NEPAL EARTHQUAKE 2015

A SOCIO-DEMOGRAPHIC IMPACT STUDY

(with Reference to 14 Most Affected Districts)

A Study Conducted by

the Central Department of Population Studies (CDPS)

Tribhuvan University

Kirtipur, Kathmandu, Nepal

for

the Ministry of Population and Environment (MoPE)

Singha Durbar, Kathmandu

with support from

the United Nations Population Fund (UNFPA)

and

the International Organization for Migration (IOM)

May 2016

Tribhuvan University
Central Department of
Population Studies

UNFPA

IOM • OIM

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May 2016

Hon. Jay Dev Joshi
Minister for Population and Environment

Government of Nepal
Singhadurbar,Kathmandu
Nepal

Ref. No.

Date: 19th March 2017

Foreword

The devastating earthquake of 25 April 2015 and large number of aftershocks had caused death of more than 8,700 our beloved, injured over 22,300 people and destroyed huge numbers of physical properties giving deep wound to all Nepalese people. Innumerable homes, public offices and heritage sites have been transformed into rubbles. The quake seriously affected multicultural and demographic landscapes.

Immediately after the devastation, the National Planning Commission (NPC) commissioned a Post Disaster Needs Assessment (PDNA) and the Ministry of Population and Environment (MoPE) carried out Rapid Environment Assessment (REA) aiming for assessing needs and the effects in environment respectively. The PDNA effort is well suited to help determine and quantify the extent of damage and loss caused by the earthquake. However, it was felt that the PDNA could not cover all **the socio-demographic impacts of earthquake** in households and communities, local capacities for response, recovery, and reconstruction. So, the then Ministry of Health and Population (MoHP) and now Ministry of Population and Environment (MoPE) commissioned a detailed study on Post-disaster Socio-demographic Impacts through its focal point, Central Department of Population Studies, Tribhuvan University (CDPS/TU) with support from United Nations Population Fund (UNFPA) and International Organization for Migration (IOM). The CDPS Team has successfully completed the task and brought the report in this shape.

I believe the findings and the recommendations of the study will be very useful in formulating effective policies and programmes for disaster resilience development and society in Nepal. The MoPE will take necessary actions to implement the recommendations put-forth here.

Finally, on behalf of the Government of Nepal and on my own, I would like to extend sincere gratitude to all for their incredible supports to us in building back better. Similarly, I would like to appreciate, acknowledge and thank all individuals including professionals, experts and activists and the institutions for their incredible time, energy and efforts in making the study success and producing this report. Thank you very much.

Jay Dev Joshi
Minister

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Government of Nepal
Ministry of Population & Environment

Date: 19th March 2017

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Foreword

After the tragic earthquake of April 2015 and the continuing aftershocks, the Government of Nepal, the then Ministry of Health and Population commissioned a detailed research study on Post-disaster Socio-demographic Impacts, led by the Central Department of Population Studies, Tribhuvan University (CDPS/TU) with support from United Nations Population Fund (UNFPA) and International Organization for Migration (IOM). The main objective of this research was to assess the socio-demographic impacts of 2015 earthquake and to recommend for more cost-effective and efficient government policies on population dynamics in post disaster context. Specifically, this study had aimed to explore changes in local socio-demographic situation (fertility, mortality, and population mobility) of the earthquake most affected 14 districts, in relation to impacts on vulnerable populations (women, men, children, adolescents, the elderly, and the persons with disabilities). In addition, it had also aimed to assess the changes in livelihoods, health situations in the disaster affected areas and the strategies the local communities have been adopting against disaster incidents.

This report indicates that the study team had tried to explore the magnitude and reasons for in/out migration, both voluntary and forced (internal displacement) after disaster and examined its long term socio-demographic impacts. I believe that the findings and recommendations stated in this report would be very important in reviewing and developing policies, planning interventions and implementing them for more disaster resilience development. In addition, it would be very useful in empowering local communities for disaster risk reduction too. The ministry will certainly consider the recommendations in its policy, plan and programmes.

I am pleased to expresses sincere thanks to leader and all the members of the study team, Advisory and Technical Committees members representing different ministries and organizations for their significant contributions during the study and developing this report. It is a good asset for policy maker, planner, researchers and all interested individuals.

I would like to extend my sincere thanks to Ms. Giulia Vallese, UNFPA Representative, Mr. Maurizio Busatti, Chief of the Mission, IOM for their supports to make this study success. I would also like to extend my special thanks to Prof. Dr. Ram Sharan Pathak, Head, CDPS/TU and his team for their commitment, hard work, wisdom and valuable time in bringing this report to light. Finally, I express my thanks to the all persons and institutions that have supported and contributed for this study and report. Thank you very much.

Dr. Bishwa Nath Oli
Secretary

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Central Department of Population Studies, Tribhuvan University (CDPS/TU) is very much obliged to the Ministry of Population and Environment, Government of Nepal (MoPE/GoN) and also the then Ministry of Health and Population (MoHP/GoN), United Nations Population Fund (UNFPA) Country Office, Nepal, and International Organization for Migration (IOM), Nepal for entrusting us to conduct this study "**Nepal Earthquake 2015: A Socio-demographic Impact Study (With Reference to 14 Most Affected Districts)"** along with a wide range of technical as well as financial support.

Thanks are due to Dr. Bishwa Nath Oli, Secretary, MoPE/GoN; Mr. Narayan Raj Timilsena, Joint Secretary, MoPE/GoN; Mr. Arun Gautam, Director, MoPE/GoN; and Mr. Ritu Pantha, Director, MoPE/GoN.

Our special sincere gratitude goes to Ms. Giulia Vallese, Representative, UNFPA; Mr. Bijay Thapa, Assistant Representative - Population and Development, UNFPA; and Mr. Tirtha Man Tamang, Program Officer - Population and Development, UNFPA for their time, support and valuable inputs provided to us throughout the study period. We are also equally obliged to Mr. Maurizio Busatti, Chief of the Mission, IOM; Dr. Meena Poudel, Advisor, IOM; and Ms. Prasuna Saakha, Project Officer, IOM for their active roles and effective support along with valuable inputs for this study.

Our sincere gratitude also goes to the Advisory and Technical Working Committees, and Consultants of the study for their time, support and valuable inputs.

All the local respondents interviewed and all the participants of focus group discussions and in-depth interviews were the key persons of this study. We extend thanks to all of them for their time, participation and support during the collection of information.

Finally, we are grateful to the Study Team, Associate Team Members, Research Assistants, Field Researchers/Surveyors, Field Monitors, and Admin Finance and Logistic Support Staff for their generous efforts at various stages in carrying out the study work during the entire period of the study.

Prof. Dr. Ram Sharan Pathak
Head, CDPS/TU & Study Director
(On Behalf of the Study Team)

Table of Contents

List of Tables

List of Figures

Acronyms

AI	:	ActionAid International [Nepal]
ANC	:	Ante-natal Care
ATCD	:	Agency for Technical Cooperation and Development
CBS	:	Central Bureau of Statistics
CDPS	:	Central Department of Population Studies
CMC	:	Centre for Mental Health and Counselling
CMR	:	Clinical Management of Rape
CNDRC	:	Central Natural Disaster Relief Committee
DaLA	:	Disaster and Loss Assessment
DDC	:	District Development Committee
DDRC	:	District Disaster Rescue Committee
DEO	:	District Education Office
DRM	:	Disaster Risk Management
DRR	:	Disaster Risk Reduction
FGD	:	Focus Group Discussion
GDP	:	Gross Domestic Product
GLOF	:	Glacial Lake Outburst Flood
GoN	:	Government of Nepal
HDI	:	Human Development Index
HIV	:	Human Immunodeficiency Virus
INGO	:	International Non-government Organization
IOM	:	International Organization for Migration
KII	:	Key Informant Interview
LAPA	:	Local Adaptation Plans for Actions
LWF	:	Luthran World Federation
MHT	:	Main Himalayan Thrust
MISP	:	Minimum Initial Service Package
MoHA	:	Ministry of Home Affairs
MoHP	:	Ministry of Health and Population
MoPE	:	Ministry of Population and Environment
NAPA	:	National Adaptation Program of Action
NDRF	:	National Disaster Response Framework
NFE	:	Non-formal Education
NGO	:	Non-government Organization
NPHC	:	National Population and Housing Census
NPR	:	Nepalese Rupees
NRRC	:	Nepal Risk Reduction Consortium
NSDRM	:	National Strategy for Disaster Risk Management
PDNA	:	Post Disaster Needs Assessment
PSU	:	Primary Sampling Unit
RCC	:	Reinforced Concrete Cement
SCF	:	See Change Foundation
SRH	:	Sexual and Reproductive Health
TLC	:	Temporary Learning Center
TU	:	Tribhuvan University
UNDAC	:	United Nations Disaster Assessment and Coordination
UNDP	:	United Nations Development Program
UNFPA	:	United Nations Population Fund
UNICEF	:	United Nations Children's Fund
UNISDR	:	United Nations Officer for Disaster Risk Reduction
VDC	:	Village Development Committee
WFP	:	World Food Program

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Executive Summary

Introduction to the Study

The April 25 earthquake in Nepal and the subsequent aftershocks resulted in losses not only in terms of lives and physical infrastructures but also of historical, social, cultural and economic aspects of the country and its population. Thirty-one out of the 75 districts of Nepal were affected by this devastation with 14 of them located in the Central and Western mountains and hills including Kathmandu Valley, and categorized by the Government of Nepal as the most affected[1]. An estimated 5.4 million people live in these 14 districts.

In order to carry out a Damage and Loss Assessment (DaLA), the Government of Nepal conducted a Post Disaster Needs Assessment (PDNA) in May-June 2015 under the broader concept of building back better. While the PDNA assessed the damages of houses and buildings as well as the post-earthquake needs using a globally accepted methodology, it did not really focus on the socio-demographic impacts of the earthquake, that is, how households and communities had been affected, the level of local resilient social capacity to respond and how recovery and reconstruction efforts could be made more responsive.

Against this backdrop, it was decided to carry out this study in order to assess the socio-demographic impacts of the 2015 earthquake, with a focus on cultural diversity pertaining to household settings including caste/ethnicity, population dynamics (fertility, mortality, migration), as well as population size, composition and distribution. The study was meant to contribute to more cost-effective government policies on population dynamics resulting from the post disaster context.

Methodology

The survey was conducted among affected households in the 14 districts using multiple approaches and both quantitative and qualitative techniques to measure the socio-demographic impacts of the earthquake. The CDPS/TU led the overall research and study design, fieldwork training, survey tool refinements, sample design, and data collection and management with technical support from MoPE, UNFPA, and IOM. The fieldwork was carried out during 20 November – 15 December 2015 with a total of 3,000 households surveyed, which was a statistically representative number.

- The survey used the list of earthquake affected households in VDCs/ municipalities in each of the 14 most affected districts as the sampling frame provided by the District Disaster Relief Committee (DDRC) through a screening survey conducted in August 2015.
- The Team covered 150 Primary Sampling Units (PSUs) determined through a scientific sampling method.
- The sample size was drawn from three domains: 7 'severely hit' districts, 4 'crisis-hit' out of the Kathmandu valley, and 3 'crisis-hit' within the valley[2].
- The sample size was determined at 3,000 households from 150 PSUs of 20 households each.
- To substantiate the findings of the quantitative survey, a team of trained researchers carried out 37 focus group discussions among community representatives, 43 key informant interviews, case studies and participatory observations.

[1] They are Bhaktapur, Dhading, Dolakha, Gorkha, Kathmandu, Kavrepalanchowk, Lalitpur, Makawanpur, Nuwakot, Okhaldhunga, Ramechhap, Rasuwa, Sindhuli, and Sindhupalchowk.

[2] Severely hit districts: Dhading, Dolakha, Gorkha, Nuwakot, Ramechhap, Rasuwa, and Sindhupalchowk; crisis-hit districts: Bhaktapur, Kathmandu, Kavrepalanchowk, Lalitpur, Makawanpur, Okhaldhunga, and Sindhuli.

Socio-Demographic Characteristics of Household Population

Agee-sex composition: The total population of 3,000 sampled households consisted of 14,987 people, of which 7,419 were males and 7,568 females. The sex ratio in the household population was found higher (98.0) than the national average indicating a similar trend, that is, a higher number of females. The economically active population aged 15-59 years was 65 percent whereas the total dependent population aged below 15 and 60+ years was reported at 25 and 11 percent respectively. The overall dependency ratio was estimated at around 54 percent.

Type of family: The proportion of nuclear households was the highest (61%) followed by joint and extended respectively. On average, the household size was estimated at 5.0. About one in five (19.6%) households consisted of more than six family members.

Caste/ethnicity: Nepal is known as a mosaic of diverse-caste ethnic groups. The study found, Tamang (26.3%), Chhetri/Thakuri (18%), followed by Newar, other Hill Janajatis, Brahmin and Hill Dalits[3]. These percentages are different from the national average given that the earthquake hit in particular the mid hills and the mountainous areas.

Changes in marital status: More than one-third of the total population aged 10 years and above (36%) was unmarried during the survey. The proportion of single people was higher among females as compared to male counterparts. The marital status of 88 household members out of 12,870 (aged 10 years and above) changed following the earthquake. The majority of these married women (59.1%) had become either widows or divorced/separated, followed by unmarried women (39.8%) who had married following the earthquake. By sex, more females had changed their status than males. By caste/ethnic composition, the change in marital status was highest among the Tamang community.

Literacy status and level of education: Out of 13,999 people surveyed aged 5 years and above, around 75 percent could read and write. This figure was 67 percent for females and 84 percent for males. Nearly one-third (29.1%) of the household members had completed primary education, followed by secondary (25.4%).

Occupational status: The highest percentage of the people surveyed were engaged in agriculture prior to the earthquake (34.3%) followed by students (27.9%) and household work (12.0%). Following the earthquake, two in five members of the entire households surveyed (43.6%) had changed occupation from agriculture to other types, such as wage labours and household works.

Psycho-social problems: Nearly 3 percent of the household members out of 14,987 reported suffering from psycho-social problems. Females (3.5%) were more affected than males (2.2%).

Citizenship certificate: A large majority of household members (88.5%) reported having a citizenship card; among them the proportion of males was higher (91.8% vs. 85.3% for females).

Conclusion

The sex ratio in the household population was higher than the national level. The economically active population was also higher. The proportion of nuclear households was nearly two-thirds. The marital status of several people, women in particular, changed following the earthquake. Overall literacy rate was around 75 percent which varied by gender. Following the earthquake the population involved in the agricultural sector had decreased. Appropriate measures need to be taken to address the psycho-social problems identified.

[3] Other Hill Janajatis include Gurung, Magar, Danuwar/Sunuwar, Kumal and Sherpa; and other include different caste/ethnic groups with small number of cases like Rai, Limbu, Majhi, Thami, Yakkha, Thakali, Baramo, Jirel, Khaling, Brahman (Tarai), Tharu and Rajbanshi.

Policy actions

- Take advantage of the fact that the economically active population is present in the affected districts; provide them with appropriate skills for and employment opportunities related to reconstruction activities. Connect this initiative to long-term economic and livelihood opportunities in order to prevent this age group from migrating.
- To respond to the changes observed in the marital status of females, including those under the age of 18, after the earthquake, conduct further analysis to understand the extent to which the changes affected adolescent groups belonging to specific caste and ethnic groups in order to inform appropriate interventions to prevent future early marriages in post-disaster settings.
- Recognizing that the earthquakes affected different communities disproportionately due to their different socio-economic statuses and geographical locations, take appropriate measures to ensure equity-based reconstruction support prevails over blanket interventions.

Stakeholders' Participation in Rehabilitation and Reconstruction

Rescue operations immediately after the earthquake: The people mostly involved in the rescue operations were family members, neighbours and community people. The majority of respondents (82.8%) stated that they did not receive help from outside their community, with the proportion being higher (88.8%) in crisis-hit areas compared to the Kathmandu valley (74.5%) and the severely hit areas (83.0%). The rescuers identified were Nepali volunteers both from governmental and non-governmental organizations, political parties and their affiliates. A key role was played by social groups such as *Gumba*, cooperatives and community-based users' groups.

Living status in shelter/camp: About 5 percent of the households surveyed were still living in shelter camps. Nearly Two-thirds (65%) of the households in the camp did not have adequate and appropriate places for accommodation.

Planning to build a new house: Over three-quarters (76%) of the households expressed their desire to build a new house with a large majority (81.2%) from severely hit districts followed by almost three-quarters (73.9%) in crisis-hit and nearly two-thirds (65%) in the Kathmandu valley. Six out of 10 households expressed that they would want to build a new house in a new place if government support was available. However, a large majority (87.3%) stated that they wished to build their house in their original place. Nearly half (48.9%) wished to build a new house in an area suitable for agricultural cultivation and livestock rearing.

Views on reconstruction: Nearly two-fifths (37.7%) of the people interviewed stated that it would be good if the new house could be built with *"all kinds of facilities provided",* while almost one third (29.8%) preferred to "*build a house with construction material being provided.*" Almost the same percentage (29.1%) stated that they wanted to be consulted on the reconstruction work of their communities.

"*We have heard that Nepal government has decided to provide NPR 200,000 to those whose houses have collapsed but we wonder when we will receive it.*"

- Communities from Gorkha, Okhaldhunga, Sindhupalchowk, Makawanpur and Rasuwa

Current situation of household assets: A change in toilet facilities was observed, with over 16 percent reporting that they had toilet facilities before the earthquake but no longer thereafter. These respondents were higher (22.1%) in the severely hit areas. Similarly, over 9 percent reported having no longer access to drinking water after the earthquake. Eight percent reported that electricity had been cut off.

Conclusion

The majority of immediate rescue was provided by family members but several community volunteers were also involved in the rescue works. Lack of adequate and appropriate living conditions was mostly felt as a need. Community members stated their strong desire and preparedness to build houses with monetary support from the government so that they could manage the materials by themselves. Changes have been observed in household utilities and public facilities as a consequence of the earthquake.

Policy actions

- Given that the early responders to the disaster were community members themselves, especially in remote crisis-hit areas, build the capacity of communities for disaster preparedness and rescue operations, ensuring the optimum participation of women and youth.
- Ensure that there are provisions at the community level, particularly in urban centers, for adequate open spaces and community housing and storage facilities where displaced community members can be temporarily housed and relief packages stored respectively as part of preparedness and response during an emergency.
- Acknowledging the preference expressed by the majority of the affected households in severely hit areas, consider providing a combination of monetary, technical, and skill-building support so they can build their houses and communities back better. As far as possible give priority to their original place of residence.

Social Impacts of the Earthquake

Impact on livelihood: More than half of the households (51.5%) reported not having any food in the evening of 25 April. The reduced food intake was higher for residents of severely hit and rural areas, for household headed by young people and other hill Janajatis and Dalits.

Impact on cultural practices: The main religious events and festivals include Dashain/Tihar, Lshosar, Christmas and Mhapuja. However, following the earthquake most of the earthquake affected communities stated that they celebrated these events merely as rituals.

"*The roles of the traditional organizations like Dharma Kirti Bihar during the rescue, relief distribution and rehabilitation were good.*" - FGD participants of Kathmandu

"*We are worried about the extinction of our Guthis*" - FGD participants from Satungal

A common Deity, known as Namrung, which is worshiped at Gorkha Municipality-4, Faslang, Gorkha was destroyed along with 36 houses of Magar community. The Temple receives a huge religious pilgrimage every year to be observed for three days. Communities seem to be accommodating towards observing some of their rituals.

