011

11.10.1 Census based on national resources

The census of 2011 has been successful in its maximum utilisation of national resources, both in terms of financial and technical aspects. The approximate cost of the census was Rs. 1,433 million, of which the Government of Nepal provided Rs. 1,310 million. In addition most technical activities such as designing, sampling, processing etc. were completed by national experts from the CBS. The census of 2011 has highlighted the internal capacity of the CBS. However, the services of international experts were useful in verifying the work undertaken by national experts and enhanced the capacity of the CBS.

11.10.2 Census with extensive use of maps in the field work

Extensive use of maps for data collection, as well as in analysis, was one of the important features of the census of 2011. EAs were prepared for all municipalities and VDC maps were provided for all districts. Altogether, 50 books for all 58 municipalities and 80 books for districts were prepared before the census. Details of the census mapping are mentioned above.

11.10.3 Use of sampling in the census

Sampling in a census was first introduced in 2001, which continued in the census of 2011. In order to meet increasing demands for information, Form- 2 with additional questions, was administered to sampled households. The sampling design in the census of 2011 was different from the one used in the census of 2001. In the census of 2011, one in every eight households was selected on the basis of systematic sampling. Nearly 648,000 households or a little over 3 million of the population were asked additional questions on migration, fertility, economic activities, occupation, industry and employment status.

11.10.4 Highly sensitised census

The census of 2011 became highly sensitized because of people's awareness of their identity and their right to be included in the census. The country was in the process of building a constitution after the election of the Constitution Assembly. The interim constitution itself spelt out the basis of a federal system and the restructuring of a state that would be based on identity. A mixed system of election for the constitutional assembly that was based on First Past the Post (FPTP) and proportional representation by gender, caste/ethnicity, oppressed/marginalised and backward regions of the country, sensitized the population to the importance of representation and visibility in government. Almost all organisations of caste and ethnicities were engaged in publicity of their own. Various caste, ethnic groups and religious groups came forward to cooperate in the census taking by providing assistance in writing census instruction manuals, helping census staff in the field, and by organising publicity campaigns. The CBS used various media for publicity before and during the census. Electronic, print and door-to-door campaigns were used which reached every household with a census message that in turn helped to increase the coverage in the census.

11.10.5 Gender mainstreaming

The census of 2011 has been successful in gender mainstreaming at all levels. The census materials, including the census questionnaires, were made gender responsive by including questions on gender and by making instruction manuals gender-friendly. The participation of female enumerators and supervisors in fieldwork was more than 40% of the total number of enumerators and supervisors, the highest number in the history of censuses in Nepal. The CBS had instructed all DCOs to recruit at least 40% of female supervisors and enumerators. Female teachers, female community health workers and students all participated in census taking.

11.10.6 Extensively rich in information on pseudo indicators of poverty

Household Schedules and Individual Schedules administered in the census collected a high level of poverty related information. Data on housing, access to drinking water, electricity, household durables and toilet facilities were collected extensively from all households of all VDCs and municipalities which enables an analysis of the poverty related situation at the local level. The Listing Schedule, administered by supervisors, contained data of livestock by type collected from all households, making it virtually a livestock census, the first of its kind. The form also collected total area of holding of each household.

11.10.7 Independent observation of the fieldwork by civic society

The census of 2011 was the first census to be observed independently by "Civic Society" during field operations. The 'Independent Civic Observation Committee' observed the fieldwork of the census in 72 districts. The observation was financed by UNFPA and implemented mainly by university professors/lecturers and social workers. The committee submitted a report to UNFPA mentioning satisfaction in general, of the quality of the census in terms of coverage.

11.11 Quality control

A wide range of consultations with experts and stakeholders were carried out while designing the census questionnaire and building concepts and definitions to be used within it. Five national level seminars and workshops on different thematic areas, five regional level workshops and thirty three district level/BSO level seminars were held with a view to getting feed back on questionnaires and enumeration manuals. The questionnaires and manuals were revised and peer-reviewed by subject matter specialist and Gender and Social Inclusion (GESI) experts to make the tools more user and GESI friendly. An emphasis was placed on quality at every stage of census operations, from the designing of the questionnaires and manuals to the standardisation of the training of enumerators, monitoring of the fieldwork, processing data and tabulation. The continuity of Form-1 and Form-2, maintained in the questionnaire design, was helpful in simultaneous data entry and also in tracing common identification between the two forms.

The ratio of supervisor to enumerators has increased from 1:5 in 2001 to 1:4 in 2011. The average workload was 860 persons per enumerator in 2011 against 1,174 in 2001. None of the wards or VDCs or any part of the country was missed out in the census. The workload of supervisors and enumerators in different censuses is detailed in Table 11.15.

Table 11.15: Workload of Supervisors and enumerators

Census Years	Total Households	Population enumerated	No. of enumerators	No. of supervisors	Enumerators per supervisor*	Households per enumerator*	Population per enumerator
1952/54	1,524,511	8,256,625	17,000	200	85	90	486
1961	1,783,975	9,412,996	5,933	300	53	112	591
1971	2,084,062	11,555,983	12,000	500	24	174	963
1981	2,585,154	15,022,839	15,000	1,500	10	172	1,002
1991	3,328,721	18,491,097	20,000	4,000	5	166	925
2001	4,174,374	22,736,934	19,370	4,926	4	216	1,174
2011**	5,427,302	26,494,504	30,793	7,909	4	176	860

Source: * Population Monograph 2003, CBS

**National Report of the National Population and Housing Census 2011, CBS

Quality of data was a key concern during the data processing period. Coding, editing, data entry and verification were done under the close supervision of the CBS team at the data processing site. The data processing company was provided with laptop computers, power supply support and extra security arrangements in order to conduct processing operations without interruption while maintaining confidentiality.

11.12 Assistance of Development Partners

Development partners contributed generously to the census from the preparatory phase. The assistance of UNFPA in the pilot census, fieldwork, the PES and analysis was extremely important. Likewise, the assistance of UN WOMEN, particularly in publicity activities and in the development of Information, Education and Communication (IEC) materials from a gender and social inclusion perspective both in the pilot and main census, was invaluable. The support of DANIDA in the development of EA maps and the support of UNDP in designing and developing training materials are appreciated as is the technical support of the US Census Bureau at the final stage of data processing.

11.13 Challenges faced during the census operation

11.13.1 The State's priority on constitution making: The State's priority during the implementation of the census project was drafting a new constitution and accordingly, the total efforts of the government and political parties were concentrated on the issue of the contents of the constitution. Also, people's aspirations from the census were high and various caste/ethnic and social groups raised issues of identity. As a result, the streets were almost continually occupied by demonstrators, that raised doubts that this might jeopardise the census.

11.13.2 High expectation of users from the census: There were demands for more questions to be included in the questionnaire. As a result, the questionnaire was one of the longest in Nepal's history of census taking with more than 50 main questions. It might have had an adverse effect on the quality of data if proper attention had not been paid to this at every stage of census operations.