"*We are worried on how we can resume worshipping the Namrung-Mai Deity.*"
"*We lost our Ghatu Nach* [dance observed for more than three months during spring] *due to the earthquake and resumed it just for two days in the aftermath of the earthquake.*"
- A key informant from Laprak, Gorkha

Impact on land endowment: Almost all households (96.6%) surveyed owned agricultural land. Relatively landless households were higher in Kathmandu valley (9%) compared to other areas. Seven percent of the households in urban areas did not have land. Nearly two-thirds of the households owned less than 0.5 hectares, with only 11 percent owning more than one hectare. The average land size of a household was 0.45 hectare.

Female headed families owned less than 0.4 hectares of land. The size of the damaged land accounted for over one-third of the total arable land which implies that land based economy was affected by the earthquake.

Impact on agriculture: About 86 percent of the households cultivated their land despite the earthquake. The major crops were paddy (60.1%), followed by maize (52.8%), and millet (45.3%). The major reasons for not cultivating included land damages and no interest to work in the field.

Impact on food security: Nearly one-third of the households (28.8%) reported to have all year-round food sufficiency from their own agricultural production. This was more pronounced in rural areas, male headed households, and households with older age structure and for families with a higher level of education. The situation was better for Brahman families followed by Chhetri/Thakuri and Tamang. Highly food-insecure families were from female headed households, families with a young age structure, families with all illiterate adults (15 years+) and those of Hill Dalits.

"*We have observed a decrease in food production in our communities. We have lost interest in cultivating our crops now.*" - FGD participants from Dhading

Buying and borrowing were the major strategies used by households that did not have enough food during the crisis period.

Impact on labour, employment and occupation: Three percent of the 12,870 household members aged 10 years and above had changed their usual occupation after the earthquake. The study found that about 17 percent of the households' traditional occupation was affected. Over 80 percent of the people interviewed reported resuming their usual occupation.

Conclusion

On the very day of the earthquake, more than half of the families did not have food and were fearful with psycho-physiological stress and appetite loss. Agriculture continued to be the major source of livelihood despite the effects of the earthquake. There was no enthusiasm or joy to celebrate festivals given the poor living arrangements, and often there was no separate place to perform the family rituals and worships. There have been changes on food security, labour, employment and occupation with variation by social groups, educational status, and place of residence.

Policy actions

- Given that the majority of communities across all affected areas depend on agriculture, strengthen this sector so it provides adequate food security and support micro-economic activities as a form of agricultural value chain in order to generate the cash income needed to sustain the daily lives of the affected populations.
- Considering that the majority of the affected populations belonged to communities that rely on traditional occupations and indigenous skills, conduct an in-depth study to assess the impact of community reconstruction and rehabilitation efforts on the preservation of such occupations and skills.

Impact on Education, Health and Elderly Care

Access to schools: Over six percent households with school aged children and adolescents reported that their children's education was completely affected in the aftermath of the earthquake. Among them, the highest proportion was from the Kathmandu valley (15.2%). The main reasons for not attending school were: fear of aftershocks and damage of school building (46.1% each respectively). The major educational impact to the children as per the responses received related to damages of schools and houses.

Alternate management of school system: Over 77 percent households reported that their children, were kept in temporarily built class rooms (TLCs) followed by 14 percent who reported that their children had been kept in damaged/cracked classrooms in the school. TLCs were more common in severely hit and in rural areas. Nearly two-thirds of children who changed school had moved to schools in the district headquarters (65%), with 35 percent in nearby cities with safe accommodations. Forty-five percent of the households changed school for the boys compared to 18 percent for the girls.

According to the participants of FGDs, children's education was affected for at least two months after the earthquake. Even after they were re-opened, the situation had not gone back to normal.

"*We are still afraid of sending our children to these almost collapsed school buildings. Both the teachers and the students are scared.*" -FGD participants from Nuwakot

Problems in TLCs: Children reported that since TLCs had no separate classrooms, there was a lot of noise coming from other classes. School teachers, parents and community people were of the view that children's learning attitude and cognitive development as well as their mental state was not yet conducive to better academic achievements.

Earthquake induced health problems and treatment: A total of 276 persons from 95 households had health problems following the earthquake with a higher percentage among Newar and Dalit families (4.7% and 4.4% respectively) compared to other social groups. Of them, 82 percent had physical disabilities, another 11 percent suffered from mental disorders and 8 percent had other health problems. Among them, 94 percent reported to have had medical treatment, with the majority of them (73.5%) in district headquarters. The cost of the treatment was borne by family and relatives (62.8%) followed by the government (31.9%).

According to the participants of FGDs and KIIs, earthquake survivors faced threats of disease outbreaks due to severe shortages of clean drinking water and toilets. With many people living out in open spaces, there was an increased risk of spreading diseases like diarrhea, respiratory diseases and measles outbreak.

"*There was no immediate support forthcoming from the local health service organizations.*"
- FGD participants from Khiji Phalate, Okhaldhunga

Disability: About two percent of the households included members with physical disabilities. Eighty-nine percent of these pre-dated the earthquake with 11 percent being disabled following the earthquake.

Child immunization: A main disruption in services was observed in children's immunization. Coverage of child immunisation was reported to have decreased by 58 percent.

Chronic illnesses and infections: The survey found persons living with HIV in three households, kidney patients in 38 households, cancer patients in 31 households, persons with chronic mental health problems in 77 households, chronic asthmatic patients in 284 households and persons with other chronic health problems in 134 households.

Psycho-physiological impact: The survey also highlighted the psycho-physiological impact and disruption of services among family members. This affected in particular antenatal care with irregularities in pregnancy check-up and challenges in supplying nutritional food for pregnant women and children.

Impact on elderly citizens: About six percent of elderly people out of 1,565 were reported to have sustained injuries. Forty-two percent of them received treatment with family support, 26 percent did not require it, and 17 percent received treatment which was paid through government subsidies.

Over 35 percent of the elderly were still scared by the trembling experienced during and after the earthquake, while over one-third were very scared by the earthquake when it first struck. The elderly were very worried about the survival status and overall condition of their son/daughters and grandchildren. They were worried about their vulnerability in case of loss of their caregiver sons/daughters. The major source of income and livelihood for the elderly consisted of social security allowances (42.9%) followed by agriculture and livestock income (26.9%) and family support (20.7%).

Conclusion

The earthquake affected the regular attendance of school going children because of fear of aftershocks and school damages, resulting in school drop outs. House and school damages caused a decline in students' motivation for learning and reading. While TLCs were identified as an alternative, there were problems in learning due to a lack of a conducive environment. The study also found some cases of earthquake-induced health problems, most of which were treated at the district headquarters. The study also highlighted a psycho-physiological impact among family members. A large number of elderly citizens were also affected.

Policy actions

- Noting the long disruption of educational services in the affected areas, restore a safe and learning environment with appropriate motivational activities to ensure regular school attendance, especially by girl students.
- Acknowledging that a disaster such as the earthquake has a significant effect on maternal, child, and mental health services, ensure that these services are an integral part, even priority area, of future health-sector disaster and response planning.
- Noting that senior citizens and people with disabilities suffered more physical injuries than other groups because of their limited mobility, ensure that the reconstruction and rehabilitation efforts prioritize infrastructures that are disability- and elderly-friendly.

Impact on Vulnerable Populations

Impact on women: Nine in every 10 female respondents had no feeling of insecurity before the earthquake. The feeling of some insecurity and fear had however, changed significantly as evidenced from the study whereby it had increased 10 times among female-headed households following the earthquake. Among them, women who were wage workers were more insecure compared to other women. By educational level, females with secondary level education felt more secure than others.

Problems in temporary settlements: Female respondents strongly reported the difficult situation they had faced after the earthquake. More than three out of five (62.5%) female respondents stated the discomfort they had experienced while taking meal, sleeping and living in a temporary place, a shelter/ camp and in their own cracked house. They reported that they had problems during menstruation (32.3%) and while changing clothes (34.6%).

Pregnancy: A total of 126 pregnant women were asked how they were coping with sleeping, living and resting. Only 8 of them (6.7%) stated that they had managed to find a separate place and warm clothes.

According to the FGD and KIIs participants, during the time of continued aftershocks, many pregnant women could not go for follow up checkups to the nearby health facilities. Most of the communities interviewed pointed out that they took some pregnant women to the nearby cattle sheds for delivery on dry hay grass. They added:

"*We could not give nutritious and hygienic food to eat when they* [pregnant and women in delivery] *were in acute need. We had to give them biscuits, noodles and water – nothing more.*"

-FGD participants from Kavre

Problems of toilet: The earthquake compounded additional risk factors for girls and women. Most of the toilet facilities could no longer be used given the damages to private and public buildings. The majority (63.1%) of the respondents reported that they had not found alternative solutions.

Violence against women, girls and children: Out of total 3,000 households, 9.4 percent reported incidences of gender based violence before the earthquake which was a bit lower (8.9%) afterwards (based on the information collected). Reports of sexual violence were higher in the severely hit and the crisis-hit districts than Kathmandu valley before the earthquake. There were more reports of gender and sexual violence in severely hit and crisis-hit districts than Kathmandu Valley both before and after the earthquake.

Despite the hardship faced, earthquake-affected people such as in Makawanpur initiated women and child friendly spaces, putting the value of children first, as an example of increased socialization and participation. Other initiatives included the formation of women's watch groups. Key informants in Makawanpur said,
"*If they had been established before, girls trafficking in the past could have been reduced.*"

Knowledge about awareness programs: About one-fifth of the respondents reported that they knew about programmes conducted prior to the earthquake related to awareness on the need to provide protection to children and women. Similarly, there had been awareness programmes on trafficking and children's and women's security organized in their community (18.3%) before the earthquake. However, very few of the respondents knew about awareness programmes aimed at minimizing the adverse activities in their communities before the earthquake. Despite the awareness raising programmes that took place in the post-earthquake situation, there were only limited initiatives to minimize child trafficking and security of children and women. Almost a similar percentage of respondents mentioned that they knew about awareness programmes related to protection of children and women (21.5%) and trafficking and security of children and women (18.8%) after the earthquake.

Similarly, some positive changes due to earthquake have also been felt by the community people. As they responded,
"*During the crisis, people have been found to be more united and fought against the immediate problems that surfaced.*" - Jirel community from Dolakha

Conclusion

The results of the study show that women, girls, children and some other caste/ethnic groups experienced various problems before and after the earthquake. Their needs are different from other groups of people. Special attention should therefore be paid to enhance women's capacity to manage risks, so as to reduce their vulnerability.

Policy actions

- Recognizing the fact that girls and women, particularly pregnant women, faced special problems and additional burdens while living in temporary shelters, ensure the provision of child- and female-friendly spaces and supplies that protect the dignity of girls and women in post-disaster situations.
- Given that a large number of toilets were destroyed by the earthquake, ensure that new houses include toilet facilities.
- Any future humanitarian response must go beyond the immediate provision of food and shelter. Reproductive health, including family planning and safe motherhood, as well as prevention of and response to gender-based violence should be priority issues. It is imperative to protect the dignity of women and girls and focus on empowering them to play a role in rebuilding their lives and communities as well as restoring their physical health and wellbeing.

Impact on Mortality and Fertility

Incidence of deaths: There were a total of 66 deaths due to earthquake in the sampled households. Of these, 29 percent were males while 71 percent were females. The age group of 60-74 accounted for 23 percent of the deaths followed by 18 percent for the group 45-59.

Maternal deaths: Of the total 47 women dead on the earthquake, 3 were pregnant and 5 had died within 42 days following delivery.

Availability of health services: Out of the total 2,203 married women in the age group 15- 49, only 149 (6.8%) reported that there was a gap in availability of health services. The health service provision was better in crisis-hit districts (87.9%) compared to Kathmandu Valley (79.2%). In total 93 percent of the respondents expressed that they were satisfied with the available health services, while 80 percent reported that they had access to information related to family planning, reproductive health and women health issues.

ANC visits: The percentage of women with regular ANC visits decreased by 7 percent following the earthquake. Reduction in ANC visits was higher (13.3 percentage points) in the Kathmandu valley compared to crisis-hit areas (5.7 percentage points).

Place of delivery: More deliveries took place in birthing centres after the earthquake. Before the earthquake the percentage of women who had delivered in a birthing centre was 55 in total, while the percentage increased to 72 after the earthquake. Home deliveries decreased from 43 to 21 percent which could be due to the destruction of homes forcing women to deliver elsewhere.

Number of children ever born: The average number of children ever born (CEB) in the sample household was 2.5, slightly lower than the national average (2.7). Kathmandu valley accounted for 2.0 and the crisis-hit and the severely hit for 2.6 each respectively.

Willing to have another child: One in five (20.5%) married women of reproductive age were willing to have another child but wanted to wait between one to more than five years.

Reasons for postponement of birth: Nearly one in five (18.3%) married woman of reproductive age reported that they were planning to postpone the next birth by at least one year due to the earthquake.

Earthquake and breastfeeding: There was an increase by almost 27 percent in breastfeeding mothers, that is, from slightly over two-thirds (68.7%) before the earthquake to 96 percent thereafter. The reasons for increased breastfeeding ranged from less involvement in activities outside the home to school closure.

Earthquake and loss of pregnancy: Altogether 115 women had experienced a pregnancy loss in the year before the earthquake while there were another 14 such losses after the earthquake. Only 6 cases were directly related to the earthquake.

Participants from the Danuwar community added that pregnant women had given birth before the due date. The Hayu community added,
"*They [pregnant women] have severely suffered from the growing cold during winter and were badly affected by the common cold*".

The Pahari community from Lalitpur highlighted some challenges brought out by the earthquake as during the delivery period women had to live in tents or out of the house in the cold winter. As such, it was very difficult and challenging for them to protect both the mother and the child, particularly their timely treatment, delivery care and support and care for the newborns. They added,

"*Some of the children were born during the time the earthquake was occurring and their timely care has been one of the most serious problems we have ever had in life.*"

Conclusion

More women than men died due to earthquake as they were at home and often attempted to save their children over their lives implying greater vulnerability to women due to their gender roles. There were evident gaps observed in the availability of health services. There was also a gap in ANC after the earthquake which could have adverse effects on women's reproductive health and childbirth. Increased institutional delivery, especially in birthing centres, was primarily due to lack of conducive environment for delivery at home. The children ever born (CEB) was slightly lower than the national average.

Policy actions

- Recognising that the number of antenatal care (ANC) visits made by pregnant women decreased after the earthquake in remote areas of the affected districts and that institutional delivery increased, integrate reproductive health services in the health service delivery through mobile health camps as part of preparedness and at the onset of any emergency and strengthen the capacity of birthing centres to manage emergency obstetric care services and referrals in disaster-affected areas.
- Disseminate information on the importance of antenatal care through FHCVs, radio and other communication channels.
- Given that married women of reproductive age in the affected districts expressed a desire to postpone their next pregnancy due to the earthquake, ensure that health-sector response and recovery programmes in disaster settings offer family planning services and raise awareness about the different contraceptive methods available.

Earthquake and Population Mobility

Displacement: Out of 3,000 households, about 3 percent (87 households) reported that their family members had been displaced due to the earthquake. The majority of households (4.2%, 67 households) were from severely hit districts. Similarly, 4.3 percent each from rural areas and nuclear families were displaced.

Reasons for displacement: A total of 340 members from 87 households were displaced in the study area due to the earthquake. There were two reasons for the displacement. Over 80 percent reported as main reason that their residence was unsuitable to live in due to landslides followed by nearly one-fifth (19.1%) due to their houses being completely damaged.

Place of destination: About 84 percent of displaced people moved from their place of origin to different villages followed by the same village or location (12%). The percentage of people displaced to different villages in the same district was more pronounced in severely hit districts.

Migration before the earthquake: A total of 221 households (7.4%) out of 3,000 reported that at least one member of their family had migrated during the last year before the earthquake and had not returned even once after the earthquake. About 9 percent households each from rural areas and joint or extended families had at least one member who out-migrated or emigrated. Similarly, 15 percent from female-headed households, 8.2 percent households with agriculture as main occupation and 10 percent households with member attending only primary education as highest educational attainment, that is, up to grade 5, had at least one member who out-migrated or emigrated.

Age and sex of the migrant population: A total of 301 persons from 221 households had migrated from their households during the last year before the earthquake. Males outnumbered females (80.7% and 19.3% respectively). By age group, almost half of the migrants (49.6%) were in the age group 20- 29 years, and 11 percent in the age group 30-44. The number of migrant population was higher among

males than females across all age groups except for the 15-19 age group (20.4% for females and 3.9% for males).

The trend of labour migration overseas in search for better work after the earthquake was highlighted by FGD participants from Nuwakot, Sindhuli, Kathmandu, and Sindhupalchowk. As they said,
"*We have observed households sending members abroad by taking loans from the banks.*"

The Dalit community from Dhading said that almost all the households in their communities were poor and thus they had no option but to migrate for foreign labour aftermath the earthquake. Those particularly from Sindhupalchowk, Makawanpur and Rasuwa added,
"*Many people went abroad; they have taken a loan of NPR 80 -100 thousand.*"

Remittances sent by migrants: About 60 percent of the households with migrant population reported that the members of their households that had migrated sent remittances to manage the crisis they were facing in their households following the earthquake. The average remittance was NPR 58,967. The highest amounts were in the Kathmandu Valley (NPR 89,647) and the lowest in other crisis-hit districts (NPR 38,964). The majority of households received remittances between NPR 25,001 to 50,000. In crisis-hit districts the majority of the households (45.5%) received remittances in an amount up to NPR 25,000.

Conclusion

The earthquake had a direct impact on population displaced due to fear of physical harm. Some indirect impact was also observed by those who had left their house for other livelihood opportunities. Moving to a safer place was priority for the displaced. Remittances constituted an important mean to manage the crisis for the affected households.

Policy actions

- Recognizing the fact that a significant number of people in the affected districts were displaced due to physical damage and landslides caused by the earthquake, formulate and implement an appropriate resettlement policy (returning to place of origin, rehabilitation in the current place of residence, or resettlement in a third place) to address the needs of the displaced population based on informed choice.
- Noting that the migrant members of affected households sent home a significant amount of remittances immediately after the earthquake, ensure that the government's reconstruction programme leverages household remittances to jointly fund "building back better" initiatives.