11.13.3 Financial resource management: The estimated size of the fund required for the census was huge. Exploring external resources took longer than anticipated and eventually the Government of Nepal financed almost all of the census expenses. Nevertheless, UNFPA, UNDP, UN Women, DANIDA, JICA, USAID and the US Bureau of Census provided technical support and financial resources for selected activities of the census.

11.13.4 Human resource management: Managing large numbers (40,276 persons) of staff at different levels was a major challenge. Deputation to field staff- enumerators and supervisors - while considering gender and social inclusion aspects was difficult.

11.13.5 Security threats: Some District Census Officers and field staff faced security threats in some districts. Disturbances in fieldwork and threats of abduction while questionnaires were being transported to Kathmandu were faced but the situation was addressed with the help of local administrations.

11.13.6 Procurement: The procurement of census materials and data processing services as per existing rules and regulation of government procurement procedures compromised the census timeline and the quality of certain census operations.

11.14 Conclusion

The population census is known by almost every citizen of Nepal. The people of Nepal were aware of the importance of being counted in the census. Historically, every census has occurred during or after some kind of political upheavals. But, despite these disturbances, censuses were conducted more or less at equal intervals and also with success. Similarly, the census of 2011 was also undertaken successfully. The in-house capacity of the CBS, the generous cooperation of all caste/ethnic groups, external development partners, NGOs, and INGOs, the sincere cooperation of census staff and above all, the participation of all Nepalese households were the prime factors for the successful accomplishment of the operation. The census of 2011 followed the recommendations of UNSC, and met an average standard of international census operations. It provided various socio-economic data as per the need of the Government of Nepal and of other users. Therefore, the census of 2011 was a success in terms of timeliness, coverage as well as quality.

11.15 Recommendations for the next census

- Decision on financial resources required for the census should be made in time, so that operation modalities, and the selection of technology and methodologies can be fixed in advance to avoid uncertainties.
- The number of census questions should be optimally determined. Open questions should be strictly minimised. The number of questions and the length of the questionnaire should be reduced compared to the

one used in the census of 2011. Questions on livestock by type may be discontinued in the coming census and instead, questions on housing and household facilities can be shifted from the census schedule to the listing schedule. Questions on maternal mortality should be continued in the next census. Reducing the length of the questionnaire will help to improve the quality of data and facilitate the use of electronic data capturing as well.

- Census mapping should be initiated at least 3 years before the census fieldwork. Also, the updating of EA maps should be continued until the last moment, especially in rapidly developing urban areas in order to reduce coverage errors.
- Priority should be given to unemployed youth and college students. Most of the school teachers had to continue teaching while at the same time completing their fieldwork, which resulted in a delay in submitting the completed census forms in many cases. On the other hand, students of the new generation who were recruited in the census of 2011 were young and performed their tasks better in terms of quality and timeliness.
- The task performed by female enumerators were relatively better and it is recommended to engage at least 50% of female enumerators in the next census.
- New technology of data capturing e.g. ICR should be adopted for ease of data collection, capturing and processing.

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Appendix 11.1 : Calendar of activities of census field work

S. No.	Activities	Date
1	Masters' Training of Trainers	Jan 27- Feb 09, 2011
2	District Census Officers' Training (Center)	Feb 17 – Mar 03, 2011
3	Area Supervisors' Training (Center)	Feb 23 – Mar 03, 2011
4	Establishment of District Census Offices	March 15, 2011 Tues
5	Establishment and first meeting of DCCC	Mar 16 – 23, 2011
6	Recruitment of Area Supervisors and Preparation for the Establishment of Area Census Offices	Apr 03 – 13, 2011
7	District Level Census Sensitization workshops	Mar 29 – Apr 08, 2011
8	Establishment of Area Census Offices	Apr 14, 2011 Thursday
9	Training of Area Supervisors	Apr 16 – 23, 2011
10	Area Level Census Sensitization workshops	Apr 24 – May 03, 2011
11	Recruitment of Supervisors and assign the area for field work	Apr 28 – May 03, 2011
12	Training of Supervisors	May 05 - 11, 2011
13	Field Work of Household Listing	May 15 – Jun 01, 2011
14	Sample Selection and Preparation for Enumerators' Training	Jun 02 – 03, 2011
15	MTOT for Supervisors who work as a resource person in Enumerators' Training	Jun 05 - 06, 2011
16	Recruitment of Enumerators' and assign the area for Field Work	Jun 07, 2011 Tuesday
17	Enumerators' Training	Jun 08 – 14, 2011
18	Deadline for Enumerators to reach the assigned area for field work	Jun 16, 2011 Thursday
19	CENSUS	Jun 17 – 27, 2011
20	Census Day	Jun 22, 2011 Wed
21	Deadline for Enumerators' to submit the filled up questionnaires to supervisor	Jun 28 – Jul 02, 2011
22	Closing the Area Census Office	Jul 03 – 06, 2011
23	Closing the District Census Office	Jul 09 – 16, 2011
24	Dissemination of Preliminary Census Results	October, 2011
25	Launching of National Report 2011	November, 2012

Appendix 11.2: Census Schedules

(Unofficial Translation)

House/Household Listing Form

National Population Census 2011 - Nepal

Total page of page

District Village Development Committee/Municipality

Ward No. Enumeration Area No. Village/Settlement/Tole

All Personal Information asked within this questionnaire will be kept confidential according to Statistical Act, 2015.

Serial No of House	Serial No of Household	Household Head's		Total Number of Usually Living Household Member		Does your household operate any land for agriculture purpose?	Only for code 1 in Question 10				Does your household raise livestock/poultry for agriculture purpose?	Only for code 1 in Question 17							Does your HH engage in small scale domestic economic activities (eg. not registered)?	What is the main activity related to?									
		First and Middle Name	Last Name	Caste/Ethnicity	Total		Male	Female	Bigha	Katha		Dhur	Ropa	Ana	Palisa	Cow/Ox	Buffalo	Horse/Mule/Ass			Sheep	Goat	Pig/Pork	Other	Chicken	Duck	Other		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
									1. Yes 2. No → 17							1. Yes 2. No → 29												1. Yes 2. No → END 5. Other	1. D. Ind. 2. Business 3. Transp. 4. Service 5. Other
									1. Yes 2. No → 17							1. Yes 2. No → 29												1. Yes 2. No → END 5. Other	1. D. Ind. 2. Business 3. Transp. 4. Service 5. Other
									1. Yes 2. No → 17							1. Yes 2. No → 29												1. Yes 2. No → END 5. Other	1. D. Ind. 2. Business 3. Transp. 4. Service 5. Other
									1. Yes 2. No → 17							1. Yes 2. No → 29												1. Yes 2. No → END 5. Other	1. D. Ind. 2. Business 3. Transp. 4. Service 5. Other
									1. Yes 2. No → 17							1. Yes 2. No → 29												1. Yes 2. No → END 5. Other	1. D. Ind. 2. Business 3. Transp. 4. Service 5. Other
									1. Yes 2. No → 17							1. Yes 2. No → 29												1. Yes 2. No → END 5. Other	1. D. Ind. 2. Business 3. Transp. 4. Service 5. Other
									1. Yes 2. No → 17							1. Yes 2. No → 29												1. Yes 2. No → END 5. Other	1. D. Ind. 2. Business 3. Transp. 4. Service 5. Other
									1. Yes 2. No → 17							1. Yes 2. No → 29												1. Yes 2. No → END 5. Other	1. D. Ind. 2. Business 3. Transp. 4. Service 5. Other

Supervisor's Name Date V.D.C./Municipality Ward Secretary's Name Signature Date

NATIONAL POPULATION CENSUS 2011 - NEPAL (Schedule 1) Contact Telephone No. Total page of page

Household Members Total Male Female
 Usually live
 Absent (within country)
 Absent (abroad)

House No. House No.
 First and Last Name of Household Head: 1. Male 2. Female

6	7	8	9	10	11	12	13	14	15
What is the Category of the Head of Household? (Name)?	For persons 10 years and above: What is the marital status of the head of household? (Name)?	What is the Mother's Second Language of the Head of Household? (Name)?	What is the Country of Birth of the Head of Household? (Name)?	What is the Physical and Mental Ability of the Head of Household? (Name)?	Can the Head of Household read and write? (Name)?	For persons 5 years and above: What is the Level of Education of the Head of Household? (Name)?			
1. Never Married	1. Never Married	1. Mother's Tongue	1. Nepal	1. Not disable	1. Read & write	1. Pass level			
2. Once married	2. Once married	2. Second Lang.	2. India	2. Physical disable	2. Read & write	2. Major Sub. (above SLC)			
3. Multiple spouse	3. Multiple spouse	3. Other	3. China	3. Blind and low vision	3. Only	3. No			
4. Re-married	4. Re-married	4. Other	4. Other	4. Deaf & hard of hearing	4. Can't read & write	4. Can't read & write			
5. Widower/widow	5. Widower/widow	1. Mother's Tongue	1. Nepal	5. Speech problem	5. Read & write	5. Pass level			
6. Divorced	6. Divorced	2. Second Lang.	2. India	6. Intellectual disable	6. Read & write	6. Major Sub. (above SLC)			
7. Separated	7. Separated	3. Other	3. China	7. Multiple disable	7. Only	7. No			
8. Never Married	8. Never Married	1. Mother's Tongue	1. Nepal	1. Not disable	1. Read & write	1. Pass level			
9. Once married	9. Once married	2. Second Lang.	2. India	2. Physical disable	2. Read & write	2. Major Sub. (above SLC)			
10. Multiple spouse	10. Multiple spouse	3. Other	3. China	3. Blind and low vision	3. Only	3. No			
11. Re-married	11. Re-married	4. Other	4. Other	4. Deaf & hard of hearing	4. Can't read & write	4. Can't read & write			
12. Widower/widow	12. Widower/widow	1. Mother's Tongue	1. Nepal	5. Speech problem	5. Read & write	5. Pass level			
13. Divorced	13. Divorced	2. Second Lang.	2. India	6. Intellectual disable	6. Read & write	6. Major Sub. (above SLC)			
14. Separated	14. Separated	3. Other	3. China	7. Multiple disable	7. Only	7. No			
15. Never Married	15. Never Married	1. Mother's Tongue	1. Nepal	1. Not disable	1. Read & write	1. Pass level			
16. Once married	16. Once married	2. Second Lang.	2. India	2. Physical disable	2. Read & write	2. Major Sub. (above SLC)			
17. Multiple spouse	17. Multiple spouse	3. Other	3. China	3. Blind and low vision	3. Only	3. No			
18. Re-married	18. Re-married	4. Other	4. Other	4. Deaf & hard of hearing	4. Can't read & write	4. Can't read & write			
19. Widower/widow	19. Widower/widow	1. Mother's Tongue	1. Nepal	5. Speech problem	5. Read & write	5. Pass level			
20. Divorced	20. Divorced	2. Second Lang.	2. India	6. Intellectual disable	6. Read & write	6. Major Sub. (above SLC)			
21. Separated	21. Separated	3. Other	3. China	7. Multiple disable	7. Only	7. No			

Personal Information

1	2	3	4	5
What is the sex of the person?	What is the relationship of the person to the head of household? (Name)?	What is the name of the person?	What is the date of birth of the person? (DD/MM/YY)	What is the educational level of the person? (Name)?
1. Male	1. Household Head	1. Name	1. Year	1. No education
2. Female	2. Spouse	2. Name	2. Year	2. Primary
3. Son/daughter-in-law	3. Son/Dau-in-law	3. Name	3. Year	3. Secondary
4. Daughter-in-law	4. Son/Dau-in-law	4. Name	4. Year	4. Higher Secondary
5. Parent	5. Parent	5. Name	5. Year	5. Bachelor's
6. Father/Mother-in-law	6. Father/Mother-in-law	6. Name	6. Year	6. Master's
7. Brother/Sister-in-law	7. Brother/Sister-in-law	7. Name	7. Year	7. Doctorate
8. Grandson/G.D.	8. Grandson/G.D.	8. Name	8. Year	8. Other
9. H/W worker	9. H/W worker	9. Name	9. Year	
10. Other	10. Other	10. Name	10. Year	

Household Information

1. What is the type of the house occupied by the household? 1. Own 2. Rented 3. Institutional 4. Others

2. What is the structure of the house? 1. Mud bonded brick/stone 2. Cement bonded brick/stone 3. Concrete with pillar 4. Wood/stone pillar 5. Other

3. What is the main source of drinking water in your household? 1. Tap/pipe 2. Tubewell/head pump 3. Covered Well/Guwa 4. Uncovered Well/Guwa 5. Spout water 6. River/Stream 7. Other

4. What is the usual type of fuel used for cooking in your household? 1. Wood 2. Kerosene 3. LP Gas 4. Cow Dung 5. Biogas 6. Electricity 7. Other

5. What is the usual source of lighting in your household? 1. Electricity 2. Kerosene 3. Biogas 4. Solar 5. Other

6. What type of toilet facility are you using in your household? 1. Flush (Public/Sewerage) 2. Toilet (Public/Tank) 3. Ordinary 4. No Toilet

7. Do you have following facilities in your household? (Multiple response is possible) 1. Radio 2. TV 3. Cable TV 4. Computer 5. Internet 6. Telephone 7. Mobile Phone 8. Motor 9. Motorcycle 10. Bicycle 11. Other type of vehicle 12. Refrigerator 13. None