Chapter I
Introduction

1.1 Background

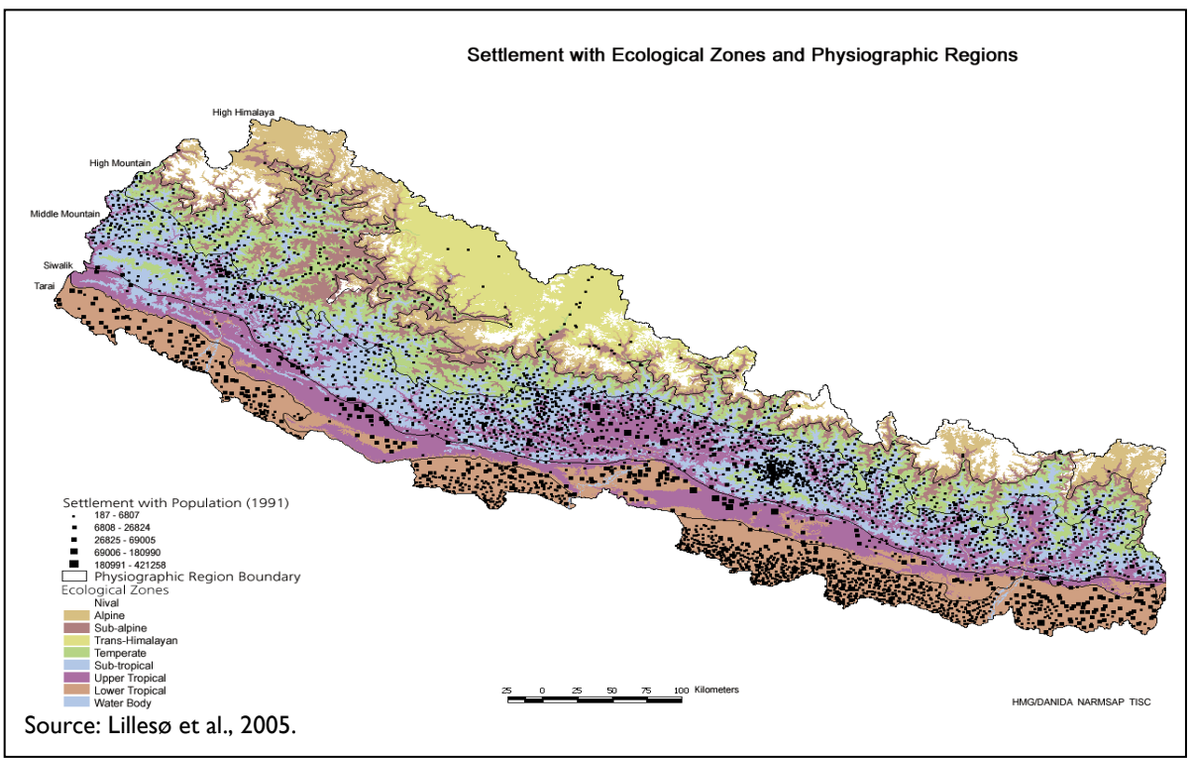
Nepal is located on the continent of Asia, a region which covers 143,351 square kilometres of land and 3,830 square kilometers of water. With a total area of 147,181 square kilometers, Nepal is the 94th largest nation in the world. It extends 500 miles along the central Himalaya between the longitudes of 80°East and 88°East and the latitudes of 26°North and 30°North (Gurung, 1989). It sits on the boundary of the two massive tectonic plates that collided to build the Himalayas (Sandiford et al., 2015), where ongoing convergence results in much seismic activity, even major earthquakes, for Nepal. Hills and steep mountains account for 86 percent of the total area, while the remaining 14 percent comprise the Tarai plains. Nepal's altitude ranges from a low of 67 meters above sea level in Kechana, Jhapa district, in the southeast to 8,848 meters on the top of Mount Everest, the world's highest mountain. Because the hills and steep mountains are characterized by fragile geological formations and Nepal's monsoon climate brings heavy rainfall, Nepal faces a wide range of geological and hydro-meteorological hazards (UNISDR, 2015), including landslides, debris flows, and floods.

Nepal is a disaster-prone country due to a variety of natural factors, including its steep terrain, rugged and fragile geomorphic condition, high peaks and slopes, volatile tectonic processes, and variable climatic conditions, as well as socio-economic factors like its largely rural settlement pattern, unplanned urbanization, increasing population, poor economic condition, unplanned settlement, and low literacy. Historical records show that Nepal has long suffered from various types of disasters: the entire country is prone to earthquakes; all elevations of Nepal's mountains are exposed to avalanches and landslides, the hilly areas, with their rough topography and very young geology, are very prone to landslides, debris flow, and sever flooding; and the lowlands are prone to floods, especially during the rainy season. In addition, avalanches, glacial lake outburst floods (GLOFs), and snowstorms are common in the High Hills and most rivers in the Tarai suffer from soil erosion. These disasters, along with lightning strikes, forest fire, and epidemics are frequent and cause enormous physical damage and loss of human lives. According to the United Nations Development Program (2004), 24 of the world's 49 least developed countries, including Nepal, face high levels of disaster risks. In fact, Nepal is ranked 11th most at risk from earthquakes and 30th most at risk from flooding.

According to the National Population and Housing Census (NPHC) of 2011, the total population of Nepal is 26.5 million living in 5.4 million households. By ecological region, the hills accounts for 47 percent of the total households, followed by the Tarai with 47 percent, and the mountains with one percent. Of the total population, about 85 percent reside in their own houses, followed by 13 percent in rented accommodations, 1 percent each in other arrangements, and in institutional houses, including barracks, hostels, monasteries, and the like. In urban areas, about 40 percent of households live in rented accommodations; of households which rent, about 59 percent are found in Kathmandu district (CBS, 2012).

With regard to the types of foundations of houses, mud-bonded bricks or stones account for 44 percent, followed by wooden pillars (24.2%), cement-bonded bricks or stones (17.6%), reinforced concrete cement (RCC) with pillars (9.9%), and mud-bonded bricks (2.3%). In urban areas 28 percent households are founded RCC with pillars. According to the 2011 PHC, the majority of households (41.4%), particularly those who reside in the mountains and hills, live in houses which have outer walls made of mud-bonded bricks or stones (CBS, 2012). This is significant as houses built with mud mortar are particularly vulnerable to several types of natural disasters, including earthquakes and floods.

Nepal's human development index (HDI) score in 2015 was 0.548, placing it in 145th position, in a state of low human development, far behind Norway, which, in first position with a score of 0.944, exhibits very high human development. Among nine South Asian countries, including Iran, Nepal ranks second to last (UNDP, 2015). Annual human development reports also estimated the population affected by natural disasters, defined as the average annual number of people requiring immediate assistance during a period of emergency as a result of a natural disaster, including displaced, evacuated, homeless, and injured people, per million people. For 2105, that figure for Nepal was 8,366 people (UNDP, 2015).

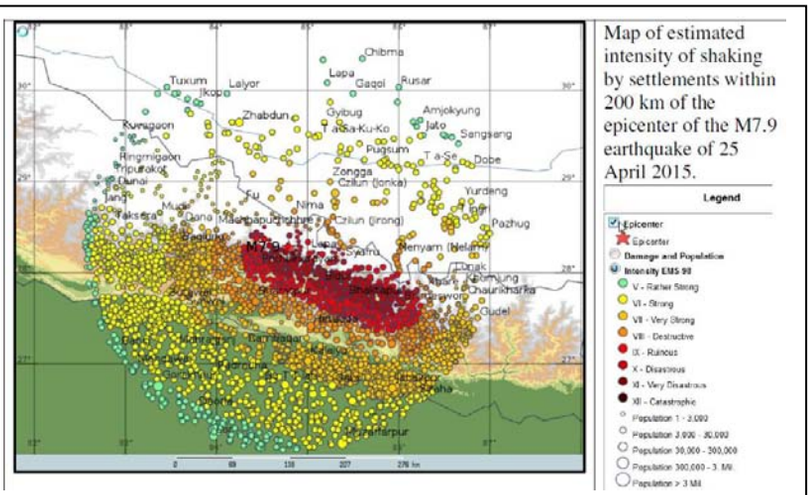


Source: Lillesø et al., 2005.

Regarding per capita disaster effects, in NPR per person among severely and crisis hit districts; Dolakha district hits the worse position (NRs. 255, 860) as Post Disaster Needs Assessment (PDNA) reported. Makawanpur district accounts for the least position (NRs. 43,760). On the hand, Kathmandu accounts for the highest HDI among affected districts, followed by Lalitpur and Bhaktapur, but very unlikely the disaster effects per capita is the least (Kathmandu, 49,495; Lalitpur, 52,765; and Bhaktapur, 78,770).

Nepal is a socially diverse nation: it comprises four different racial stocks, Caucasoid, Mongolian, Dravidian, and Austroloid (Dahal, 2014). There were 126 caste and ethnic groups in 2011. With about 17 percent of the total population, the Chhetri were the largest caste group, followed by the Hill Brahman (12.2%), Kami (4.8%), and Yadav (4.0%) (CBS, 2013), while the Magar, with 7 percent of the total population, were the third largest of any group and the largest indigenous nationality (*Janajati*). The Tharu (6.6%), Tamang (5.8%), Newar (5.0%), and Rai (2.3%) were the next largest indigenous nationalities. The Musalman, the only Islamic religious group in Nepal, comprise 4 percent of the total population. In 16 of Nepal's 75 districts, Mabuhang (2015) estimated, the combined *Janajati* population accounted for more than 54 percent of the total population, followed by hill caste groups (33.4%), and the Dalit (6.4%). Among the *Janajati,* the Tamang accounted for 19 percent, followed by Newar (16.6%), Magar (6.5%), and Gurung (3.9%), while among caste groups, Chettri accounted for 16 percent, followed by the Hill Brahmin (15.0%), Kami (2.9%), Sarki (1.9%), and Damai (1.4%) (CBS, 2012).

In addition to the sizable caste and *Janajati* groups mentioned above, Nepal is home to some numerically tiny groups, too; most of them are *Janajati*. The Chepang, the largest of these small groups, number 38,300 individuals; followed by the Majhi, 37,900; the Danuwar, 32,4000; the Sunuwar, 28,500, the Kumal, 26,600; the Thami, 25,200; and others. There are other six groups with populations not exceeding 10,000: the Pahari, Baramo, Hyolmo, Darai, Hayu, and Jirel. Very tiny groups of Dalits, including the Badi and the Gaine, with populations less than 5,000 also live in the affected districts.



Source: Byss, 27 April, 2015

When we take mostly agreed definition of disaster, it is an ability of a community to cope and to resist the outcomes of the events (geological and, meteorological). When we talk about the community, in the context of Nepal, it is heterogeneous by caste, ethnicity, and indigeneity at national level. But at community or village level, mostly a group is homogenous either of caste or ethnic groups. When disaster hits disproportionately, the affected community, a homogenous group is badly exposed, so as community set on strategies on how to resist or cope with the disaster cropped up. Thus from the very beginning how community has made maneuvering in rescue, in relief management and distribution up to how recovery and build a resilient society is very much important as far as recovery from the disaster is concerned. And of course, gender issues by sex, children and elderly by population structure are also very important as far as affected people or individual is concerned; and youth population largely absent in community level, and engaged in foreign labour and sending remittances to support the family is also a great relief for affected households and population.

1.2 Nepal's 2015 Earthquake

On Saturday, the weekly day of official holiday, on 25 April, 2015, a mega earthquake registering 7.8 on the Richter scale occurred at 11:56 A.M. just about as people were having their morning meal. One cannot imagine the human and physical loss that would have occurred if the earthquake had occurred when children were in school or at midnight. Estimates of the loss of lives and damage to physical properties released immediately after the earthquake varied. One eminent earthquake risk expert, Max Wyss (2015) published a fact sheet suggesting that if areas where the shaking intensity was greater or equal to 6 IMM were considered, about 22.8 million people and 2,288 settlements would be affected and that 57,700 would die. A more accurate prediction, using an average mortality rate of about 2 percent of the total population, would reduce that figure to 45,000 fatalities. The estimate of the UN Resident Coordinator[4] in Kathmandu was much lower: 8 million people in 39 districts, 2 million of whom lived in the 11 most affected districts and about 1.4 million of whom needed immediate food assistance. The fact that the estimations are discrepant is not surprising: individuals and agencies are more concerned with rescue and relief than with developing the sort of exact database a researcher needs.

[4] www.thelancet.com. Vol. 385 May 9, 2015.

The 25 April, 2015, earthquake had its epicentre in Barpak, Gorkha district, while the strongest aftershock which registered 6.8 on the Richter scale, had its epicentre in Sunkhani, a town on the border between Dolakha and Sindhupalchowk district. All of the houses in Sunkhani were destroyed (ATCD, 2015). The near continuous aftershocks following the main disaster caused huge human and property losses. The earthquake-hit regions included mountain and hilly areas, dispersed rural populations, densely populated towns, and the country's two largest cities - Kathmandu and Pokhara. People living in poor quality homes whose outer walls, roofs, and foundations were made of mud and stone bore the brunt of the disaster.

Regarding the effects of the earthquake and its aftershocks measured in terms of NPR per person in severely and crisis-hit districts[5], Dolakha district was worst off: there, the average loss was NPR 255,860 (NPC, 2015). Makawanpur district suffered least (NPR 43,760) of those districts. Of the affected districts, Kathmandu had the highest HDI, followed by Lalitpur and Bhaktapur but the per capita losses in these districts are also low (Kathmandu, NPR 49,495; Lalitpur, NPR 52,765; and Bhaktapur, NPR 78,770).

1.3 Disaster risk management

Comprehensive emergency management as a concept was introduced in 1979 by the National Governor's Association to address the need for inclusive emergency management policies and procedures (McEntire et al., 2002). It incorporates mitigation, preparedness, and response, and recovery activities and includes many of the different actors involved in disasters from the public, private, and nonprofit sectors. This sort of management acknowledges the diverse types of disaster agents that emergency managers have to deal with as well as the functional similarities among all hazards.

Disaster risk management (DRM) is the concept and practice of comprehensively reducing the risks of disasters through systematic efforts to analyze and reduce their causal factors. It is laid out in the Hyogo Framework for Action. Among the examples of DRM are reducing exposure to hazards, lessening the vulnerability of people and property, wise management of land and environment, and improving preparedness and early warning for adverse events are all examples of disaster risk management. Its expected outcome is the substantial reduction of disaster losses, measured in terms of both lives and the social, economic and environmental assets of communities and countries (UNISDR, 2009).

Nepal understands the critical need to ensure that all of its development plans and policies and their implementation mechanisms mainstream disaster risk management in order to save lives and secure development gains. It realizes the importance of proactively integrating disaster management into key development sectors to lead to a self-sustained and long-term reduction on disaster risks. However, in recent years, disaster risk and vulnerability have increased due to security issues, decreased livelihood opportunities, migration, displacement, and the limited access to and weak flow of information to the population displaced internally due to more than a decade-long conflict in the country (GoN/MoHA, 2009). In addition, on account of its multi-layered vulnerability, Nepal has witnessed an increase in the frequency and intensity of disasters—just those that are reported. Losses from low intensity, but extensive disaster events such as landslides, soil erosion, and thunderstorms, annually affect housing, local infrastructure, and large populations. In fact, local-level disasters are so frequent that many communities accept them as an innate part of their existence and, with varying degrees of success, simply learn to live with them. This increasing vulnerability of populations in both urban and rural areas in Nepal due to both socio-economic and natural factors requires an integrated approach to disaster risk management.

[5] A total of 31 of Nepal's 75 districts were affected by the earthquake. Fourteen of them, Gorkha, Dhading, Nuwakot, Rasuwa, Sindhupalchowk, Dolakha, Ramechhap, Kavrepalanchowk, Okhaldhunga, Makawanpur, Sindhuli, Kathmandu, Bhaktapur and Lalitpur were designated as most affected districts and among them 7 were severely hit districts.

For Nepal, managing disasters in the 21st century will require a concerted and integrated national effort which needs to be well-coordinated at all levels. Various government reports claim that the Government of Nepal has been working to reduce risks by mainstreaming disaster management into sectoral development. In doing so, it seeks to prevent the occurrence of disasters, mitigate their impact, and ensure that there is adequate preparedness to ensure an effective response. Despite the avowed commitment of the government to DRM, however, the preparedness and immediate rescue efforts it has shown in response to various natural and human-induced disasters have not been satisfactory.

What is needed is an effort to build resilience, or the ability of a community to cope and to resist the outcomes of disaster, whether geological, meteorological, or other type. At the national level, Nepal is heterogeneous by caste and ethnicity, but at the community and village levels, it is largely homogenous. When disaster hits a homogenous community disproportionately, it is badly exposed and must adopt strategies for coping with and resisting the disaster. How a community manages, from the period of rescue and the management and distribution of relief to recovery and building a resilient society, is very important in determining its overall wellbeing. And, of course, within any given community, gender issues as well as the specific issues of children and the elderly are also crucial, as is the fact that much of the youth population is working abroad and sends remittances to support the family. Such remittances are a great source of relief for affected households and populations.

1.4 Statement of the problem

The April earthquake induced many mass movements in mountainous areas, some of which resulted in landslide lakes, themselves a cause of secondary disasters. The mass movement and deformation of weathered soft soil cover were the main causes of the collapse of or heavy damage to buildings, and therefore the high rate of fatalities, in mountainous areas. In addition, the earthquake triggered a major avalanche on the southern slopes of Mt. Everest, located approximately 160 kilometers east-northeast of the epicenter, destroying Base Camp and killing at least 17 people and injuring 61 others (IRIS, 2015). The earthquake also triggered avalanches elsewhere in the Himalayas, some of which resulted in deaths. Nearby countries, including India, China and Bangladesh, were also affected enough to have had low casualties counts.

Of the 75 districts in Nepal, 31 districts were affected by the earthquake, 14 of them (Table 1.1), severely. The 14 are all located in the Central and Western development regions, which include Kathmandu Valley, and are home to about 5.4 million people (CBS, 2012; UNDAC, 2015).

Key infrastructures, including schools, health facilities, access roads, temples, and heritage sites, were damaged or destroyed, including over 1,000 health facilities ranging from primary health care centers to village health posts and birthing centers and about 32 percent of facilities providing specialized maternal and neonatal services. In addition, about half of the monuments and historic buildings within the Kathmandu Valley World Heritage Site and hundreds outside of it were destroyed. The loss of these sites represents a great loss to the living Nepali culture (PDNA, 2015).

In a meeting held on 20 May, 2015, the then Ministry of Health and Population (MoHP) decided to conduct a study on the socio-demographic impacts of the earthquake and possible measures to be adopted to assist the displaced and otherwise affected populations. The then MoHP held a series of meetings with the Central Department of Population Studies (CDPS)/Tribhuvan University (TU), United Nations Population Fund (UNFPA) and the International Organization for Migration (IOM) to draft the terms of reference for conducting a post-disaster impact study on the social and demographic situation in the 14 most earthquake-affected districts.

Table 1.1: Damage to infrastructure and population by the April 2015 earthquake

District	Damaged public buildings	Average HH size (2011 Census)	Estimated affected population	Current population (2011 Census)	% Affected population (14/05/15)	% Affected population (11/05/15)
Okhaldhunga	2,074	4.55	9,437	147,984	6	25
Ramechhap	26,743	4.62	123,553	202,646	61	39
Dolakha	48,880	4.08	199,430	186,557	107	11
Sindhupalchowk	49,933	4.32	215,711	287,798	75	67
Kavrepalanchowk	30,000	4.73	141,900	381,937	37	37
Lalitpur	16,344	4.26	69,625	468,132	15	15
Bhaktapur	18,900	4.44	83,916	304,651	28	10
Kathmandu	36,973	4.00	147,892	1,744,240	8	6
Nuwakot	57,943	4.69	271,753	277,471	98	51
Rasuwa	7,040	4.43	31,187	43,300	72	82
Dhading	43,741	4.55	199,022	336,067	59	27
Makawanpur	15,012	4.88	73,259	420,477	17	0
Gorkha	44,607	4.08	181,997	271,061	67	67
Sindhuli	12,704	5.14	65,299	293,173	22	7
Total	410,894		1,813,979			

Sources: NPC, 2015.