8. Does any female member of the HH own house in any part of Nepal? 1. Yes 2. No

9. Does any female member of the HH own land in any part of Nepal? 1. Yes 2. No

10. Please fill in the area of land owned by female member? (Unit: Bigha, Katha, Dhar, Bagan, Aana, Paisa)

11. Were there any deaths occurred during the last 12 months in your household? 1. Yes, Number: 2. No 3. NA

12. Please give use the description of deceased persons.

No.	Sex	Cause of death	Age at death	If deceased woman was 15-49 years of age, Condition at the time of death
1	Male	1. Male	Yr.	1. Pregnant 2. Delivery
2	Female	2. Female	Yr.	3. Deaths during 6 weeks of delivery
3	Male	3. Male	Yr.	1. Pregnant 2. Delivery
4	Female	4. Female	Yr.	3. Deaths during 6 weeks of delivery

13. Are any persons absent from the household living in other countries? 1. Yes 2. No

14. Give description of persons absent and living in other countries.

No.	Sex	Age at Absent (yr)	Reason for Absent (yr)	Destination Country
1	Male	Yr.	1. Person	
2	Female	Yr.	2. Person	
3	Male	Yr.	3. Person	
4	Female	Yr.	4. Person	

** Code for period level of education (5 yrs. & above only): 1. Below 2. Below 3. Institutional Service 4. Study 5. Conflict 6. Dependent 7. Other 8. Don't Know

Total page of page

CENSUS 2011 - NEPAL
Schedule 2

House No. of Form 1 Household No. of Form 1 Total Usually Living Household Members Male Female

Answers should be marked by circling the number corresponding to the appropriate answer.

Questions are asked to persons 10 years of age and above

Please write down these information from form 1		What is the marital status of (Name) ?		Where is the birth place of (Name) ?		How long (Name) has been staying in this district (Name) ?		Where was (Name) living 5 yrs ago ?		How many children were ever born to (Name) ?		Have (Name) had any disabilities during the last 12 months ?		What work (Name) usually was doing ?		Where did (Name) work ?		What was the status of employment of (Name) ?		What was the reason for usually not working during the last 12 months by (Name) ?		What is the living arrangement of (Name) ?						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27		
01	1. Male	1. Never Married	1. Same Dist.	1. Agriculture	1. Yes	1. No	1. Yes	1. No	1. Same District	1. Yes	1. No	1. Yes	1. No	1. Agriculture	1. Own farm	1. Own farm	1. Student	1. Student	1. Student	1. Student	1. Student	1. Student	1. Student	1. Student	1. Student	1. Student	1. Student	
02	2. Female	2. Once married	2. Other District	2. Business	2. Yes	2. No	2. Yes	2. No	2. Other District	2. Yes	2. No	2. Yes	2. No	2. Salary wage	2. Own farm	2. Own farm	2. House work	2. House work	2. House work	2. House work	2. House work	2. House work	2. House work	2. House work	2. House work	2. House work	2. House work	
03	3. Male	3. Multiple spouse	3. V.D.C.	3. Service	3. Yes	3. No	3. Yes	3. No	3. V.D.C.	3. Yes	3. No	3. Yes	3. No	3. Domestic work	3. V.D.C.	3. V.D.C.	3. Agri.	3. Agri.	3. Agri.	3. Agri.	3. Agri.	3. Agri.	3. Agri.	3. Agri.	3. Agri.	3. Agri.	3. Agri.	3. Agri.
04	4. Female	4. Never Married	4. Same Dist.	4. Study	4. Yes	4. No	4. Yes	4. No	4. Same District	4. Yes	4. No	4. Yes	4. No	4. Unpaid family worker	4. Other country	4. Other country	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker	4. Unpaid family worker
05	5. Male	5. Once married	5. Other District	5. Agriculture	5. Yes	5. No	5. Yes	5. No	5. Other District	5. Yes	5. No	5. Yes	5. No	5. Own account worker	5. Other country	5. Other country	5. Own account worker	5. Own account worker	5. Own account worker	5. Own account worker	5. Own account worker	5. Own account worker	5. Own account worker	5. Own account worker	5. Own account worker	5. Own account worker	5. Own account worker	5. Own account worker
06	6. Female	6. Multiple spouse	6. V.D.C.	6. Service	6. Yes	6. No	6. Yes	6. No	6. V.D.C.	6. Yes	6. No	6. Yes	6. No	6. Employee	6. Other country	6. Other country	6. Employee	6. Employee	6. Employee	6. Employee	6. Employee	6. Employee	6. Employee	6. Employee	6. Employee	6. Employee	6. Employee	6. Employee

CHAPTER 12

POPULATION PROJECTION FOR NEPAL (2011-2031)

The latest population projection for Nepal is carried out using data from National Population and Housing Census (NPHC) 2011. The population has been projected for 20 years from 2011 to 2031 using cohort component method. The components used for projection are levels of fertility, mortality and migration obtained from NPHC 2011. Trends of fertility, mortality and migration for subsequent years are assumed based on available sources and plausible estimates. As the census date was 22nd June 2011, the base year population was smoothed for age-sex distribution and so, the projection refers to the same date. The fertility and mortality levels for June 2011 are estimated by applying various methodologies to various available data. The effect of migration component was also taken into consideration based on foreign born citizens and absentee population provided by the NPHC 2011. As various combinations of assumptions were applied on fertility, mortality and migration, population projections were prepared in various scenarios as well. Thus three scenarios of population projections namely High, Medium and Low variants are obtained for all age, sex and spatial area with an interval of 5 years' time period and also, for five year age distribution. Also, the projection at national level is available by yearly basis.

A computer program known as Spectrum (Future Institute, USA 1980) is used for making population projections at the national level. However, reliable data about the components of the population are not available at sub-national level. As such, the cohort-component method cannot be used for sub-national population projections.

Projection has been done using seven types of input data namely: smoothed age-sex distribution of base year population, sex ratio at birth, age-specific fertility, total fertility rate, life expectancy at birth, model life table pattern and net migration. As there exist age heaping in the reported population of the census, Arriaga's method (Arriaga 1992) was used to smoothen the base year population. The sex ratio at birth (SRB) for the base year 2011 used was 1.07 which gradually moves with increasing trend in subsequent years e.g. 1.10 for 2021 and 1.11 for the year 2031. The plausible estimate of total fertility rate (TFR) in June 2011 was assumed to be 2.48 children per woman. The estimate of TFR for 2031 is assumed to be equal to 1.8 children per year. The Age Specific Fertility Rate (ASFR) in 2011 is assumed to be equal to the ASFR of DHS 2011. Similarly, ASFR pattern for younger age groups and older age groups for the year 2031 was assumed to decline further.

The expectation of life at birth in 2011 for females and males are estimated to be 68.0 years and 65.4 years respectively. For the year 2031, it is assumed that the expectation of life at birth will reach to 74 years of females and 70 years of males. The plausible estimate of expectation of life at birth is obtained for the reference period based on Coale Demeny West model. Net migration for both sexes is estimated as (-278,274) in 2011. This figure is assumed to be equal for all years to 2031. The age and sex distribution of this population are estimated by age and sex distribution of absentee population in 2011.