1.5 Rationale of the study

The strength of any post-disaster effort depends on how well recovery programs respond to the needs and dynamics of the affected communities. The PDNA used the internationally approved standard disaster-and-loss-assessment (DaLA) methodology to assess the damage and loss caused by the April 2015 earthquake. This methodology provides an overview of the damage, loss and macroeconomic impact of a disaster (World Bank, 2011). It tries to capture most of the 'what' and 'where' of a disaster response by identifying and quantifying the extent of damage and loss caused by the earthquake. It estimates the losses in social sectors (the affected population; housing and human settlements; education and culture; and health); infrastructure (energy; drinking water and sanitation; transport and communications); economic sectors (agriculture; trade and industry; tourism); and the overall cross-sectoral and macroeconomic effects of the disaster (environment; impacts on women; damage overview; macroeconomic impacts; and employment and income). This methodology uses government-endorsed national accounts and statistics as a baseline for assessment. In addition, the PDNA assessed human recovery needs, taking into account the impact of the disaster on human development and identified the resources needed for recovery and reconstruction in key sectors. The aim of this addition was to strengthen the disaster-and-loss-assessment methodology, making sure it assessed the human impacts of disasters.

In addition, the PDNA assessed human recovery needs, taking into account the impact of the disaster on human development and identified the resources needed for recovery and reconstruction in key sectors. The aim of this addition was to strengthen the disaster-and-loss-assessment methodology, making sure it assessed the human impacts of disasters.

Social impact analysis, a qualitative research methodology, can complement the disaster-and-loss-assessment and human recovery methodology used by the PDNA and provides a better understanding of the full impact of disaster on affected communities. By itself, the current methodology does not adequately identify three key matters: (i) cross-cutting issues, such as governance, social accountability, and negative coping strategies that do not fit neatly within one particular sector; (ii) the perspectives of affected communities and the key priorities and needs of vulnerable groups; and (iii) community dynamics and how they affect recovery. For example, the PDNA may have identified the resources necessary to rebuild schools and replace destroyed school equipment but overlooked other factors that prevent parents from sending their children back to school, such as a rise in the cost of transport or the need for children to work on farms because adult family members have died. Understanding how affected people relate to their past experiences

and why they adopt the survival strategies they do is critical for designing better recovery programs but these matters are difficult to gauge using primarily quantitative methodologies alone.

The PDNA consists of a comprehensive needs assessment for reconstructing and rebuilding the country under the broad concept of building back better. Using a globally approved methodology, the PDNA aptly assessed the physical damage to houses and buildings as well as post-earthquake needs. It did not, however, place much focus on understanding the socio-demographic impacts of earthquake, that is, how households and communities were affected, what the local capacity for response is, and how recovery and reconstruction efforts can be made more responsive. It also did not assess the harm to socio-demographic aspects of the human population, including impacts on the cultural diversity of households or on population dynamics, including fertility, mortality, migration, size, composition and distribution, all of which are the cornerstones of successful recovery, rehabilitation, resettlement and reconstruction. In addition, substantial information, both quantitative and qualitative, on vulnerable populations, including single-parent family households, women, children, older persons, persons with disabilities, and endangered communities is needed in order to be able to address their specific needs, priorities and concerns. Data on casualties due to birth-related complications, untimely death events, treatment-seeking conditions, medicine, and emergency care among the vulnerable are equally important for addressing their problems. Temporary migration, forceful displacement, and population shifts are sure to be forthcoming, but their consequences have yet to be assessed or analyzed.

Although the PDNA, with the significant contribution of the then MoHP, articulated information on the damage and losses due to the earthquake in the health sector well, the then MoHP has to focus particularly on the socio-demographic impacts and population dynamics in the most earthquake-affected districts during this crucial recovery period. In order to fulfill the above gaps in the PDNA, the then MoHP decided to conduct a detailed study on post-disaster socio-demographic impacts through its focal point, CDPS/TU with support from UNPF and IOM.

Although the impact of disasters in Nepal is certainly not limited to the earthquake or the 14 most earthquake-affected districts - after all, local-level disasters of many types are annual events right across the country - the survey described herein focuses on the socio-demographic impacts of the earthquake on Gorkha, Kavrepalanchowk, Dhading, Nuwakot, Rasuwa, Sindhupalchowk, Dolakha, Ramechhap, Okhaldhunga, Makawanpur, Sindhuli, Kathmandu, Bhaktapur and Lalitpur.

1.6 Objectives

The general objective of this study was to assess the socio-demographic impacts of 2015 earthquake in order to contribute to the development of more cost-effective government policies on population dynamics in a post-disaster context.

The following are its specific objectives:

- To explore the changes in the local socio-demographic situations (fertility, mortality, and population mobility) of the most earthquake-affected 14 districts that were caused by the earthquake specifically in relation to the impacts on vulnerable populations (women, men, children, adolescents, older people, and the persons with disabilities);
- To identify the likely reasons for changes in livelihoods and health (special as well as chronic health conditions) in post-disaster areas as well as the coping strategies that communities have adopted;
- To study the magnitude and reasons for in/out migration flows, both voluntary and forced (internal displacement), after disaster and examine its long term socio-demographic impacts;
- To contribute to more cost-effective government policies on disaster mitigation, preparedness and recovery for vulnerable populations.

1.7 Guiding principles for the socio-demographic impacts study

This socio-demographic impact study adhered to guiding principles similar to those adopted by the PDNA,[6] principles which build on Nepal's recovery vision and encourage reforms to achieve resilient and inclusive growth; focus on the most vulnerable and aim at improving livelihood opportunities and public services; assess the differentiated impacts on men, women, children and the most vulnerable of groups and address these impacts accordingly in the recovery strategy; provide a basis for objective resource allocation among competing recovery priorities in a transparent process; cover all affected districts and areas, placing a differentiated emphasis on rural and urban areas; and prioritize rebuilding needs that correspond to relative development achievements across regions and districts, as well as persisting disaster and climate risks.

1.8 Limitations of the study

Although 31 districts of Nepal were directly impacted by the earthquake of 25 April, 2015, and its aftershocks including two major tremors felt on 26 April and on 12 May, this study considered only seven severely hit and seven crisis-hit districts, as categorized by the PDNA. Though earthquakes - and their impacts - obviously do not observe political boundaries, due to time and resource constraints on the one hand and the mandate the then MoHP on the other, the study used the district of its unit of study. That said, though the conclusions drawn from this study are based on just 14 districts, the impacts of the earthquake on social and demographic phenomena in these districts is likely to be representative of the impacts on all the affected districts.

The lists of affected households provided by the respective District Disaster Rescue Committees (DDRCs) could have resulted in the under-representation of the issues to be measured; for while the selected primary sampling units (PSUs) ought to have been affected households, they might have ended up on the list due to political reasons. In fact, at least eight PSUs had to be changed after the study team discovered that they had not been affected by the earthquake.

Since affected households were largely interested in recovering their houses and resuming their usual activities and inherited social, physical, economic and cultural lives, they were more concerned about reporting on the destruction they had experienced than on societal and population dynamics like pregnancy, birth, and marriage.

Some of the direct and indirect impacts of the earthquake reported by the media and other sources of information, including gender-based violence, human trafficking, and psycho-social issues, were not explored in this study because its representative sample design is not suitable for studying impacts such as these, which require anthropological approaches to and techniques of data collection.

1.9 Organization of the report

This report comprises 11 chapters. The first three chapters present context, review and methodology of the study respectively. Chapter IV analyzes the socio-demographic characteristics of the household population that served as variables to cross-analyze the main themes of the study. The participation of stakeholders in rehabilitation and reconstruction and the social impacts of earthquake are the subjects of chapters V and VI respectively. Chapter VII presents more impacts, particularly on education, and health and elderly care. Chapter VIII presents issues related to vulnerability caused by the earthquake, while Chapter IX presents findings on mortality and fertility, and Chapter X, findings on population mobility. Conclusions and recommendations of the study are presented in Chapter XI.

[6] As laid out in its terms of reference.

1.10 Definition of key terms

Damage: Literally known as physical harm that impairs the value, usefulness, or normal function of something. In this study damage denotes the physical harm occurred due to the devastating earthquake on 25 April 2015 and the consecutive aftershocks.

Disaster: A sudden accident or a natural catastrophe that causes great damage or loss of life. In this study the devastating earthquake is considered a sudden, calamitous event that seriously disrupted the functioning of a community or society and causing human, material, and economic or environmental losses that exceed the community's or society's ability to cope using their own resources.

Fertility refers to "the number of live births women have" and differs from fecundity, which is the physiological capability of women to reproduce. Fertility is directly determined by a number of factors which, in turn, are affected by a great many other factors: social, cultural, environmental, economic, and health (PRB, 2011). Fertility in this study is associated with the effect due to the earthquake and not a measure as such that takes longer time reference period.

Forced migration: Migration typologies often characterize population movements by the degree of choice involved in the decision to leave home. On one end of the spectrum, "voluntary" migrants exercise maximum choice when they head for new horizons, most often for economic reasons, while at the other end "involuntary" migrants exercise no choice when they are forced out of their homes. Over time, however, this bipolar view of population flows has been deemed overly simplistic. In reality, "few migrants are wholly voluntary or wholly involuntary. Almost all migration involves some kind of compulsion; at the same time almost all migration involves choices" (Van Hear, 1998: 42).

Forced migration flows occur because of a variety of causal factors, including persecution, natural and industrial disasters, development projects, environmental degradation, war and conflict, ethnic discrimination, etc. A number of paradigms have been produced in an attempt to capture the full range of these causes (Van Hear, 1998). In general, though, the two categories of forced migrants most often discussed in the literature are "refugees" and "internally displaced persons" (IDPs).

Impact: Literally, the word impact denotes "…the action of one object coming forcibly into contact with another." In this study, an impact of the earthquake is termed as the change observed between the time of the earthquake and prior to one year of the quake.

Mortality: is the "relative incidence of death within a particular group categorized according to age or some other factor"[7] such as due to earthquake of 25 April 2015 and its aftershocks in Nepal. It refers to deaths that occur within a population. The probability of dying during a given time period is linked to many factors, such as age, sex, race, occupation, and economic status. The incidence of death can reveal much about a population's standard of living and health care (PRB, 2011). The concept used in this study is concentrated more on the effect and not its measures which require a longer period of time to derive a meaningful calculation and come to a plausible result.

Population mobility: Literally, mobility refers to the movement of people from place to place, or job to job, or social class to social class. Population mobility refers to the geographic movement of people where there has been a change in the place of usual residence. Migration and mobility are being used synonymously in this study.

[7] Read more: http://www.businessdictionary.com/definition/mortality.html#ixzz46b5nbh7j.

Reconstruction: Termed literally as the act or process of building something that was damaged or destroyed again. Reconstruction is the process of putting something (such as a country) back into a good condition, which is popularly known as *building back better* in the context of Nepalese devastating earthquake.

Socio-demographic Impact: Social impacts and any natural catastrophes include psychosocial, socio-demographic, socioeconomic, and sociopolitical impacts. Such impacts can develop over a long period of time and can be difficult to assess when they occur. Despite the difficulty in measuring these social impacts, it is nonetheless important to monitor them because they can cause significant problems for the long-term functioning of specific types of households and businesses in an affected community. A better understanding of disasters' social impacts can provide a basis for pre-impact prediction and the development of contingency plans to prevent adverse consequences from occurring (Lindell & Prater, 2003). In this study, impact of earthquake is defined as the impact on demographic characteristics of the affected population, mainly on fertility, mortality and migration as well as impact on social sectors connected with livelihoods, assets loss, employment change and change in social functioning.

Vulnerable populations: Vulnerable populations include the economically disadvantaged, racial and ethnic minorities, the uninsured, low-income children, the elderly, the homeless, those with human immunodeficiency virus (HIV), and those with other chronic health conditions, including severe mental illness. It may also include rural residents, who often encounter barriers to accessing healthcare services. The vulnerability of these individuals is enhanced by race, ethnicity, age, sex, and factors such as income, insurance coverage (or lack thereof), and absence of a usual source of care. Their health and healthcare problems intersect with social factors, including housing, poverty, and inadequate education.[8]

Household populations: The members of any given household share a common kitchen and usually live as a family. Members who do not live with the rest of the family include members who send remittances (or are looking for work with the intent of doing so) as well as those, like students, who gets economic support from the household. All household members might not have been home at the time of the survey as they may have gone to visit relatives or been on a business trip, but the expectation is that an absent member of a household will return. Under this definition, a domestic worker who shares a common kitchen is also a member of the household, as is a married woman who is living in her maternal home and does not intend to return to her husband's home.

Study domains: The current study was carried out in the 14 most earthquake-affected districts of Nepal. These districts were classified into three domains: seven districts classified as "severely hit" by the PDNA, four "crisis-hit" districts outside of Kathmandu Valley, and the three crisis-hit districts inside Kathmandu Valley (NPC, 2015).

Place of residence: Nepal comprises 75 districts, under which there are 217 municipalities and 3,157 village development committees (VDCs). This study considers these municipalities, some of which were very recently so designated, as urban places of residence and VDCs as rural places of residence.

Literacy and education: The definition of literacy in Nepal has changed over the years. Earlier censuses defined literacy as the ability to read and write, but the most recent census of 2011, adopted a definition which includes three distinctions: 1) can read only, 2) can read and write only, and 3) cannot read or write. This study elected not to use either of these definitions but its own modification, as shown below.

[8] See more at: http://www.ajmc.com/journals/supplement/2006/2006-11-vol12-n13suppl/nov06-2390ps348-s352#sthash.wYtHdDQe.dpuf

Table 1.2: Definition of education and levels

Educational status	Definition
Non-formal	Those who can read and write but never went to school
Literate	Those who can read and write with understanding in any language
Primary	Those who have completed up to grade five)
Secondary	Those who have completed grades six to ten
Higher secondary	Those who have passed the School Leaving Certificate (taken after grade ten) and/or have passed the intermediate level ("10+2" or "plus two")
Bachelor and above	Those who have completed a Bachelor's or other more advanced degree

Type of family: Operationally, a family is defined by a set of relational criteria, for example, descent, affinity, and consanguinity, whereas a household is defined by its activity throughout a 24-hour period. While the concepts of a joint household and a joint family are somewhat ambiguous, in Nepal there is no difference between the two. A joint family (joint household) covers several generations: the sons of one family bring their wives to this unit, produce children, and stay together until the death of their father or even longer. The conjugal (nuclear) family is the basic building block of a joint family: it comprises any two of the following three elements: husband/father, wife/mother, and child. A nuclear family consists of a single conjugal unit; a joint family contains two or more conjugal units, but with no more than one per generation; and an extended family contains two or more conjugal units, at least two of which are in the same generation.

Social composition in the study areas: In its social composition, two terms need to be defined, caste and ethnicity. The last name or the family name reflects a person's caste and ethnic status or the distinct cultural identity of a person. In Nepal, the term "caste" can be understood in terms of Dumont's model (1970) - it is a country whose social structure is hierarchical and strongly imbued with the Hindu religious values of purity and impurity and where any given person can be placed somewhere along the spectrum form bottom to top (Dahal, 2014). The term "ethnicity" encompasses a variety of cultural attributes, including a collective name, a common myth of descent, a shared history, and an association with a specific territory (Smith 1986). In this sense it is an inbuilt position associated with certain kinds of status and rights by birth. The term caste basically refers to Dumont's model (1970) of those groups whose social structure is hierarchical and strongly embedded in the Hindu religious values of purity and impurity. Almost all Hindu groups of Nepal such as Brahman, Chhetri, Sanyasi, Maithil Brahman, Rajput Kayastha and Dalits (so-called "untouchables") come under the "caste" category. The term "ethnicity" encompasses certain kinds of cultural attributes such as a collective name, a common myth of descent, a shared history and association with a specific territory (Smith, 1986). Almost all Adibasi/Janajati groups of Nepal fall under this definition.

Sex of household head: The household head is the main person in a household; he or she generally lives in the house, takes responsibility for household income and expenditure, and makes about all family-related matters. The household head can be either male or female.

Occupational status: The census of 2011 uses the International Labour Organization's definition which says that populations aged 10 years and above are economically active, who were economically active at some time during the last year preceding the enumeration (ILO, 1990). Employed persons are the populations aged 10 years and above who were employed for more than six months during the last year preceding the enumeration. Occupation is the sector in which those who were usually economically active for six months or more were involved. This study also uses the same notion and asked population 10 years and above generally prior to the earthquake and after the earthquake

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Chapter II
Review of the Study

2.1 Introduction

With the aim of exploring changes in the local socio-demographic situations (fertility, mortality, and population mobility) of the 14 most earthquake-affected districts caused by the earthquake of April 25, 2015, especially in relation to its impacts on vulnerable populations (women, men, children, adolescents, older persons, and persons with disabilities), this study was conducted by the Central Department of Population Studies (CDPS) for the Ministry of Population and Environment (MoPE) with the financial support of the United Nations Population Fund (UNFPA) and the International Migration Organization (IOM). Along with documenting socio-demographic changes, including changes in livelihoods, health, and coping strategies, the study suggests the reasons for those changes. Since disasters may provoke unwanted and unprecedented migration, the study also focused on assessing the scale and drivers of migration in the post-disaster situation.

The study focused on two impacts of the earthquake: that on social conditions and that on the demographic situation. How disaster is related to social structure and demographic dynamics is its main focus.

2.2 Earthquakes and population dynamics

Studies of disasters and demographic impacts are limited, but the few that exist suggest that disasters have negligible demographic impacts on American communities (Friesma et al., 1979; Wright et al., 1979). A disaster has an immense impact at the time of it occurs, but it is very difficult to measure its impact immediately after it happens as its real impacts become apparent only after a certain time period has passed. Donner et al. (2011) argue that increasing threat does not only reflect the onset of the event, such as an earthquake or flood, but also changing demographics and socioeconomic characteristics of the population. For example, a large, violent tornado passing through an open field presents less danger than a relatively weak tornado that passes through a densely populated area, putting at risk human life and causing great economic losses. While the intensity of a disaster is important, of equal or greater importance is the presence of a vulnerable population whose demographic or socioeconomic characteristics place its members at great risk of harm before, during, and after the disaster.

Most of the available literature focuses on the psychological effects and suicidal behaviours associated with the impact of earthquakes on affected populations. The results indicate that post-traumatic stress disorder and depression were risk factors in suicidal thinking and that psychological effects were most marked among females, the young, and those of low socioeconomic status (Lo, 2010). Being alone was another risk factor that resulted in affected people being emotionally distressed or depressed, but elderly survivors tended to report fewer complaints than younger ones (Salcioglu et al., 2003).

The dynamic relationship between demography and economy has been of interest to social scientists ever since Malthus proposed his economic theory of population growth in the late eighteenth century. This relationship is still of concern to use today as we consider the negative impacts of natural calamities on populations. Very clearly, the 25 April, 2015, earthquake and its aftershocks have had a decided effect on Nepal, so it was wise of the Government of Nepal to commission this socio-demographic impact study to find out exactly what it was.

The available literature shows that individuals behave differently under conditions of instability, risk, and uncertainty than they do under conditions of certainty. Ample empirical evidence suggests that household-level income volatility leads to lower investment in both physical and human capital at the

micro level, and that economic volatility leads to lower government spending and lower mean growth at the macro level (Blattman et al., 2007). Instability is also likely to affect fertility decisions: just as individuals in an unstable economic environment may be less willing to invest in capital, individuals in volatile natural environments may be less willing to invest in bearing children. If natural disasters cause a decrease in fertility because they make families reluctant to invest in having children, risk-sharing policies such as disaster insurance can help mitigate these effects.

Dyson (1991) found a reduction in the rate of conception prior to a famine even without a major rise in the death rate, perhaps due to conscious planning during periods of mounting adversity preceding a famine. Similarly, Boyle and Grada (1986) report that during the onset of the Great Irish Famine of 1845–1849, the fertility rate dropped to 75 percent of its pre-famine level and remained at this level for the duration of the famine. In their study of Angola et al. (2002) found evidence of a wartime drop in fertility. In their study of Cambodia et al. (2007) find a one-third decline in fertility during the Khmer Rouge regime, under which 25 percent of the Cambodian population died with fertility, particularly marital fertility. In Japan, tsunamis had a robust negative association.

Lin's 2010 study of the demographic, economic, and disaster data for Italy (1820–1962) and Japan (1671–1965), countries chosen for the availability of regional-level data, the prevalence of natural disasters, and the need for a country each from Europe and Asia, revealed that short-run economic volatility had a significant negative association with fertility in Italy, but no association in Japan. Lin's choice of two naturally disaster-prone countries, one from Europe and one from Asia, enabled her to build upon Jones' 1981 theory that differences in fertility behaviour in Asia and Europe were a result of differences in the prevalence of natural disasters, not differences in culture, society, history, or politics, and, therefore, that any other society subjected to the volatility of the Asian environment would have responded as Japan did. Earthquakes had a robust negative association with fertility and the birth rate in Italy. For example, just one additional earthquake in the previous 20 years decreased the crude birth rate by 24 births per 100,000 people. Relative to the mean crude birth rate for Italy over the total time period (1880–1962), 26.5 per 1000, this was about one percent decrease (Lin, 2010).

2.3 Earthquakes and social impacts

"Disaster" is a vague term that is not easy to define. That said, a disaster is an event that can be designated in time and space (Kreps, 1985) and that has an impact on social units, which, in turn, respond to this impact. Most social scientists refer to actual or possible disaster in terms of the physical impacts of or problems caused by unplanned and socially disruptive events. The most visible features of disasters are the physical and social harm they cause, the fact that they strike suddenly, and that something can be done about them either before or after they happen (Perrow, 1984). Fritz (1961) points out the mutual relationship between social structure and disasters:

> [Disasters are] events in which societies or their larger subunits (e.g., communities, regions) incur physical damages and losses and/ or disruption of their routine functioning. Both the causes and effects of these events are related to the social structures and process of societies or their subunits (p. 312).

This discussion reveals the four core properties of a disaster: (1) it is an event (natural, technological, or social) that can be observed in time and space; (2) it has impacts (physical damage and losses incurred by a social unit that disrupt its routine functioning); (3) those impact are on social units as small as individuals and households as well on higher levels of aggregation; and (4) those impacts galvanize the social units to enact responses (demands created by an actual or possible event and its impacts and the continuing requirements of sustaining a viable social system). Current disaster research is creating a taxonomy of disaster related to the above four properties; with them, a disaster can be identified and measured as physical, temporal, or social. Any given event can be characterized by their energy release (physical), their periodicity (temporal), or their formal declaration as a disaster (social) (Kreps, 1984).

2.3.1 Earthquake events in Nepal

Kathmandu has a long history of destructive earthquakes: at least 10 major earthquakes feature in historical records dating to the 13th century. The 1255 event that destroyed Kathmandu with surface ruptures in central and western Nepal was followed by the 1344 Kathmandu event, which ruptured the surface as far away as Kumaon (Mugnier et al., 2013). The biggest earthquakes occurred in the Kathmandu basin in 1934 (Mw 8.1) and 1833 (Mw 7.6). The 1934 earthquake induced strong shaking in eastern Nepal and even in Bihar Province of India. It killed 20 percent of the population and damaged 40 percent of all the buildings in Kathmandu Valley. The 1833 event was preceded by two foreshocks that drove people outdoors in alarm, thus reducing the loss of life. The main 1833 earthquake was recorded throughout the region, from Tibet to the Ganga plain. It affected regions in Tibetan located north of Kathmandu very badly.

The present-day structure of the Himalaya results from the progressive under-thrusting of the Indian tectonic plate along the Main Himalayan Thrust (MHT) beneath the Tibetan Plateau. Great earthquakes (with magnitudes exceeding Mw 8) have periodically ruptured segments of the brittle upper part of the MHT several hundred kilometer long. A major question as yet unanswered is whether an earthquake of the magnitude of the 1934 earthquake releases all the strain stored by the Tibet-India convergence during the preceding inter-seismic period and only that strain or whether it can also release a background store of energy that remained unreleased through one or more earlier earthquakes and so potentially engender a giant event or a relatively random sequence of events. To consider this question, eminent geologists have investigated the history of the great earthquake of the last millennium by combining data found in the historical archives of Kathmandu, trenches created by surface ruptures, isoseismic damage mapping, seismites, and the instrumental record.

It is said that the location of the epicenter of the 1934 earthquake in the Kathmandu basin was determined by the arrival of high energy that created sedimentary dikes and ground fractures perpendicular to the epicenter azimuth. The epicenter of the Mw 7.6 1833 earthquake can be determined analogously from dike orientation, and its location to the northeast of Kathmandu indicates an overlap with the Mw 8.1 1934 rupture. It seems that the 1934 earthquake released strain not released by the 1833 earthquake and therefore was a giant earthquake greater than Mw 8.6. The 1255 event that destroyed Kathmandu is attested by surface ruptures in central and western Nepal and by seismites in soft sediment as far away as Kumaon.

Geometric and rheological controls for the different types of ruptures that occur during medium (Mw ~ 7), great (Mw ≥ 8), and giant (Mw≥8.4) earthquakes are illustrated in structural cross-sections. The epicenters of great Himalayan earthquakes are located on the basal thrust farther north or close to the locked zone, which is defined from geodetic measurements of regional deformation during the inter-seismic period. This fact suggests that great earthquakes initiate in a wide transition zone between exclusively brittle and exclusively creeping regimes, the extent of which depends on the dip of the MHT. The succession of great earthquakes during the last millennium has released all the energy of the 20-millennial Himalayan convergence. Even in the central seismic gap, which has been locked since 1505, the millennial seismic release rate is close to the convergence rate. Nonetheless, no evidence of a succession of characteristic earthquakes has been found: the ~1100, 1833, and 1934 earthquakes in the eastern Himalaya were characterized neither by constant displacement nor by constant recurrence. Furthermore, some great earthquakes do not release all the strain elastically stored by the Himalayan and Tibetan upper crust: after the 1255 event, for example, there was still enough potential energy for a slip of several meters to occur, as it did in the Mw ~ 8.1 1505 event. This suggests that the release of seismic energy is random: a great earthquake could occur anytime and in any part of the central Himalaya. Furthermore, the chance a future giant earthquake of Mw ≥ 8.6 cannot be excluded.

Table 2.1: Earthquake events in Nepal

Years	Magnitude	Time	Epicenter	Human Loss		Damage to Buildings	
				Dead	Injured	Complete	Partial
15 Jan. 1934	8.4	2.24 PM	Nearby Madhubani, India	8519	-	80,963	126,285
29 Jul. 1980	6.5	2.58 PM	Bajhang, Nepal	103	391	35,000	
21 Aug. 1988	6.6	4.54 AM	Udayapur, Nepal	668	6,081	21,976	42,198
18 Sept. 2011	6.9	6.25 PM	Sikkim-Nepal, Border	-	24	4,646	4,776
25 Apr. 2015	7.6	11.56 AM	Gorkha, Nepal	8790	22,300	510,772	

Source: *Nepal* (2015).

2.3.2 Disaster impacts

A natural disaster occurs when an extreme geological, meteorological, or hydrological event exceeds the ability of a community to cope with that event. Environmental disasters cause casualties, injuries, and property damage. The terms "disaster damage" and "losses" are frequently used interchangeably, and "disaster effects" are understood as the combination of total damage and total losses caused by an extreme natural event (Paul, 2011).

Impacts, on the other hand, are the outcomes of the total effects of a disaster on the post-disaster physical, economic, social, health, and other environments. It is essential to conduct an in-depth assessment of total damage and losses after a disaster in order to estimate its macro- and microeconomic impact as well as to measure its social and demographic impacts. Disasters impact a number of social units, including individuals, households, and businesses, each of which experiences a disruption in its normal function for either the short or the long term, or, in some cases, both. Disasters impact the different social groups of a population, whether they comprise different ages, ethnicities, occupations, or genders, in different ways.

The impacts of disasters can be so severe as to threaten human development, but they need not be. There is no escaping that natural disaster risk is intimately connected to processes of human development and that disasters put development at risk. The development choices made by individuals, communities, and nations can generate new disaster risks. For example, the decision to raze forestland and plant crops could increase the risk of landslides. This need not be the case, however. Human development can also contribute to a serious reduction in disaster risk (UNDP, 2004). In the case above, the decision to practice agro-forestry could both protect the forest and generate much-needed income.

Impacts can be distinguished in terms of their damage to the natural or man-made environment (physical), duration (temporal), and degree of disruption (social). As far as the physical damage caused by earthquakes is concerned, data and information has increased steadily since 1900. The better recording of small losses, the fact that more infrastructure and greater populations are exposed to earthquakes, and better media coverage have seen a rise in the detail and amount of information about damage. The first human development index, which is a composite measurement of life expectancy, education, and gross domestic product GDP per capita, documents the rise in human development from 1800 to 2010 (Daniell, 2010).

One social impact that an earthquake has follows as a consequence of its physical impact: houses are destroyed or damaged, and people are rendered homeless. The numbers displaced can reach the millions (Table 2.2).Displacement can occur as a result of natural disasters (earthquakes, floods, landslides, and volcanoes), environmental change (deforestation, desertification, land degradation, and global warming), and human-made disasters (industrial accidents, radioactivity and others). These different types of disaster-induced displacements may overlap: the impact of floods and landslides, for example, is greatly exacerbated by deforestation and land degradation.

Table 2.2: The top 10 earthquakes in terms of the greatest number of people rendered homeless since 1900

	Date	Year	Place, Country	Population rendered homeless
1	1 September	1923	Great Kanto, Japan	3,400,000
2	22 May	1960	Chile Tsunami	2,000,000
3	31 May	1970	Ancash, Peru	1,700,000
4	27 July	1976	Tangshan, China	2,000,000
5	26 January	2001	Gujrat, India	1,790,000
6	26 December	2004	Indian Ocean tSunami	1,690,000
7	8 October	2005	Kashmir, Pakistan	3,500,000
8	26 May	2006	Yogyakarta, Indonesia	1,845,000
9	12 May	2008	Sichuan, China	4,800,000-11,000,000
10	12 January	2010	Port-au-Prince, Haiti	1,500,000-1,800,000

Source: Adapted from Daniell, 2014.

Disaster even impacts seemingly unrelated processes like decisions about marriage and childbearing. There is a positive correlation between a person's level of education and his or her probability of getting married: the more educated a person, the more likely it is that he or she will marry. Married women of childbearing age from households where there were still children after a disaster were less likely than other not affected women to have a baby after the disaster. More than 50 years of disaster research in the social sciences provide ample evidence of the intersection of demographic and socio-economic factors and disasters. It is, therefore, imperative that local and national officials engaged in the development of disaster preparedness and mitigation policies, also take these factors into account if our aim is to ameliorate the devastating impacts of disasters on human populations (Donner et al., 2008).

The impacts of a disaster are closely related to the idea of disaster risk, or the likelihood that during a given period of time a disaster will cause loss of life, injury, or destruction and damage. Disaster risk is influenced by the nature of the hazard itself as well as the degree of exposure of people, property and livelihoods to and their susceptibility to the damaging effects of these hazards (UNISDR, 2015). Changes in any of these components will either increase or decrease the risk, and when a disaster strikes they will determine the size of its impacts.

Nepal has a high risk of exposure to hazards for several reasons. First of all, there are many hazards. The nation's topography includes low hills (the Churia range), high hills (the Mahabharat range), and steep mountains (the Himalaya), all of which have fragile geological formations, are prone to erosion and mass movements. The monsoon brings with it heavy rains and intense storms, creating a wide range of hydro-meteorological hazards, including landslides, debris flows, and floods. EM-DAT shows that, for the period 1900-214, floods were the most frequent hazard (50 events), followed by landslides (23 events), and epidemics (17 events). Six earthquake events were also registered (Guha-Sapir et al., 2016).

A second reason for high exposure is that about 90 percent of disasters in Nepal are small-scale disasters, which, cumulatively, cause more death, affect more people, destroy more houses, and cause more economic damage than do large-scale disasters. Both people and assets in Nepal are very vulnerable to disasters. In fact, the Pacific Disasters Centers ranks Nepal as 37 out of 172 countries in its disaster vulnerability index.

Kathmandu Valley is especially exposed to disaster, but it is not the only vulnerable district. With a population of 2.5 million population and density of a about 13,000 people per square kilometers, Kathmandu District, with an annual growth rate of 4 percent, is the fastest growing metropolitan population in South Asia. In four districts of western Nepal, Baitadi, Darchula, Doti, and Baglung, as well as Kathmandu, about 35 percent ofpermanent houses lie in very-high-hazard earthquake zones. In the districts of Bara, Parsa, Kanchanpur, Ilam, and Rautahat, about 85 percent of schools are

located in hazard-prone areas[9]. In terms of exposure among hospitals, in 20 districts, every single health post is located in a high hazard zone, and in another 19 districts, all health posts lie in moderate hazard zones. Transport infrastructure is equally exposed: in more than 20 districts, roads are located in hazard-prone areas and in 15 districts every single road is located in earthquake-prone areas.

Some experts argue that Kathmandu is vulnerable to earthquakes due to its high population density, unplanned development practices, unsafe construction, lack of urban planning, high incidence of poverty, and high inequality in terms of access to public services. Poor and socially excluded groups, they aver, will be less able to absorb shock than affluent groups and better-off households. In particular, food security is threatened during and after a disaster. A household survey conducted by the World Food Program found that in almost 94 percent of households, natural disasters, including drought, hailstorms, unemployment, illness, landslides, and the death of a family member, resulted in food shortage ("Food," 2007). The study also showed that food grain stocks in drought-affected areas depleted six times faster than in non-drought-affected areas. This study demonstrates that hazards directly affect the wellbeing of populations, with the effect that vulnerability increases in tandem with the disaster.

The nature of housing construction in Kathmandu Valley also increases people's risk. A survey of the structure of close to 1,000 buildings in Kathmandu Valley that Japan International Cooperation Agency conducted in 2000 under the Earthquake Mitigation of Kathmandu Valley Project shows that most owners, in both rural and urban settings, constructed buildings themselves (Dixit, 2009). In rural areas, about 92 percent of houses were built by owners themselves, followed by 82 percent self-construction in urban areas and 79 percent self-construction in sub-urban areas. It is likely that many of these houses do not meet the stringent standards of the Nepal Building Code. In fact, all events and accounts reveal that people who live in buildings they themselves built of stones or bricks and mud mortar are highly vulnerable to disasters. The study found that building contractors built about 17 percent of houses in sub-urban areas, 11 percent in urban areas, and 7 percent in rural areas, but even they often ignore codes in an attempt to reduce costs and construction time.

The efforts Nepal has made for preparedness against disaster are remarkable to an extent, but the government has not adequately considered the question of what constitutes a hazard-prone environment and what its effects are. The question is whether a very traditional and subsistence-based society will be able to move beyond its currently socio-economically fragile condition and whether culturally diverse groups will be able to serves as agents of change at the grassroots level. The wide-scale destruction wreaked by the April earthquake could be the trigger for the Government of Nepal and the Nepali citizenry to build a culture of disaster risk prevention and reduction.

2.3.3 Social units

Social units vary by location (physical), time of origin relative to the occurrence of the event (temporal), and societal level (social). Earthquakes hit a society out of the blue. In addressing their impacts, socially created vulnerabilities are largely ignored, mainly due to the difficulty in quantifying them. This is in part why social losses are normally not considered in post-disaster cost and loss estimates (Cutter et al., 2003). However, social units, whether they are individuals actively resisting a disaster or groups facing problems in the aggregate, by their very nature, work against disasters. When a society is vulnerable, the coping strategies of different social units may not be effective, and the impacts of the disaster will fall upon the population as a whole.

[9] GFDRR, Nepal Hazard Risk Assessment, *http://bit.ly/1GDTMfK*.

Table 2.3: Social vulnerability mapping

Concept	Description	Social vulnerability Increases (+), Decreases (-)
Socioeconomic status (income, political power, prestige)	Socioeconomic status affects the ability to absorb losses and enhance resilience to hazard impact. Wealth enables communities to absorb and recover from losses more quickly due to insurance, social safety nets, and entitlements.	
Gender	Women can have a more difficult time during recovery than men, often due to their sector-specific employment, lower wages, and responsibilities for family care.	+
Race and ethnicity	Race and ethnicity impose language and cultural barriers that affect access to post-disaster funding and increase the likelihood of residential locations being in highly hazardous areas.	Non-white (+), Non-Anglo (+)
Age	Extremes of the age spectrum affect the movement out of harm's way. Parents lose time and money caring for children when daycare facilities are affected, and older people may have mobility constraints or mobility concerns, increasing the burden of care and lack of resilience.	Elderly (+) Children (+)
Employment loss	The potential loss of employment following a disaster exacerbates the number of unemployed workers in a community, contributing to a slower recovery from the disaster.	Employment (+)
Rural/urban	Rural residents may be more vulnerable due to lower incomes and greater dependence on locally based resource extraction economies like farming and fishing. High-density urban areas complicate evacuation out of harm's way.	Rural (+) Urban (+)
Residential property	The value, quality, and density of residential constructions affect potential losses and recovery. Expensive homes on the coast are costly to replace; mobile homes are easily destroyed and less resilient to hazards.	Mobile homes (+)
Occupation	Some occupations, especially those involving resource extraction, may be severely impacted by a hazard event. Self-employed fishermen suffer when their means of production is lost and may not have the requisite capital to resume work in a timely fashion and thus will seek alternative employment. Migrant workers engaged in agriculture and low–skilled service jobs (housekeeping, childcare, and gardening) may similarly suffer, as disposable income and therefore the desire for services declines. Immigration status also affects occupational recovery.	Professional and Managerial (-) Clerical and labourer (1) Service sector(1)
Family structure	Families with large numbers of dependents and single-parent households often have limited finances to outsource care for dependents, and thus must juggle work responsibilities and care for family members. These factors affect resilience to and recovery from hazards.	High birth rates(1) Large families(1) Single-parent Households(1)
Education	Education is linked to socioeconomic status, with higher educational attainment resulting in greater lifetime earnings. Lower education constrains the ability to understand warning information and access to recovery information.	Little education(1) Highly educated(-)
Medical services	Health care providers, including physicians, nursing homes, and hospitals, are important post-event sources of relief. The lack of proximate medical services will lengthen the periods immediate relief and long-term recovery from disasters	High density of medical services (-)
Social dependence	Those people who are totally dependent on social services for survival are already economically and socially marginalized and require additional support in a post-disaster period.	High dependence(1) Low dependence(-)
Special needs	Special needs populations (the infirm, institutionalized, transient, homeless), while difficult to identify and measure, are disproportionately affected during disasters and, because of their invisibility in communities, mostly ignored during recovery.	Large special needs population (1)

Adapted from Cutter, Boruff, & Shirley (2003); Heinz Center for Science, Economics, and the Environment (2002).

In the literature on hazards, vulnerability has many different connotations, depending on the research orientation and perspective (Cutter et al., 2003). There are three main strands in vulnerability research: the exposure model, which identifies conditions that make people or places vulnerable to extreme natural events; the assumption that vulnerability is a social condition, or a measure of societal resistance or resilience to hazards; and the integration of potential exposures and societal resilience with a specific focus on particular places or regions. Social vulnerability is often described using the individual characteristics of people (age, race, health, income, type of residence, and employment).