Sub-national population projections like development regions, ecological regions and district level projections are made using ratio method. The ratio of 20 years from 1991 census to 2011 census is taken for projecting the changing volume of population for upcoming 20 years. As we obtain estimates of total population for all sub-regions and for various points of time, the female population and male population are obtained from the total population by using sex ratio at birth. After deriving projected total male and female population for each district,

the age distribution of the population by age and sex for each district are obtained according to the age distribution of the projected national population for projected years. Projected population for development regions, ecological belts and eco-development regions are obtained by summing up the population of the corresponding districts.

Projected populations for urban and rural areas are obtained by a method known as Urban Rural Growth Difference (URGD) method (UN 1974, p.38). This method projects population year by year. For the population projection, urban population is defined as population residing in administratively declared 58 municipal areas. Age and sex distributions of urban population for future years are assumed as corresponding distributions in 2011 for the urban area.

Table 12.1: Population projection for Nepal 2011-2031 by sex. (Medium variant)

Year	Population		
	Total	Male	Female
2011	26,494,504	12,849,041	13,645,463
2012	26,873,066	13,030,795	13,842,271
2013	27,257,347	13,215,791	14,041,556
2014	27,646,053	13,403,432	14,242,621
2015	28,037,904	13,593,069	14,444,835
2016	28,431,494	13,784,009	14,647,486
2017	28,825,709	13,975,678	14,850,032
2018	29,218,867	14,167,241	15,051,626
2019	29,609,623	14,358,034	15,251,589
2020	29,996,478	14,547,267	15,449,211
2021	30,378,055	14,734,201	15,643,853
2022	30,752,146	14,917,665	15,834,481
2023	31,116,913	15,096,679	16,020,234
2024	31,471,213	15,270,627	16,200,585
2025	31,814,161	15,439,032	16,375,128
2026	32,144,921	15,601,443	16,543,478
2027	32,462,518	15,757,337	16,705,181
2028	32,766,483	15,906,454	16,860,029
2029	33,056,861	16,048,800	17,008,061
2030	33,333,693	16,184,376	17,149,317
2031	33,597,032	16,313,189	17,283,844

Table 12.2: Population projection for Nepal 2011-2031 by five years age group and sex (medium variant).

Age	2011			2016			2021			2026			2031		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
All Ages	26,494,504	12,849,041	13,645,463	28,431,494	13,784,009	14,647,486	30,378,055	14,734,201	15,643,853	32,144,921	15,601,443	16,543,478	33,597,032	16,313,189	17,283,844
00-04 Yrs.	2,698,565	1,380,177	1,318,388	2,950,167	1,525,630	1,424,537	3,034,615	1,575,174	1,459,441	2,905,831	1,514,591	1,391,240	2,632,885	1,378,013	1,254,872
05-09 Yrs.	3,074,257	1,569,956	1,504,301	2,674,278	1,368,495	1,305,783	2,929,396	1,515,051	1,414,346	3,017,353	1,566,220	1,451,132	2,893,116	1,507,945	1,385,172
10-14 Yrs.	3,341,426	1,697,057	1,644,369	3,062,865	1,564,080	1,498,784	2,666,176	1,364,270	1,301,906	2,921,917	1,511,015	1,410,902	3,011,074	1,562,734	1,448,340
15-19 Yrs.	3,065,978	1,510,764	1,555,214	3,317,315	1,680,525	1,636,790	3,042,838	1,549,116	1,493,723	2,649,430	1,351,036	1,298,395	2,906,027	1,498,024	1,408,003
20-24 Yrs.	2,392,279	1,070,091	1,322,188	3,021,919	1,476,611	1,545,309	3,273,395	1,646,148	1,627,247	3,003,253	1,516,949	1,486,304	2,614,336	1,321,296	1,293,040
25-29 Yrs.	2,045,146	891,133	1,154,013	2,340,931	1,033,222	1,307,709	2,968,344	1,437,092	1,531,252	3,221,407	1,606,795	1,614,613	2,956,350	1,480,105	1,476,245
30-34 Yrs.	1,780,599	797,106	983,493	1,998,816	860,512	1,138,303	2,295,206	1,002,200	1,293,007	2,920,849	1,403,917	1,516,932	3,176,000	1,574,004	1,601,996
35-39 Yrs.	1,559,025	713,671	845,354	1,740,784	771,970	968,815	1,959,793	835,668	1,124,125	2,256,514	977,126	1,279,388	2,880,616	1,376,740	1,503,876
40-44 Yrs.	1,373,341	655,556	717,785	1,521,989	691,192	830,797	1,704,217	749,759	954,458	1,923,768	813,877	1,109,891	2,220,991	955,115	1,265,876
45-49 Yrs.	1,185,739	579,835	605,904	1,334,086	632,128	701,958	1,482,726	668,244	814,481	1,665,091	727,067	938,025	1,885,055	791,601	1,093,455
50-54 Yrs.	985,214	495,281	489,933	1,140,179	552,834	587,346	1,287,085	604,753	682,332	1,435,540	641,416	794,123	1,617,678	700,312	917,366
55-59 Yrs.	838,525	423,475	415,050	930,950	462,675	468,275	1,082,006	518,686	563,320	1,226,752	569,749	657,003	1,374,402	606,719	767,683
60-64 Yrs.	716,002	353,432	362,570	770,098	382,738	387,360	859,487	420,366	439,121	1,004,940	473,782	531,158	1,145,955	523,080	622,876
65-69 Yrs.	595,274	292,801	302,473	627,821	303,255	324,567	679,539	330,597	348,942	764,292	365,578	398,714	900,809	414,819	485,990
70-74 Yrs.	478,238	235,919	242,319	482,949	231,131	251,818	514,018	241,518	272,499	561,693	265,602	296,090	638,335	296,264	342,071
75-79 Yrs.	191,617	97,909	93,708	339,914	162,123	177,791	346,493	160,174	186,318	374,054	169,440	204,614	414,140	188,513	225,627
80+ Yrs.	173,279	84,878	88,401	176,432	84,889	91,543	252,721	115,385	137,335	292,237	127,285	164,952	329,263	137,905	191,359

Table 12.3: Population projection for Nepal 2011-2031 by sub-national and sex (Medium Variant)