Social vulnerabilities can be mitigated and even overcome with social capital, by which we mean the trust, social norms, and networks which affect social and economic activities (Nakagawa et al., 2014). As far as disaster management is concerned, social capital is considered to be important by several international organizations, including the World Bank, the Department for International Development of UK, and Japan International Cooperation Agency. In Japan, the incorporation of social capital in disaster management used to be rare: earthquake disaster management was considered to be an engineering issue, and solutions were sought in a technical direction. However, the great Hanshin-Awaji earthquake (popularly known as the Kobe earthquake) of 1995 made it clear that solutions had to be multi-disciplinary and that there had to be clear links between technological and social solutions.

Disaster management issues are divided into two parts (Arya, 2003): mitigation, which includes risk analysis, prevention and preparedness, and response, which includes search and rescue, humanitarian assistance, and rehabilitation and reconstruction). Examining each component in more detail, reveals that risk analysis includes hazard and vulnerability assessment and risk assessment, prevention includes both structural and non-structural measures; and preparedness includes warning, planning, and policy. All these elements are included in a cyclic process popularly known as the disaster cycle. The disaster management policies observed in many countries, including the Nepal Disaster Response Plan of 2001, focus mainly on physical vulnerabilities; social vulnerabilities are often missing. Consequently, the reconstruction plans implemented after a major disaster also focus mostly on physical recovery and the more visible physical impacts of that disaster and often ignore social recovery.

2.3.4 Responses

Responses to a disaster may involve structural engineering (physical); be relevant before, during, or after the impacts are felt (temporal); or, as is shown below, result from a variety of forms of human association (social). According to Quarantelli (1995), people typically pass through four stages of housing recovery following a disaster. The first stage is *emergency shelter*, which consists of unplanned and spontaneously sought locations that are intended only to provide protection from the elements. These are typically open yards after earthquakes. The next stage is *temporary shelter*, which includes food preparation and sleeping facilities. These are usually sought from friends and relatives or are found in commercial lodging although "mass care" facilities in schools and open spaces in the communities are acceptable as a last resort. The third and fourth stages respectively are *temporary housing*, which allows affected people to re-establish household routines in non-preferred locations or structures, and *permanent housing*, which re-establishes household routines in preferred locations and structures.

Regarding responses made against possible disasters, or preparedness, the Nepal Risk Reduction Consortium (NRRC) has been working to produce trained and skilled manpower since 2009. Already, it has trained close to 2,000 masons ("Female," 2015). NRRC also provides technical training in seismic resilience to engineers and specialists and is assisting the government in developing a building code compliance strategy and geographical information system (GIS) mapping of all buildings in Kathmandu Valley.

Seddon (2105), a renowned scholar of Nepal and author of *Nepal in Crisis* in the 1980s, criticizes Nepal's PDNA for being largely retrospective and top-down and not even beginning to address the implications of the cumulative effect of a series of earthquakes. He criticizes the PDNA because its conceptions of "damage" and "need" are based on a physical or macro-economic rather than a micro-economic and social model. He opines that a realistic strategy and program for reconstruction should include not just the data and information in the PDNA but an assessment of the short-, medium-, and long-term requirements and priorities as needs emerge. He argues that the PDNA should identify activities that will bear fruit, but arguably even more importantly, it should critically assess people's ability (or lack of ability) to sustain those activities through a continuing income stream both in Nepal and abroad. He reiterates that the crucial priority now and over the coming months and even years should be to recognize and promote an adequate flow of income to households and local communities so that people can rebuild their livelihoods and live well. Seddon's dynamic grassroots-derived model advocates that whatever sectors are likely to be effective for income generation should be promoted.

2.4 Policy overview and institutional framework of disaster management in Nepal

The first effort to adopt measures that explicitly addressed different types of disasters was introduced in Nepal in 1996, with the adoption of the National Action Plan on Disaster Management. Prior to the issuance of this plan, matters of disaster management and reduction were regulated by disaster legislation, specifically, the Natural Calamity (Relief) Act of 1982, which was the first act to recognize earthquakes, fires, storms, floods, landslides, heavy rainfall, droughts, famines, and epidemics as disasters. The Local Self-Governance Act of 1999 promotes the concept of local self-governance within a decentralization framework to manage environment-friendly development. However, because Nepal currently has no elected local bodies, local government authorities who have a mandate to promote disaster resilience have not been able to carry out their responsibilities. Another crucial document is the National Strategy for Disaster Risk Management in Nepal (NSDRM) of 2009, which identifies sector-specific strategies for addressing gaps[10].

The five priorities for immediate action under the Nepal Flagship Program are as follows:

1) School and hospital safety: improving structural and non-structural aspects of making schools and hospitals earthquake-resilient;
2) Emergency preparedness and response capacity;
3) Flood management in the Koshi River Basin;
4) Integrated community disaster risk management program; and
5) Policy and institutional support for disaster risk management.

Disaster-related policies and programs are coordinated by the Central Natural Disaster Relief Committee (CNDRC), a 36-member committee chaired by the home minister that coordinates all central-level disaster relief and rehabilitation efforts and directs district and local disaster relief committees on all matters related to relief and rehabilitation work and supplies.

The Nepal National Building Code (NBC) was adopted in 1993 to promote safe construction practices across the nation. The code identifies municipal and VDC authorities as the key implementers of the code and the Department of Urban Development and Building Construction as the source of technical support. The Building Act and Regulations and the Building Code of 1998 provide the legal framework for implementation by local governments, especially in urban areas.

In 2011, the government developed the Local Disaster Risk Management Planning (LDRMP) Guideline, which aims to mainstream disaster management into the sectors of local development by mobilizing local resources and ensuring the participation of local communities using a bottom-up approach.

[10] See more: http://www.nrcs.org/sites/default/files/pro-doc/NSDRM%20Nepal.pdf.

The Ministry of Home Affairs formulated the District Disaster Preparedness and Response Planning Guideline under the guidance of CNDRC. This guideline aimed to provide a formula for conducting emergency preparedness and response planning activities at the district level. The piloting of this guideline began in 2007, when it served as a contingency plan for effective response under the chairpersonship of the chief district officer.

The National Disaster Response Framework (NDRF)includes actions to be taken to save life and property; maintain law and order; care for sick, injured and vulnerable people; provide essential services (lifeline utilities, food, shelter, public information, and media), and protect public property immediately after the onset of any disaster.

The National Adaptation Program of Action (NAPA) of 2011emphasizes the need to follow a climate-resilient and low-carbon development path as called for in international commitments. The emphasis of the policy, *inter alia*, includes a) the implementation of community-based local adaptation actions as mentioned in the NAPA, b) the promotion of climate adaptation and the adoption of effective measures to address the adverse impacts of climate change through the development and transfer of technology, public awareness, capacity-building, and access to financial resources, and c) the development of a reliable forecasting system to mitigate the adverse impacts of climate change on vulnerable areas, natural resources, and people's livelihoods.

Local Adaptation Plans for Actions (LAPA) are an offshoot of the NAPA. Serving as a guide local- to national-level planning, they identify the most climatically vulnerable VDCs, municipalities, wards and communities and their adaptation challenges and opportunities, including possible activities, and prioritize adaptation actions in simple ways so that local communities decide on and prioritize their own needs.

Since its establishment in 2009, the NRRC has supported the government in identifying program areas for disaster management, resource mobilization, and implementation.

The above policy frameworks now need to be developed into a concise and comprehensive national disaster response framework for Nepal that can guide a more effective and coordinated national response focusing on large-scale disaster. In fact, in recent years, the Government of Nepal has taken steps to move from a relief-and-response paradigm towards one which emphasizes DRM and addresses all stages of the disaster management cycle. That said, there are still major impediments to implementing, monitoring and following up on the disaster management policy. For example, the government is currently struggling to adopt long-term relief planning and sustainable approaches in dealing with the current earthquake-affected people. In addition, recurrent and major disaster impacts such as of earthquakes and floods continue to perpetuate poverty outcomes and how vulnerable communities are to disaster risk differs in urban and rural areas.

Although disasters greatly impact the social and the economic landscape of the country, there is little evidence that the government has undertaken any systematic research to assess the long-term impacts of disasters on the livelihoods of people in urban and rural areas. If the government is to develop an enriched understanding of disaster impacts and of the sort of pragmatic approaches necessary to deal with the different kinds of impacts associated with different disasters, such research must be conducted. All authorities dealing with disaster management in Nepal must take investment in research very seriously indeed. The links between risk management and development must be strengthened if Nepal is to progress.

How Nepal's periodic development plans address disaster issues

The 10th Five-Year Plan (2002-2007) gave special attention to disaster management while developing infrastructures and making construction and development projects sustainable and the Three-Year Interim Plan (2007-2010) recognizes disaster as one of the major impediments to national

development process and addresses disaster management tasks. The latter plan recognized the need to foster collaboration and coordination among key disaster management actors and institutions active in different sectors of the national economy.

The current thirteenth Five-Year Plan (2013/14-2015/16) emphasizes that disaster risk management issues are an inherent characteristic of sustainable development and has accorded priority to pre-disaster preparedness as well as the recovery process. The government has tabled a new Natural Disaster Bill in the parliament to deal with disaster issues in a broad perspective. The existing Natural Calamity Act is also in the process of replacement.

A national platform for disaster risk reduction (DRR) has been formed with the involvement of multi-stakeholders. The government has established disaster risk management focal desks and appointed officials in different ministries and departments to synergize DRR efforts and incorporate them in the work of all line agencies. It has prepared a country-level multi-hazard risk assessment with the aim of being able to implement better preparedness, response and recovery activities based on a strong knowledge of all possible hazardous situations at the district and local levels.

In the past, the effects of various disasters were not addressed in a proper or timely fashion, thereby resulting in huge damage and loss after every disaster.

2.5 Policy gaps

The main policy gap is the lack of a disaster management act, an act which Nepal has been awaiting for a long time. The Natural Calamity Act of 1982 is a relief act and does not cover all stages of disaster management. Nepal is also missing a comprehensive and adequately resourced mechanism to implement the National Building Codes strictly and therefore guard against the risks of earthquake. The Building Regulations under the Building Act do not establish a mechanism for approval of small buildings at the local level although these are covered in the act itself. The development of guidelines known as the Mandatory Rules of Thumb was a pragmatic response to this gap.

The National Building Codes established under the Building Act have so far been only partially implemented by a small number of municipalities, meaning that high-risk buildings continue to be constructed, including in the heavily populated and seismically active Kathmandu Valley. Some actors believe that municipalities are not obliged to implement the National Building Codes although this perception appears to be an error concerning the hierarchy of laws. Even though the codes have been implemented to establish prior approval of large buildings, no municipality has yet managed to implement the full cycle of building regulations, (1) prior approval, (2) inspection, and (3) enforcement and penalties. Achieving these three elements is essential to achieving building code compliance.

There appears to be no legally mandated system for carrying out safety inspections of existing buildings to assess their risk for fire, earthquake or other disasters. Designing such a system would normally be the responsibility of local governments, which would then make provisions for its implementation in their local by-laws, but in the current context in Nepal, additional national legislation may be needed to establish the parameters of such a system and induce local governments to implement it.

As yet there is no system of assessment or incentives in place for retrofitting private buildings for earthquake and fire safety. Such a process would require massive resources, as 93 percent of the existing buildings were not properly engineered. Without such a concentrated effort, little progress can be made in improving the earthquake and fire safety of the overall built environment, especially in established urban centers.

The government needs to transform public policy, urge collective action, and address issues related to disaster risk reduction by emphasizing the following actions:

- Strictly implementing disaster management plans and policies;
- Raising public awareness;
- Creating an enabling environment for disaster-friendly public services;
- Ensuring residual risk transfer;
- Improving disaster management information systems;
- Strengthening networking and coordination;
- Enforcing national building codes and land-use planning; and
- Mainstreaming disaster and climate risk management into the development planning process.

Overall, there is a well-developed policy framework for DRR in Nepal and even a substantial (though as yet incomplete) legislative framework, but the institutional structure for the implementation of those policies and laws needs strengthening at all levels of government. The challenge is to implement these measures in a period of political transition and to move to a new system of implementation with the sort of full community participation that empowers communities and creates a sustainable approach to DRR. The Government of Nepal, in addition to carrying out its ongoing relief and response practices, needs to recognize the far-reaching impacts of disasters and the need to address them through comprehensive risk management approaches.

A casual relationship between a natural disaster and its widespread effect in a society, particularly on social situations, livelihood, vulnerability, health, employment, fertility, and demography was the basis of this study. The most significant characteristics for assessing the impacts of a disaster are its speed of onset; the availability of perceptual cues (such as wind, rain, or ground movement); the intensity, scope, and duration of the impact; and the probability of occurrence. The speed of onset and availability of perceptual cues affect the amount of forewarning that affected populations will have to carry out emergency response actions in their entirety (Lindell, 1994).

Lindell and Prater (2003) outline how the impact of natural disasters should take into account other mechanisms, such as mitigation practices, emergency preparedness, and assistance, to determine the real impact. Donner (2007) analyzed the effects of tornadoes in the U.S. and found that they are not random, because some factors, such as environmental, organizational, demographic, and technological factors, influence the impact of such events.

It might be hard, however, to measure a substantial impact by a natural disaster on social and demographic indicators. For example, the impacts of famines in South Asia are often dissimilar. Caldwell et al. (1992) discuss the 1980-83 famine in southern Karnataka (once Mysore): during a mild famine, people were distressed, many lost their incomes, nearly everyone had to make do with less food, most turned to foodstuffs they normally would have regarded as inferior or inedible, almost all forwent all expenses except the most urgent if only because of the fear that the famine, and around 20 per cent of marriages, even those already planned, were deferred. In fact, among the rich, who are expected to have lavish weddings, the postponement rate reached 30 per cent. Despite all these impacts, the famine was too mild to have any impact on mortality.

In contrast, the 1973-74 famine affected the Indian Tamil in Sri Lanka's tea estates so severely that the infant mortality rate rose from 70 to over 100 per thousand and fertility fell by one–fifth (Caldwell et al., 1992). In an anthropological demographic work of enquiry conducted on the same estates in 1987, people explained that women of reproductive age had not conceived because they did not have sexual relations during such dire times.

In Nepal, the earthquake badly affected couples, many of whom still do not have a safe residence. We do not know, however, how, or even if, they have been planning for their fertility along with finding a way to feed and shelter their children.

Chapter III
Methodology of the Study

"*When disaster strikes and there are indications that an emergency may be unfolding, effective humanitarian action must be based on a sound understanding of the situation.*" (Center for International Emergency, Disaster, and Refugee Studies, 2003)

3.1 Introduction

Nepal's earthquake of 25 April, 2015, and its aftershocks had such a devastating impact on the human population and physical assets that it was the top disaster-stuck country in the world in 2015. A press release issued by the United Nations International Strategy for Disaster Reduction on 11 February, 2016, claims that 17,796 people died in the 10 countries topping the list. Nepal's earthquake put it in first position with 8,831 deaths (49.6% of the total), followed by France (18.4%), and India (12.6%). To assess the losses and costs due to the disaster, Nepal conducted a PDNA study applying an internationally standard methodology. Such a need assessments, however, is largely retrospective and does not really begin to address the implications of the cumulative effect of a series of earthquakes (Seddon, 2015). In the standard PDNA, the assessments of both damage and need are based on physical and macro-economic criteria and tend to overlook a micro-economic and social model of damage and need. The socio-demographic impact study described here was an effort to fill the gap and study the impact of the earthquake from a social and demographic perspective as well. Measuring that impact in the 14 most earthquake-affected districts in the time allocated by the Government of Nepal was a challenge.

One of the challenges was that households were no longer located where they had been during the 2011 NPC; they had been displaced after their houses were damaged or destroyed. Another challenge is that some households that were one in 2011 had split into multiple households, whether nuclear or joint, and were located in different areas. Other complications were that respondents were not always willing to meet or not in a position to listen research questions since their priority was what to feed their families, where to sleep, and how to be safe in the face of repeated aftershocks. Of primary importance for the affected was daily subsistence and shelter free from traumatic stress and psychosocial problems. Once a household's physical place of residence has been destroyed, the implications for their lives and livelihoods are vast.

To address these challenges, the study team developed various qualitative and quantitative techniques and tools to measure the impact of the earthquake on social and demographic dynamics. This methodology is presented in three sections, the screening, the household, and the community surveys.

3.2 Study area

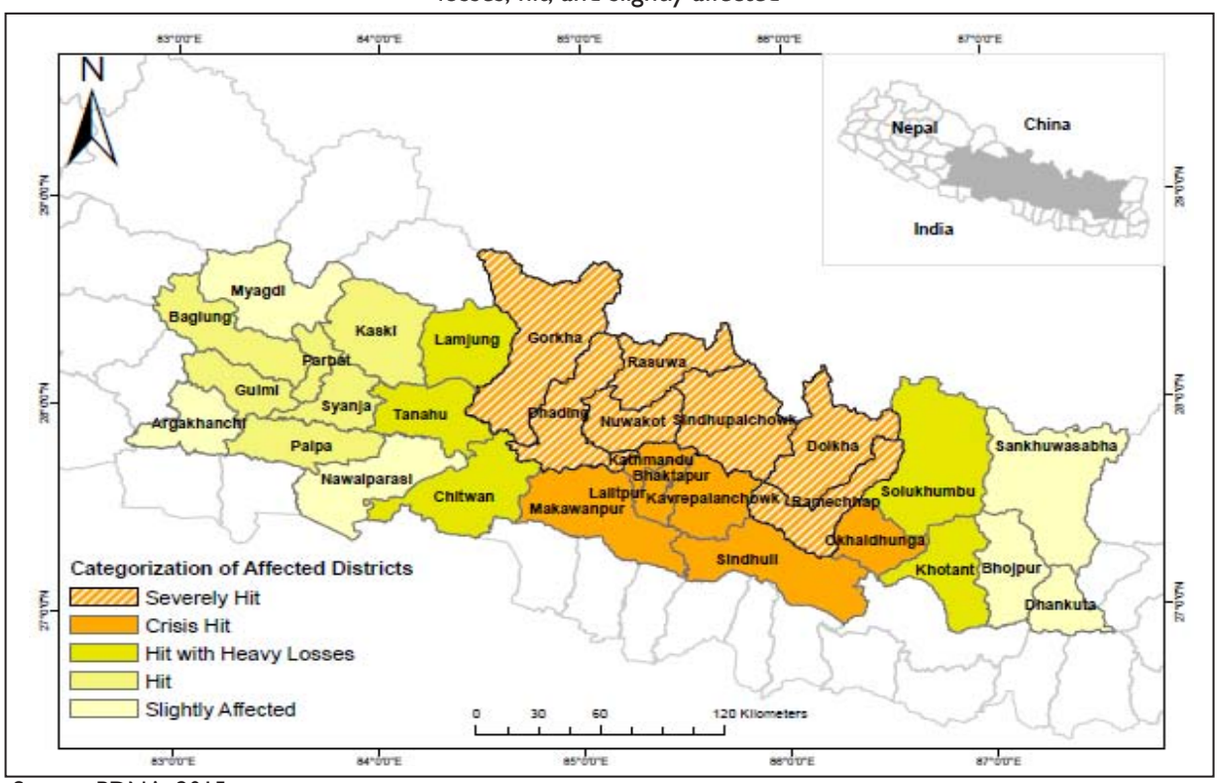
The main earthquake of 25 April, 2015, and its aftershocks had an impact on 31 districts. The degree of that impact varied: of them, seven districts were classified as severely hit, seven as crisis-hit, five as hit with heavy losses, six as hit, and six as slightly hit. The Ministry of Health and Population (MoHP) chose 14 districts in which to conduct a socio-demographic impact study[11].

One-hundred and fifty wards of various VDCs and municipalities were visited during the household survey; these wards were the primary sampling units (PSUs) and their number was determined by

[11] The severely hit districts surveyed were Gorkha, Dhading, Rasuwa, Nuwakot, Sindhupalchowk, Dolakha and Ramechhap, while the crisis hit districts surveyed were Kavrepalanchowk, Makawanpur, Lalitpur, Kathmandu, Bhaktapur, Sindhuli and Okhaldhunga.

scientific sampling methods. Eight of the 150 PSUs had to be changed[12] as the expected numbers of affected households were not found.

Figure 3.1: Categorization of the earthquake affected districts as severely hit, crisis-hit, hit with heavy losses, hit, and slightly affected

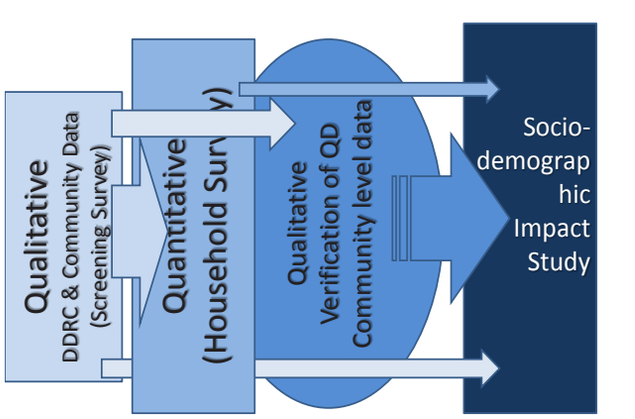


Source: PDNA, 2015.

3.3 Mixed method approach

The study team used three surveys. A survey, by definition is a detailed study made by gathering information through observations, interviews and/or questionnaires and analyzing it (CIEDRS et al., 2003: 13). The first survey was an initial or screening survey using the lists of affected households provided by DDRCs; the second was a household survey comprising a close-ended self-administered questionnaire designed to collect quantitative information; and the third, comprising focus group discussions (FGDs), key informant interviews (KIIs), and participant observations, collected qualitative information. Such an approach is termed a "mixed method approach."

Figure 3.2: A mixed method approach combining quantitative and qualitative methods



[12] Rampur VDC-8, Ramechhap; Kalleri VDC-2, Dhading; Kiranchok VDC-9, Dhading; Deurali VDC -5, Gorkha; Makaising VDC -2, Gorkha; Dudhauli VDC -1, Sindhuli; Taluwa VDC-7, Okhaldhunga; and Harkapur VDC-2, Okhaldhunga.

There are many definitions of the mixed method approach in the literature. It is an approach or methodology which focuses on research questions that call for real-life contextual understandings, multi-level perspectives, and cultural influences; employs rigorous quantitative research assessing the magnitude and frequency of constructs and rigorous qualitative research exploring the meaning and understanding of those constructs; utilizes multiple methods; intentionally integrates or combines different methods to draw on the strengths of each; and frames an investigation within philosophical and theoretical positions (Creswell et al., 2011).

In assessing the impact of a disaster on a human population, the triangulation of both quantitative and qualitative methods produces the best results. Quantitative data helps researchers understand the magnitude and scale of a humanitarian crisis by providing a numerical picture of its impact upon affected communities. It addresses the questions "*how many?*" and "*how much?*" Qualitative data, on the other hand, focuses on determining the nature of the impact of a disaster upon affected populations. Qualitative data answers questions about *how* and *why* various coping strategies have adapted, or failed to adapt, to the changed circumstances. When undertaking a needs assessment, a combination of different *types* and *sources* of data is required to build a holistic picture of the affected population. *Sources* for information include both primary and secondary data. *Types* of information include both qualitative and quantitative data (ACAP, 2012).

3.3.1 Screening survey

An initial assessment, called a screening exercise by USAID's Office of Foreign Disaster Assistance (2002), is conducted in order to identify the impact on a society, its infrastructure, and ability to cope; identify the most vulnerable population groups; identify the level of local response; identify the level of response from the international community; identify urgent relief needs and effective methods of providing service; make recommendations that define priorities for action and resources needed for immediate response; and identify areas and issues for further, in-depth assessment.

The Ministry of Home Affairs (MoHA) collected information about the loss of lives, both human and other animals, as well as the damage to both residential buildings and cattle sheds. Since the Central Disaster Rescue Committee does not have a database, the study team visited the DDRCs of each of the 14 selected districts to get information. In order to verify the reliability of the secondary data and find out the issues to incorporate in the survey instrument to ensure it would measure what it was intended to measure, 14 two-member study teams, a leader and an assistant, visited at least three types of communities in their assigned district, the severely hit, the partially hit, and the slightly hit, and conducted spontaneously held FGDs with community groups. The data generated by the screening survey was important for two reasons, sampling and questionnaire designing. The empirical data generated was also useful for both quantitative and qualitative data analysis.

Table 3.1: Physical loss and damage by three broad earthquake affected domains

Categorization	Dead	Missing	Injured	Households with damaged houses
Severely hit	6,398	97	8,697	424,245
Crisis-hit	2,443	39	1,051	209,794
Kathmandu Valley	1,585	0	2,914	160,882
Total	10,426	136	12,662	794,921

Source: Data DDRCs providing during the screening survey

3.3.2 Household survey

Where purely scientific quantitative methods were applied, representative households were the main thrust of the study. The study team designed probability sampling; developed a structured questionnaire, pre-tested it, and trained the 42 surveyors who would administer it; edited, cleaned, and processed data; and analyzed and drew inferences from the data using bivariate and multivariate analysis to explain dependent variables. The representative sample size was drawn from seven severely hit and seven crisis-hit districts, three in and four outside of Kathmandu Valley. It took 19-

22 days for the surveyors to interview 3,000 households using the 20-page questionnaire. The questions were written in Nepali and translated into local languages in the field as necessary.

3.3.3 Qualitative survey

Qualitative research is, by definition, exploratory. It is used when researchers don't know what to expect and how to define the issues. In this case, it implies the researchers' lack of understanding of *why and how affected populations were impacted by the earthquake.* The key contribution of qualitative data is that it provided information about the human aspect of the emergency by recognizing the specific local contexts of the top-priority needs of the affected populations. Data gathered through qualitative methods is often presented in the form of a case study, but it can also be presented in pie charts, pictorial form, graphs, and the like.

Qualitative research enquiry tools vary. Among them, FGDs, KIIs, and participatory observation are very popularly used in report writing and academic research. FGDs are a technique for eliciting information from specific population subgroups. The issues addressed may be little known or relatively well known to the researcher. The method is most effectively used when the objective of the investigation is to elicit the points of view of client or consumer groups which may differ from those of providers. Despite the frequency with which focus group discussions are used, few published materials describe the practical application of the method (Bender & Ewbank, 1994).

Qualitative information was generated for specific caste and ethnic groups concurrently with the collection of quantitative data. The study team conducted 37 FGDs with different caste and ethnic groups affected by the earthquake and 43 KIIs with stakeholders involved in different professions. Interviews, whether for FGDs or key informants, were recorded and later transcribed into writing.

3.4 Survey design

The survey collected information from a representative sample of the earthquake-affected households in the 14 most earthquake affected districts in Nepal. The primary focuses of the survey were to present the situation of these households regarding damage, rescue, relief, and rehabilitation and the impacts of the earthquake on socio-demography, employment and livelihood, the education of children, health, and population mobility. The sample was designed to provide information on these key variables for the sample as a whole as well as separately for the three survey domains (severely hit districts, crisis-hit districts excluding Kathmandu Valley, and Kathmandu Valley), rural and urban areas, and background variables, including family type, sex of household head, education, occupation, caste and ethnicity, and religion.

3.4.1 Sampling frame

The study team used the lists of affected households provided by the DDRCs of local development offices and/or district statistics offices as their sampling frame. These lists were obtained during the screening survey of this main survey, which was conducted in the last week of August 2015 and the first week of September 2015. About 937,000 houses of 795,000 households were damaged by the earthquake (Screening Survey, 2015) in the 14 most earthquake affected districts.

The PSU of the survey was the ward, or, if a ward had more than 200 affected households, the sub-ward.

3.4.2 Determination of sample size

The sample size, n, was determined using the formula

$$n = \frac{z^2 \cdot p(1-p)}{d^2} \cdot deff \cdot k$$

where

n = sample size in terms of number of households;
z = statistic defining the level of confidence; z was 1.96 for a 95% level of confidence;
p = an estimate of a key indicator of the survey; *p* was assumed to be 0.5 based on the estimation for the largest sample size;
deff = sample design effect; *deff* was assumed to be the default value of 2.0 since supporting empirical data from previous surveys did not suggest a different value, since the 2011 NDHS had calculated a design effect of less than 2 for most variables, and since it was equivalent to the figure used when comparing the clustering component of the design effect for intra-cluster correlations of 0.05 and cluster sizes of 20 households;
k = a multiplier to account for the anticipated non-response rate; *k* was assumed to be 1.1 because of Nepal's history of non-response rates of under 10 percent. The 2011 NDHS, for example, had a non-response rate of only 4.8 percent only;
d = margin of error (desired precision); *d* was set at 0.05 (±5.0%), or 10 percent of *p*.

Using the formula,

$$n = \frac{z^2 \cdot p(1-p)}{d^2} \cdot deff \cdot k = \frac{1.96^2 \cdot 0.5(1-0.5)}{0.05^2} \cdot 2.0 \cdot 1.10 = 845$$

the sample size was determined to be 845 households.

- The sample size calculated was for a single domain, so the sample size for the three domains (severely hit districts, crisis-hit districts except Kathmandu valley, and Kathmandu Valley), was 2,535.
- However, to increase the representativeness of the sample, especially in severely hit districts, the sample size of the survey was increased to 3,000 households with 150 PSUs of 20 households each. The values for the number of PSUs and number of households in each PSU were chosen since a large sample of small clusters is more efficient than a small sample of large clusters and since many recent surveys in the country used a cluster size of 20 households.
- For each domain, 1,000 households in 50 PSUs were surveyed.

3.4.3 Sample selection

The sample for the survey was based on a two-stage stratified representative sample of earthquake-affected households. In the first stage of sampling, 1,000 PSUs were selected using systematic sampling with probability proportional to size (PPS) in each of three survey domains. The complete list of earthquake-affected households in each selected enumeration area, whether a ward or sub-ward (PSU), obtained during the screening survey was then used as a sampling frame for the second stage selection of households.

First, the number of affected households at the VDC or municipality level in each of the 14 districts was determined and the VDCs and municipalities were placed in the same order of geographical location used by the Central Bureau of Statistics in the 2011 census. Then, the total number of affected households in all the VDCs and municipalities in each district was calculated. Next, the total of affected households for each of the three domains was calculated, and, finally, using that value, PSUs were selected using the PPS method based on the number of affected households in each domain.

In the second stage of sampling, systematic random samples of 20 households in each selected PSU for all three domains were selected from the complete list of affected households in that PSU. If the selected PSU had more than 200 affected households, it was segmented into 2 parts. If the selected PSU had more than 400 affected households, it was segmented into 3 parts and so on, and one segment was selected randomly.

Rough maps of the positions of houses in the selected PSUs (enumeration areas) were sketched during fieldwork to identify the location of selected households.

3.4.4 Sample weights

Since the proportions of earthquake affected households were different in each of the three sample domains, the samples were weighted for each domain based on proportions of affected households in domains and the sample weights are used to provide statistically reliable estimates for each of the three domains as well as for the 14 most earthquake affected districts as a whole, for rural and urban areas, and for different background variables.

3.5 Survey tools

The main survey tools were the 20 page structured questionnaire for collecting quantitative data from affected households and two checklists for gathering qualitative information, one for use with FGDs with different communities and genders in different locations and one for use in KIIs with knowledgeable persons engaged in different sectors and professions.

The questionnaire was specifically designed to obtain information from households about certain socio-demographic characteristics of the population as well as damage to houses; materials used in constructing a house; the rescue, relief and rehabilitation process; employment; livelihood; the education of children, health, population mobility, access to different facilities, ownership of a variety of consumer durable items, and other quantitative data. The checklists comprised questions about similar issues but were designed to gather qualitative information through FGDs and KIIs.

3.6 Data quality

Data quality is affected by sampling and non-sampling errors. Non-sampling errors can arise at various stages during the collection and processing of data. In order to minimize the non-sampling errors in the survey, various efforts were made before, during, and after the survey. These are discussed below.

3.6.1 Training and pre-testing

Forty-two field surveyers participated in a six-day training session on administering the survey held in Kathmandu from 3 to 8 November 2015. These surveyers were hired based on their academic qualifications, past experiences in fieldwork, and language skills. The majority had Master's degrees in one of the social sciences. The training consisted of review of questionnaire and checklists, instruction in interviewing techniques, field procedures for the survey, mock interviews and FGDs among participants, and practice interviewing in the field during the pre-tests of both the questionnaire and the checklists.

These pre-tests were conducted in two different locations of Kathmandu Valley, Phutung and Jharuwarasi, on 7 November 2015. The determination of which field researchers would lead (supervisors) and which assist (enumerators) was made on the basis of their performances during the training and pre-tests.

3.6.2 Data collection and processing

To maintain the uniformity of the survey data, the study team prepared an interviewer's manual which included a detailed discussion of the contents of the questionnaire as well as the interviewing techniques and procedures needed for completing the questionnaire. The selected supervisors were also trained to supervise fieldwork, edit completed questionnaires in the field, and take other various measures to maintain data quality.

Fieldwork was carried out between 20 November, 2015, and 15 December, 2015. During the fieldwork, experts from the Population Division of the then MoHP, the UNFPA, and the members of the study team, research associates and research assistants from the Central Department of Population Studies of the Tribhuvan University (CDPS, TU) were in constant contact with field researchers through both direct communication and spot-checking during monitoring visits. To ensure the quality of the data, the 42 field surveyers were closely supervised by 10 different monitoring teams who conducted monitoring visits in the field; observed interviews, FGDs and KIIs; checked completed questionnaires; and provided feedback.

Quantitative data were collected from 3,000 households in the 14 most earthquake affected districts of Nepal, 1,000 each in three domains (severely hit districts, crisis-hit districts excluding Kathmandu Valley, and Kathmandu Valley) by administering a structured household questionnaire. In addition, 37 FGDs were conducted among different communities and caste and ethnic groups and 43 KIIs were conducted with people engaged in different professions in different locations.

Once the field operation was over, completed questionnaires and transcripts of FGDs and KIIs were sent to the CDPS, TU for data processing. Research associates and research assistants involved in the survey checked the filled-in questionnaires and transcribed the qualitative data. They also post-coded the answers of those questions which were not pre-coded in the questionnaire after checking manually for inconsistencies in data filled in the questionnaires.

3.6.3 Double entry of data

Once the post-coding and manual editing of all the filled-in questionnaires were complete, the data were entered into Microsoft computers using Version 6.0 of CSPro software. After the first entry of data was complete, all the data were entered again to check for errors. The two data files were then matched using of the same CSPro software and all cases of entered data that did not match were checked with reference to the appropriate filled-in questionnaires and edited or deleted as necessary. Altogether 1.3 percent of the total 1,872,229 data entry units were found to have been entered incorrectly. All were fixed. Data cleaning was carried out once more by producing frequency and cross tables after transforming the data into SPSS software, Version 18 (PASW Statistics). Once the data cleaning was complete, the data were analyzed and the required tabulations produced using the same SPSS software package.

3.6.4 Sampling errors

The estimates made by any given sample survey are affected by sampling errors, whose degree can be evaluated statistically from the survey results themselves. Sampling error is usually measured in terms of the standard error for a particular statistic, which is the square root of the variance. The standard error can then be used to calculate confidence intervals, design effect, and relative error.

As this sample survey has a multi-stage stratified design, the Taylor linearization method of variance estimation for survey estimates of proportions or means was used to estimate the standard errors of selected key variables. This method treats any percentage or average as a ratio estimate, $r = y/x$, where 'y' represents the total sample value for the variable 'y', and 'x' represents the total number

of cases in the group or sub-group under consideration. The variance of 'r' is computed using the formula below, and the standard error is the square root of the variance.

$$var(r) = \frac{1-f}{x^2} \sum_{h=1}^{H} \left[\frac{m_h}{m_h - 1} \left(\sum_{i=1}^{m_h} z_{hi}^2 - \frac{z_h^2}{m_h} \right) \right]$$

where $z_{hi} = y_{hi} - r \cdot x_{hi}$

$z_h = y_h - r \cdot x_h$

h = represents the stratum which varies from 1 to H

m_h = total number of PSU (EA/cluster) selected in the h^{th} stratum

y_{hi} = sum of the weighted values of variable 'y' in the i^{th} PSU (EA/cluster) in the h^{th} stratum

x_{hi} = sum of the weighted number of cases in i^{th} PSU (EA/cluster) in the h^{th} stratum, and

f = sampling fraction (n/N), which is very small and ignored

Sampling errors were calculated for 70 selected key variables of the survey. These errors, along with relative errors and confidence limits, are presented in Annex II. Standard errors were less than 2 percent for 30 variables and less than 5 percent for another 22 variables. For half of the selected variables, the relative errors, errors of estimates based on standard errors, were less than 10 percent. The confidence limits of the estimates based on standard errors did not cross the value of 1 or 0 for most of the selected variables, a result suggesting statistical significance. However, the fact that the design effects for most of the variables considered were more than 2, suggests the errors in estimates could have been reduced if the sample size had been larger.

3.6.5 Completeness of reporting

All 3,000 households were enumerated using the replacement method but there were some cases of no response and missing answers for 10 of the 616 variables included in the questionnaire. However, the rate of non-response was minimal, less than one percent for four of the variables, 2-3 percent for another three variables, and 5 and 10 percent for one variable each. The tenth variable had one missing case out of a total of 4. The non-response rates for various variables are presented in Annex III.

3.6.6 Histograms with normal curves and normal Q-Q plots

The histogram charts made for selected interval variables show that, for most variables, responses were distributed under the normal curve of roughly bell shape, thereby indicating a normal distribution of data (Annex IV). However, given the nature and type of variables considered, it was not possible that all data was distributed normally. A normal Q-Q (quantile-quantile) plot determines normality graphically. The Q-Q plot is a graph used to display the degree to which the quantiles of a reference (known) distribution (the normal distribution) differ from the sample quantiles of the data. When the data fit the reference distribution, that is, when they are normally distributed, then the points will lie in a tight random scatter around the reference line. The fact that plotted data points were linear and close to the diagonal line for most of the interval variables considered, suggests that the data were indeed normally distributed (Annex V).

Chapter IV
Socio-Demographic Characteristics of the Population of the Surveyed Households

This chapter reports on the socio-demographic characteristics of the populations of the 3,000 households in the selected sample domains. The socio-demographic characteristics include age-sex structure, family type, marital status, literacy and education, caste and ethnic group, religion, occupation, psychosocial problems, and citizenship certification.