Spatial Area	2011			2016			2021			2026			2031		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Nepal	26,494,504	12,849,041	13,645,463	28,431,494	13,784,009	14,647,486	30,378,055	14,734,201	15,643,853	32,144,921	15,601,443	16,543,478	33,597,032	16,313,189	17,283,844
Ecological Belts															
Mountain	1,781,792	862,592	919,200	1,853,940	900,665	953,275	1,918,935	936,659	982,276	2,001,472	982,505	1,018,967	2,061,976	1,017,975	1,044,001
Hill	11,394,007	5,440,067	5,953,940	12,022,644	5,753,218	6,269,426	12,628,116	6,064,267	6,563,849	13,216,876	6,369,302	6,847,574	13,662,587	6,608,278	7,054,309
Tarai	13,318,705	6,546,382	6,772,323	14,554,910	7,130,125	7,424,785	15,831,003	7,733,275	8,097,728	16,926,573	8,249,636	8,676,937	17,872,470	8,686,936	9,185,534
Development Regions															
Eastern	5,811,555	2,790,483	3,021,072	6,121,394	2,921,397	3,199,997	6,416,027	3,043,333	3,372,694	6,725,525	3,171,093	3,554,432	6,960,600	3,259,217	3,701,383
Central	9,656,985	4,841,624	4,815,361	10,543,221	5,307,421	5,235,800	11,460,353	5,798,689	5,661,664	12,250,553	6,233,722	6,016,831	12,936,854	6,621,400	6,315,454
Western	4,926,765	2,292,597	2,634,168	5,162,077	2,399,035	2,763,042	5,381,646	2,499,836	2,881,810	5,584,722	2,592,782	2,991,940	5,721,655	2,654,009	3,067,646
Mid-western	3,546,682	1,706,450	1,840,232	3,843,855	1,844,575	1,999,280	4,147,155	1,985,919	2,161,236	4,417,491	2,111,970	2,305,521	4,647,115	2,217,234	2,429,881
Far-western	2,552,517	1,217,887	1,334,630	2,760,947	1,311,580	1,449,367	2,972,873	1,406,424	1,566,449	3,166,630	1,491,876	1,674,754	3,330,809	1,561,329	1,769,480
Districts															
Taplejung	127,461	60,552	66,909	129,694	61,489	68,205	130,992	62,015	68,977	134,769	63,769	71,000	136,824	64,684	72,140
Panchthar	191,817	90,186	101,631	195,334	91,263	104,071	197,440	91,689	105,751	203,148	93,810	109,338	206,231	94,630	111,601
Ilam	290,254	141,126	149,128	302,791	146,765	156,026	314,201	151,901	162,300	328,016	158,285	169,731	338,131	162,808	175,323
Jhapa	812,650	385,096	427,554	875,828	411,125	464,703	939,491	436,797	502,694	996,913	459,087	537,826	1,044,418	475,800	568,618
Morang	965,370	466,712	498,658	1,036,841	499,337	537,504	1,108,654	532,097	576,557	1,175,177	562,484	612,693	1,230,237	586,970	643,267
Sunsari	763,487	371,229	392,258	845,555	409,542	436,013	931,436	449,583	481,853	1,001,863	482,241	519,622	1,064,015	510,514	553,501
Dhankuta	163,412	76,515	86,897	168,131	77,907	90,224	171,841	78,778	93,063	177,840	80,653	97,187	181,583	81,351	100,232
Terhathum	101,577	47,151	54,426	101,546	46,752	54,794	100,495	45,894	54,601	102,179	46,296	55,883	102,400	45,982	56,418
Sankhuwasabha	158,742	75,225	83,517	157,854	74,763	83,091	155,292	73,563	81,729	157,468	74,684	82,784	157,396	74,728	82,668
Bhojpur	182,459	86,053	96,406	169,139	80,205	88,934	152,216	72,643	79,573	146,236	70,330	75,906	137,302	66,555	70,747
Solukhumbu	105,886	51,200	54,686	104,415	50,738	53,677	101,726	49,728	51,998	102,627	50,527	52,100	102,017	50,597	51,420
Okhaldhunga	147,984	68,687	79,297	150,428	69,647	80,781	151,762	70,129	81,633	156,009	72,017	83,992	158,252	72,949	85,303
Khotang	206,312	97,092	109,220	190,100	89,221	100,879	169,630	79,442	90,188	161,957	75,750	86,207	150,888	70,456	80,432
Ydayapur	317,532	149,712	167,820	339,267	157,353	181,914	360,705	164,376	196,329	380,853	170,333	210,520	396,866	173,720	223,146
Saptari	639,284	313,846	325,438	679,548	331,589	347,959	719,000	348,788	370,212	758,110	365,767	392,343	789,309	378,481	410,828
Siraha	637,328	310,101	327,227	674,923	323,701	351,222	711,146	335,910	375,236	742,360	345,060	397,300	764,731	348,992	415,739
Dhanusha	754,777	378,538	376,239	803,785	401,225	402,560	852,097	423,481	428,616	899,589	445,384	454,205	937,881	462,324	475,557

Spatial Area	2011			2016			2021			2026			2031		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Mahottari	627,580	311,016	316,564	673,405	329,966	343,439	719,181	348,280	370,901	761,650	364,418	397,232	796,305	375,821	420,484
Sarlahi	769,729	389,756	379,973	838,695	426,143	412,552	909,891	464,317	445,574	972,362	498,909	473,453	1,026,572	529,667	496,905
Sindhuli	296,192	142,123	154,069	305,164	145,888	159,276	312,448	148,885	163,563	316,532	150,446	166,086	316,013	149,755	166,258
Ramechhap	202,646	93,386	109,260	206,653	95,308	111,345	209,248	96,659	112,589	215,563	99,843	115,720	219,189	101,794	117,395
Dolakha	186,557	87,003	99,554	187,584	86,595	100,989	186,871	85,376	101,495	190,693	86,221	104,472	191,845	85,724	106,121
Sindhupalchowk	287,798	138,351	149,447	292,370	140,296	152,074	294,736	141,258	153,478	302,978	145,161	157,817	307,316	147,157	160,159
Kavrepalanchok	381,937	182,936	199,001	394,229	189,619	204,610	404,549	195,590	208,959	420,013	204,367	215,646	430,608	210,895	219,713
Lalitpur	468,132	238,082	230,050	525,211	270,627	254,584	585,982	306,207	279,775	635,151	336,990	298,161	680,157	366,466	313,691
Bhaktapur	304,651	154,884	149,767	340,066	175,368	164,698	377,660	197,737	179,923	408,472	217,388	191,084	436,553	236,188	200,365
Kathmandu	1,744,240	913,001	831,239	2,011,978	1,059,270	952,708	2,300,890	1,219,538	1,081,352	2,522,103	1,347,388	1,174,715	2,729,056	1,469,787	1,259,269
Nuwakot	277,471	132,787	144,684	283,827	135,593	148,234	288,328	137,588	150,740	297,622	141,987	155,635	303,208	144,582	158,626
Rasuwa	43,300	21,475	21,825	44,399	21,733	22,666	45,200	21,818	23,382	46,687	22,212	24,475	47,572	22,259	25,313
Dhading	336,067	157,834	178,233	346,950	161,896	185,054	355,975	165,076	190,899	369,235	170,237	198,998	378,016	173,143	204,873
Makwampur	420,477	206,684	213,793	443,976	217,994	225,982	466,612	229,001	237,611	490,481	240,824	249,657	509,196	250,081	259,115
Rautahat	686,722	351,079	335,643	772,098	398,094	374,004	862,993	449,193	413,800	935,960	492,414	443,546	1,002,668	533,312	469,356
Bara	687,708	351,244	336,464	765,053	393,956	371,097	846,772	440,049	406,723	914,078	479,992	434,086	974,815	517,351	457,464
Parsa	601,017	312,358	288,659	663,559	348,603	314,956	729,291	387,666	341,625	784,922	422,676	362,246	834,768	455,464	379,304
Chitwan	579,984	279,087	300,897	644,219	309,247	334,972	711,629	340,970	370,659	766,462	366,865	399,597	815,116	389,630	425,486
Gorkha	271,061	121,041	150,020	259,299	115,022	144,277	243,272	107,225	136,047	221,898	97,224	124,674	194,728	84,748	109,980
Lamjung	167,724	75,913	91,811	170,568	76,862	93,706	172,158	77,270	94,888	176,971	79,174	97,797	179,487	79,997	99,490
Tanahu	323,288	143,410	179,878	336,710	147,965	188,745	348,724	151,798	196,926	363,278	156,659	206,619	373,551	159,399	214,152
Syanja	289,148	125,833	163,315	270,403	117,244	153,159	246,315	106,466	139,849	215,832	93,072	122,760	178,715	76,855	101,860
Kaski	492,098	236,385	255,713	543,767	263,777	279,990	597,988	293,247	304,741	643,183	319,275	323,908	683,513	343,537	339,976
Manang	6,538	3,661	2,877	6,444	3,757	2,687	6,284	3,804	2,480	6,364	3,993	2,371	6,537	3,978	2,559
Mustang	13,452	7,093	6,359	12,477	6,552	5,925	11,240	5,878	5,362	10,803	5,628	5,175	10,140	5,261	4,879
Myagdi	113,641	51,395	62,246	112,643	51,079	61,564	110,419	50,248	60,171	106,452	48,675	57,777	100,385	46,125	54,260
Parbat	146,590	65,301	81,289	148,130	65,814	82,316	148,448	65,821	82,627	151,999	67,319	84,680	153,537	67,901	85,636
Baglung	268,613	117,997	150,616	277,582	121,094	156,488	285,119	123,549	161,570	295,745	127,353	168,392	302,796	129,468	173,328
Gulmi	280,160	120,995	159,165	268,597	115,326	153,271	252,731	107,919	144,812	249,402	105,975	143,427	241,779	102,166	139,613
Palpa	261,180	115,840	145,340	255,386	112,189	143,197	246,206	107,113	139,093	246,502	106,222	140,280	242,885	103,540	139,345

Spatial Area	2011			2016			2021			2026			2031		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Nawalparasi	643,508	303,675	339,833	690,731	322,960	367,771	737,968	341,838	396,130	781,485	358,657	422,828	817,081	371,095	445,986
Rupendehi	880,196	432,193	448,003	982,851	480,673	502,178	1,091,034	531,671	559,363	1,177,926	572,340	605,586	1,255,541	607,988	647,553
Kapilvastu	571,936	285,599	286,337	625,522	312,276	313,246	680,984	340,112	340,872	728,693	364,445	364,248	770,155	385,674	384,481
Arghakhanchi	197,632	86,266	111,366	200,967	86,445	114,522	202,756	85,877	116,879	208,189	86,771	121,418	210,825	86,277	124,548
Pyuthan	228,102	100,053	128,049	236,540	102,446	134,094	243,816	104,220	139,596	248,726	104,895	143,831	250,142	103,895	146,247
Rojpa	224,506	103,100	121,406	232,419	105,445	126,974	239,145	107,135	132,010	248,289	109,800	138,489	254,389	110,864	143,525
Rukum	208,567	99,159	109,408	220,092	102,576	117,516	231,015	105,359	125,656	242,287	107,916	134,371	250,723	108,653	142,070
Salyan	242,444	115,969	126,475	259,309	122,969	136,340	276,060	129,778	146,282	291,865	136,043	155,822	304,669	140,649	164,020
Dang	552,583	261,059	291,524	605,796	283,469	322,327	660,742	306,187	354,555	706,858	324,393	382,465	746,519	338,861	407,658
Banke	491,313	244,255	247,058	554,630	275,149	279,481	621,921	308,048	313,873	674,817	333,999	340,818	722,827	357,398	365,429
Bardiya	426,576	205,080	221,496	456,547	217,438	239,109	486,334	229,428	256,906	514,332	240,343	273,989	537,038	248,276	288,762
Surkhet	350,804	169,421	181,383	387,858	187,876	199,982	426,673	207,480	219,193	465,096	227,306	237,790	500,484	245,858	254,626
Daitlekh	261,770	126,990	134,780	281,758	138,298	143,460	302,085	150,179	151,906	320,983	161,832	159,151	337,052	172,379	164,673
Jajarkot	171,304	85,537	85,767	186,375	93,667	92,708	201,913	102,242	99,671	215,652	110,154	105,498	227,559	117,280	110,279
Dolpa	36,700	18,238	18,462	39,832	20,066	19,766	43,058	22,009	21,049	45,955	23,862	22,093	48,477	25,577	22,900
Jumla	108,921	54,898	54,023	117,958	59,835	58,123	127,214	65,007	62,207	135,577	69,878	65,699	142,768	74,235	68,533
Kalikot	136,948	68,833	68,115	149,371	76,137	73,234	162,277	83,965	78,312	173,642	91,311	82,331	183,639	98,156	85,483
Mugu	55,286	28,025	27,261	60,109	30,950	29,159	65,102	34,072	31,030	69,571	37,057	32,514	73,489	39,838	33,651
Humla	50,858	25,833	25,025	55,261	28,254	27,007	59,800	30,810	28,990	63,841	33,181	30,660	67,340	35,315	32,025
Bajura	134,912	65,806	69,106	146,338	71,971	74,367	158,078	78,472	79,606	168,561	84,569	83,992	177,612	90,080	87,532
Bajhang	195,159	92,794	102,365	210,122	100,711	109,411	225,304	108,970	116,334	239,314	116,949	122,365	251,166	124,055	127,111
Achham	257,477	120,008	137,469	274,505	129,324	145,181	291,468	138,948	152,520	308,049	148,801	159,248	321,734	157,514	164,220
Doti	211,746	97,252	114,494	213,619	94,837	118,782	213,465	91,146	122,319	217,832	88,899	128,933	218,884	84,542	134,342
Kailali	775,709	378,417	397,292	870,771	422,917	447,854	971,320	469,848	501,472	1,050,982	506,649	544,333	1,122,577	539,044	583,533
Kachanpur	451,248	216,042	235,206	494,553	232,715	261,838	539,119	249,012	290,107	582,034	263,513	318,521	619,897	274,274	345,623
Dadeldhura	142,094	66,556	75,538	151,312	70,860	80,452	160,426	75,167	85,259	168,622	79,132	89,490	175,060	82,275	92,785
Baitadi	250,898	117,407	133,491	260,015	121,427	138,588	267,932	124,947	142,985	278,614	129,861	148,753	286,041	133,214	152,827
Darchhula	133,274	63,605	69,669	139,712	66,818	72,894	145,761	69,914	75,847	152,622	73,503	79,119	157,838	76,331	81,507

Glossary

<i>Absentee Population</i>	An individual absent from the household and gone abroad for more than six months before the census date.
<i>Age Dependency Ratio</i>	The ratio of persons in the ages defined as dependent (under 15 and over 60 years) to persons in the ages defined as economically productive (15–59 years).
<i>Ageing Index</i>	The number of persons 60 years and above per hundred persons under age 15 years.
<i>Age Specific Fertility Rate</i>	Number of births to women of a particular age group, in a specific calendar year, to the mid-year population of women in that same age group.
<i>Average household size</i>	Average number of usually residing population of a household. Total population of a specific area divided by the total number of household of that area provides average household size.
<i>Child Mortality Rate</i>	Total number of deaths of children aged one to four years during a specific year divided by the mid-year population of children aged one to four years.
<i>Crude Birth Rate (CBR)</i>	The total number of live births per 1,000 population in a given year.
<i>Crude Death Rate (CDR)</i>	The total number of deaths per 1,000 population in a given year.
<i>Children Ever Born (CEB)</i>	Total number of children born alive throughout the child bearing age (15-49 years) of a female.
<i>De' facto Population</i>	Consists of all persons who are physically present in the country or area at the reference date of census/survey, whether or not they are usual residents.
<i>De' jure Population</i>	Consists of all usual residents, whether or not they are present at the time of the enumeration.
<i>Economically active population</i>	Economically active population comprises all persons of age ten years and above of either sex who furnish the supply of labor for the production of economic goods and services as defined by the United Nations System of National Accounts during a specified time-reference period.
<i>Emigrants</i>	Persons who move out of a country for the purpose of establishing a new usual residence.

<i>Household</i>	Refers to a group of people who normally live together and share a common kitchen.
<i>Head of the household</i>	The person whether male or female reported by the household as being mainly responsible for the maintenance and management of the household. The person should be usual resident of the household and should be aged 10 years and above
<i>Immigrants</i>	Persons who enter into a country for the purpose of establishing a new usual residence.
<i>Infant Mortality Rate (IMR)</i>	Total number of deaths of children under one year of age per 1,000 live births in a specific period (normally one year).
<i>In-migrants</i>	Persons who move into a different area within a country for the purpose of establishing a new usual residence.
<i>Internal migration</i>	The movement of people within a country for the purpose of establishing a new usual residence.
<i>International migration</i>	The movement of people between and among countries for the purpose of establishing a new usual residence
<i>Labour force</i>	Population of age 10 years and above who are economically active. In labour force, persons employed and unemployed are included; and persons those are not seeking employment, housewives and students are excluded.
<i>Labour force participation rate</i>	The number of persons in the labour force (economically active) divided by the corresponding total number of persons (usually those 10 years and above).
Literacy	The ability to read and write in any language with understanding and ability to do simple arithmetic. Literacy pertains to persons at ages five years and above. In Nepal population aged five years and above who can read and write is considered as literate.
<i>Institutional Population</i>	Population reported to be residing in institutional residence/housing units such as barracks, hostels, cantonments, prisons etc. at the time of census.
<i>Life Expectancy (e_x)</i>	Represents the average number of years remaining to a person who survives to the beginning of a given age or age interval x.

<i>Life Expectancy at Birth(e_0)</i>	Number of years a newborn child can be expected to live under a given mortality condition of an area in a given year.
<i>Life Table</i>	A tabular display of life expectancy and the probability of dying at each age (or age group) for a given population, according to the age-specific death rates prevailing at that time. The life table gives an organized, complete picture of a population's mortality.
<i>Marital Status</i>	Refers to the personal status of each individual in reference to the marriage laws or socio-religious customs of the country. All persons except the single are ever-married persons. Information on marital status are gathered from all persons at ages 10 years and above.
<i>Median Age</i>	The age that divides a population into two numerically equal groups; that is, half the people are younger than this age, and half are older.
<i>Maternal Mortality Ratio (MMR)</i>	The number of women who die as a result of pregnancy and childbirth related complications per 100,000 live births in a given year.
<i>Maternal Mortality Rate (MMR)</i>	The number of women who die as a result of pregnancy and childbirth related complications per 100,000 female population of reproductive age in a given year.
<i>Migration</i>	Movement of people across a specified boundary for the purpose of establishing a new usual residence.
<i>Natural increase</i>	Population increase that is the result of births and deaths; growth occurs when the number of births in a given time period (e.g. a calendar year) exceeds the number of deaths; negative growth, or population decline, occurs when the number of deaths exceeds the number of births.
<i>Net Migration Rate</i>	Difference between in-migration and out-migration of a particular place, divided by the mid-year population of that place expressed in per 1,000 population. For international migration, difference between immigration and emigration is taken as numerator.
<i>Out-migrants</i>	Persons who move out of an area within a country for the purpose of establishing a new usual residence in a different area of the same country.

<i>Population Census</i>	The total process of collecting, compiling, evaluating, analyzing and publishing demographic, economic and social data pertaining to all persons in the country or in a well-limited territory.
<i>Population Change</i>	The difference between the size of the population at the end and the beginning of a period.
<i>Population Density</i>	Number of persons usually residing per square kilometer of land area in a specific spatial area.
<i>Population Distribution</i>	The patterns of settlement and dispersal of a population.
<i>Population Growth Rate</i>	The average annual rate of change of population size during a specified period usually expressed as a percentage.
<i>Population Projection</i>	Computation of future changes in population numbers, given certain assumptions about future trends in the rates of fertility, mortality and migration based on given base population size, structure and distribution.
<i>Population Pyramid</i>	Diagram, usually a bar chart depicting the distribution of a given population by age and sex. By convention, the younger ages are at the bottom, with males on the left and females on the right.
<i>Sex Ratio</i>	The number of males per 100 females in a population.
<i>Singulate Mean Age at Marriage (SMAM)</i>	The probability of being single (not married) cohort of the population below 50 years of age who have attained age of 15 years and above. It represents the mean age of persons' first entry into marital union (departure from single status).
<i>Total Dependency Ratio</i>	The number of persons under age 15 plus persons aged 60 or older per one hundred persons of age 15 to 59 years. It is the sum of the child dependency ratio and the old-age dependency ratio.
<i>Total Fertility Rate</i>	The average number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the age specific fertility rates of a given time period.
Usual place of residence	It refers to the place of residence of members of household where they were usually residing or their intention is to reside usually at that place in future days for at least six months and over.
<i>Youth dependency Rate</i>	The number of persons 0 to 14 years per one hundred persons 15 to 59 years.

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