4.1 Age-sex composition

The age-sex composition of a population is an important indicator. The total population of 3,000 households comprised 14,987 people, with 7,419 males and 7,568 females. The resultant sex ratio, 98.0, was much higher than the sex ratio the 2011 census reported, 94.1 (Adhikari, 2014). This means that the average sex ratio in the study districts was closer to parity than the national average. In 2011, the range in the sex ratio of the individual study districts was significant: nine of the 14 study districts had sex ratio less than 94; and three districts, Bhaktapur, Makawanpur, and Sindhupalchok, had sex ratio between 95 and 105; and that of Kathmandu, a destination of many migrants, was above 106.

Figure 4.1: Population pyramid by five-year age group and sex

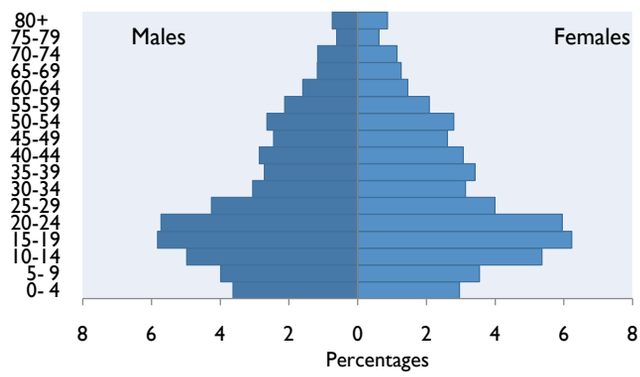


Table 4.1: Age-sex composition of household population (in %) by 5-year age group

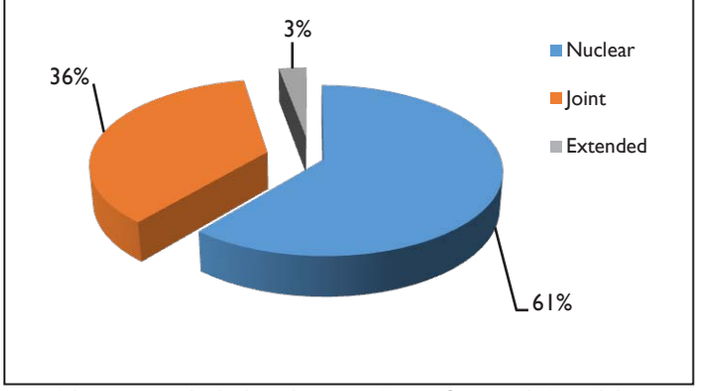
Age group	Male	Female	Total	Sex ratio
0-4	7.3	5.9	6.6	122.5
5-9	8.1	7.0	7.5	112.6
10-14	10.1	10.6	10.3	92.7
Below 15	**25.4**	**23.5**	**24.5**	**106.1**
15-19	11.8	12.3	12.0	93.5
20-24	11.6	11.8	11.7	96.2
25-29	8.6	7.9	8.3	106.5
30-34	6.2	6.2	6.2	97.4
35-39	5.5	6.8	6.1	79.3
40-44	5.8	6.1	5.9	93.1
45-49	5.0	5.2	5.1	93.9
50-54	5.3	5.5	5.4	94.3
55-59	4.3	4.1	4.2	101.9
15-59	**63.9**	**65.9**	**64.9**	**95.1**
60-64	3.2	2.9	3.0	109.6
65-69	2.4	2.5	2.4	92.6
70-74	2.3	2.3	2.3	101.2
75-79	1.2	1.2	1.2	97.8
80+	1.5	1.7	1.6	84.6
60 and above	**10.6**	**10.6**	**10.6**	**98.4**
Total	100.0	100.0	100.0	98.0
n	7,419	7,568	14,987	

In terms of age structure, the male population exceeded the female in only four five-year age groups, those falling in the working ages of 35-39, 40-44, 45-49, and 50-54; in all other age groups there were more females than men. It appears that the general trend in Nepal, the absenteeism of the male population of working age because they have migrated in search of employment, was reversed

after the earthquake. A likely explanation for the disparity is likely that men, who, in general, have the knowledge and skill to rebuild homes, returned to help. The economically active population aged 15-59 years was 65 percent whereas the total dependent populations, those aged below 15 as well as those above 60 years, were 25 percent and 11 percent respectively (Table 4.1). The overall dependency is estimated at around 54 percent. The population by five-year age groups and sex is represented by the population pyramid (Figure 4.1).

4.2 Type of family

Figure 4.2: Percent of households by type of family



For the first time since census-taking began in Nepal in 1911, types of family had been asked. This study has asked about three family categories - nuclear, joint and extended as family types, not just household populations. The reason the survey asked this question was the dissatisfaction buzzing among the intelligentsia and the media: there were complaints that number of households was inflated compare to households 2011 census reported to increase the amount of relief the affected people could lay claim to. To illustrate, if a relief-provider recorded the destruction of a traditional house that might have housed an extended family, he or she would allocate relief to one, extended family. An aged traditionally built house when destroyed, obviously extended family would have been separated into five nuclear families and built their temporary shelters and they were registered by relief providers, then they could claim five separate relief packages. The splitting up of a family does not necessarily mean that there was an attempt at deception but there might be a compulsion when they lost their original house and household structure. Thus a distinction between genuine and spurious claims must be made.

Traditional families, by which we mean joint and extended families were badly disrupted, not only were their houses destroyed but also they saw their very social values, norms, beliefs, and practices shaken. Surprisingly, the survey found that three out of five families were nuclear (61.0%); slightly over one-third (36.0%), joint; and the remaining 3 percent, extended. On average, the household size is estimated at 5.0. About one in five (19.6%) households holds more than six family members.

4.3 Mortality

Immediately after the earthquake, the main efforts were to rescue people trapped in damaged buildings, take the injured to the hospital for emergency treatment, protect property, including food, clothes, and other important things, and bury dead bodies. Managing relief, particularly food for children, older people, and vulnerable populations, in this hour of crisis was a tremendous job. Naturally, during such a time of emergency, maintaining accurate records was not a high priority. The fact that neither society nor the authorities was well-prepared for a disaster and its consequences made the situation worse. Generally, when a patient enters a hospital seeking treatment, admission a new file is created and treatment pursued accordingly, but after a disaster recordkeeping is overlooked in the haste to save lives. The Government of Nepal has a health management information system (HMIS) in all 75 districts but its efficacy in the 14 most earthquake-affected districts in the hours following the earthquake is questionable.

Officially, the earthquake was responsible for 8,790 casualties and 22,300 injuries, and it impacted the daily lives of 8.0 million people, or one-third of the total population of Nepal (PDNA, 2015). The PDNA states that 31 of the nation's 75 districts were affected and classified seven each as severely

and crisis-hit. District disaster rescue committees (DDRCs) collected primary data by deploying field staff as the central authority ordered. The screening survey used the databases of the 14 DDRCs to arrive at the following figures: 10,426 people died, 136 were missing, and 12,662 were injured. Altogether, 794,921 households were affected. The secondary data in the PDNA covers 31 districts, but there are inconsistencies between its data and those of the individual DDRCs: the DDRC data recorded 3,636 deaths more than the PDNA did.

4.4 Identification cards for the earthquake-affected

One of the objectives of the study survey was to identify the number of earthquake victims based on household-level information. In order to figure out which households might be entitled to benefits allocated to the disaster-affected, the 3,000 heads of household were asked whether or not they had an earthquake-affected identification card. Nine of ten households reported that they had a "complete damage" while 5 percent reported that they had a "partial damage" card, and another about 5 percent reported that had no identification card at all (Table 4.2).

Table 4.2: Percent distribution of households possessing earthquake-affected identification card

Background variables	Possession of earthquake-affected identification card			Total (n)
	Yes, completely damaged	Yes, partially damaged	No	
Domain				
Severely hit	97.9	1.1	1.0	1,601
Crisis-hit	79.0	11.7	9.2	792
Kathmandu Valley	84.0	7.1	8.9	608
Residence				
Rural	92.7	4.2	3.0	2,004
Urban	84.9	6.8	8.2	996
Type of family				
Nuclear	90.2	5.0	4.8	1,831
Joint or extended	90.0	5.3	4.7	1,170
Sex of HH head				
Male	90.8	4.8	4.4	2,381
Female	87.7	6.0	6.3	618
Occupation of HH head				
Agriculture	92.5	4.4	3.1	1,785
Self-employed in non-agriculture	82.2	7.4	10.4	298
Wage worker	87.4	5.1	7.5	293
Salaried worker	88.7	6.4	4.9	203
Other	88.6	5.7	5.7	420
Highest education of HH member				
No education	92.5	3.5	4.0	173
Primary & NFE	90.3	5.2	4.6	329
Secondary	91.6	4.8	3.6	976
Higher secondary	91.0	4.6	4.4	1,106
Higher	83.5	7.4	9.1	417
Religion				
Hindu	88.5	5.3	6.2	1,969
Bouddha	93.0	5.2	1.8	828
Kirant	85.7	10.2	4.1	49
Christian	96.1	1.3	2.6	155
Caste/ethnicity				
Brahman (Hill)	91.4	4.0	4.5	397
Chhetri/Thakuri	90.3	5.1	4.6	567
Tamang	92.1	5.5	2.4	781
Newar	84.6	7.6	7.8	487
Other Hill Janajatis	92.6	3.6	3.8	446
Dalit (Hill)	90.2	2.6	7.2	235
Other	85.1	5.7	9.2	87
Total	90.1	5.1	4.8	3,000
Total (n)	2,704	153	143	

Note: Other occupations include too old to work and retired; disabled; unemployed or searching for work; and too young to work; other Hill Janajatis include the Magar, Gurung, Kumal, Sherpa, Danuwar and Sunuwar; and other caste/ethnicity includes many different groups with small number of cases like the Rai, Limbu, Majhi, Thami, Yakkha, Thakali, Baramo, Jirel, Khaling, Brahman (Tarai), Tharu, and Rajbanshi.

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The survey administrators often heard local people complain that their names had been left off the list of the earthquake-affected collected by local authorities in collaboration with the central authorities who visited their villages to assess the damages and losses associated with the earthquake.

In terms of the background attributes of earthquake survivor identification cardholders, some interesting results are apparent. The proportion of cardholders was greatest in severely hit districts, followed by the proportions in crisis-hit districts and then Kathmandu Valley (Table 4.2). In terms of caste and ethnicity, the highest proportions of complete-damage cardholders were found among other Hill Janajatis (92.6%) and Tamangs (92.1%).

The proportion of identified cardholders was greater in rural than urban areas, probably because more buildings in urban than rural areas are made of reinforced cement concrete (RCC).

By religion, 96 percent of Christian households said that they had complete-damage identification cards. Kirant households had the largest proportion of partial-damage identification cards - 10 percent. In terms of education, 93 percent of households whose heads had no education had complete-damage identification cards, but only 84 percent of households with "higher" educational statuses had cards of this category.

4.5 Marital status

Every society has recognized procedures for creating marital relationships and marital rights, and for making it known that they have been created. Marriage has been defined as a union between a man and a woman such that the children born to the woman are recognized as the legitimate offspring of both parents, but that definition varies across societies. Anthropologists generally agree that marriage is an institution or process that legitimizes the rights to mutual sexual access, access to spousal labour, and forms of support as well as the right of paternity. Demographers, however, take a functionalist view of marriage and have often treated all 'regular sexual union' as marriage (Bongaarts & Potter, 1983).

In the study, all household members aged 10 years and above (12,870 in total) were asked about their marital status, whether they were unmarried, married, single (widow/widower), or divorced/ separated. About three out of five (58.0%) were married, slightly more males (57.6%) than females (54.8%). The unmarried comprised just over one-third of the population (36.0%), with fewer females (33.2%) than males (38.9%) reporting that they were unmarried (Table 4.3). About one percent were divorced or separated, with the rate for males (0.6%) slightly less than that for females (0.8%). Widowers comprised 3 percent of the study population, and widows, almost thrice that proportion, 8 percent.

Nationally, the 2011 census found that the proportion of married females was significantly higher (63.9%) than that of married males (57.6%) (Bajracharya et al., 2012), and the proportions of never married or unmarried males and females were 41 percent and 31 percent respectively.

Similarly, at the national level, widowers comprised just about 2 percent of the population aged over 10, but widows were about triple at around 5 percent. The national rates of divorce/separation were less than one percent each for males (0.3%) and females (0.4%) respectively, were less than those of the study population.

Table 4.3: Percent distribution of household population (10+ years) by sex and marital status

Background variables	Male					Female					Total				
	Unmarried	Married	Single	Div./sep.	Total (n)	Unmarried	Married	Single	Div./sep.	Total (n)	Unmarried	Married	Single	Div./sep.	Total (n)
Domain															
Severely hit	39.0	57.6	2.9	0.6	3,249	33.4	59.7	6.2	0.7	3,393	36.1	58.6	4.6	0.6	6,642
Crisis-hit	39.0	57.8	2.4	0.8	1,819	33.8	57.7	7.8	0.6	1,912	36.4	57.7	5.2	0.7	3,730
Kathmandu Valley	38.6	57.5	3.5	0.4	1,207	31.9	56.0	10.9	1.2	1,290	35.2	56.7	7.3	0.8	2,497
Residence															
Rural	39.5	57.2	2.8	0.6	4,176	34.1	58.4	6.8	0.7	4,395	36.7	57.8	4.8	0.7	8,571
Urban	37.8	58.4	3.1	0.6	2,101	31.6	58.5	9.1	0.8	2,199	34.6	58.5	6.2	0.7	4,299
Type of family															
Nuclear	45.7	52.0	1.6	0.7	3,220	39.9	54.1	5.0	1.0	3,282	42.8	53.0	3.3	0.8	6,502
Joint or extended	31.7	63.5	4.2	0.5	3,054	26.6	62.7	10.1	0.5	3,313	29.1	63.1	7.3	0.5	6,367
Sex of HH head															
Male	37.4	58.8	3.2	0.6	5,394	33.6	62.4	3.7	0.2	5,216	35.5	60.6	3.5	0.4	10,610
Female	48.5	50.2	0.7	0.7	883	32.0	43.2	22.1	2.6	1,376	38.5	45.9	13.7	1.9	2,260
Occupation															
Agriculture	10.0	85.8	3.3	1.0	2,068	8.0	83.4	7.4	1.2	2,339	8.9	84.5	5.5	1.1	4,408
Self-employed in non-agri.	14.3	84.2	1.1	0.4	525	9.6	83.5	5.2	1.6	249	12.8	84.1	2.5	0.6	773
Wage worker	25.1	73.1	1.2	0.6	928	31.8	59.5	6.8	2.0	148	26.0	71.3	1.9	0.8	1,075
Salaried worker	15.3	82.9	1.4	0.5	439	31.4	67.6	1.0	0.0	204	20.4	78.1	1.2	0.3	643
HH work/student/other	80.4	15.4	3.8	0.4	2,316	51.1	40.2	8.3	0.4	3,654	62.5	30.5	6.5	0.4	5,971
Education															
No education	4.3	82.2	11.9	1.6	1,001	3.0	75.3	20.3	1.4	2,248	3.4	77.5	17.7	1.4	3,248
Primary & NFE	30.5	65.6	3.1	0.8	1,657	33.7	63.3	2.2	0.8	1,443	32.0	64.5	2.7	0.8	3,101
Secondary	52.4	47.1	0.2	0.3	1,924	59.7	39.4	0.6	0.4	1,631	55.8	43.5	0.4	0.3	3,555
Higher than secondary	52.2	47.1	0.4	0.2	1,695	52.2	47.5	0.2	0.1	1,272	52.2	47.3	0.3	0.2	2,967
Religion															
Hindu	38.6	58.3	2.6	0.5	4,061	33.2	57.7	8.3	0.8	4,377	35.8	58.0	5.6	0.7	8,440
Bouddha	38.6	56.8	3.9	0.7	1,836	32.1	60.9	6.2	0.8	1,798	35.4	58.8	5.0	0.7	3,633
Kirant	49.5	50.5	0.0	0.0	93	41.0	49.0	9.0	1.0	100	45.4	49.5	4.6	0.5	194
Christian	42.9	54.7	0.7	1.7	287	38.1	56.9	4.7	0.3	318	40.3	55.9	2.8	1.0	605
Caste/ethnicity															
Brahman (Hill)	40.4	56.8	2.5	0.2	848	32.3	58.5	8.7	0.6	886	36.3	57.7	5.6	0.4	1,735
Chhetri/Thakuri	40.1	58.0	1.6	0.3	1,143	32.7	57.5	8.7	1.1	1,233	36.3	57.8	5.2	0.8	2,375
Tamang	38.3	57.9	3.0	0.8	1,684	32.0	61.0	6.2	0.8	1,665	35.2	59.4	4.6	0.8	3,350
Newar	38.3	57.5	3.8	0.4	1,053	33.6	57.7	8.1	0.5	1,095	35.9	57.6	6.0	0.5	2,148
Other Hill Janajatis	38.8	56.4	3.8	1.0	972	35.0	57.6	6.5	1.0	1,046	36.8	57.0	5.2	1.0	2,019
Dalit (Hill)	36.7	59.5	3.0	0.7	430	35.1	56.1	8.6	0.2	499	35.8	57.8	6.0	0.4	928
Other	39.7	57.5	1.4	1.4	146	36.3	55.6	7.6	0.6	171	38.0	56.6	4.4	0.9	316
Total	38.9	57.6	2.9	0.6	6,277	33.2	54.8	7.6	0.8	6,594	36.0	58.0	5.3	0.7	12,870
Total (n)	2,443	3,614	181	39		2,192	3,852	500	50		4,636	7,466	680	87	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The marital status of 88 of the 12,870 household members over the age of 10 changed after the earthquake (Table 4.4). While 57 percent and 41 percent of the males whose marital status changed were married and unmarried respectively before the earthquake, afterwards, 43 percent were married, 50 percent were widowers, and 7 percent were divorced or separated (Table 4.5). Among the females whose marital status changed, 37 percent were unmarried and 63 percent were married before the earthquake, while afterwards, 37 percent were married, 59 percent were widows, and 4 percent were either divorced or separated (Table 4.6).

Of the 88 people whose marital status changed, 35 were unmarried, 52 were married, and only one had suffered a spouse's death before the earthquake, while after the earthquake, 36 were married, 48 were widows or widowers, and 4 were divorced or separated (Table 4.4). While the proportions of unmarried males and females were 41 and 37 percent respectively before the earthquake, it turned out to be nil after the earthquake. The proportions of married males and females were 57 and 63 percent respectively before the earthquake and it cropped up significantly towards widowhood (widower 50.0% and widow 58.7%), followed by divorce (male 7.1% and female 4.3%).

Table 4.4: Percent distribution of household population (10+ years) by marital status whose marital status changed after the earthquake

Background variables	Before earthquake				After earthquake				Total
	Unmarried	Married	Single	Div./sep.	Unmarried	Married	Single	Div./sep.	(n)
Domain									
Severely hit	53.3	46.7	0.0	-	-	53.3	40.0	6.7	45
Crisis-hit	46.2	46.2	7.7	-	-	53.8	38.5	7.7	13
Kathmandu Valley	16.1	83.9	0.0	-	-	16.1	83.9	0.0	31
Residence									
Rural	48.0	50.0	2.0	-	-	50.0	42.0	8.0	50
Urban	28.9	71.1	0.0	-	-	28.9	71.1	0.0	38
Type of family									
Nuclear	31.4	65.7	2.9	-	-	34.3	60.0	5.7	35
Joint or extended	45.3	54.7	0.0	-	-	45.3	50.9	3.8	53
Sex of HH head									
Male	39.6	58.5	1.9	-	-	41.5	54.7	3.8	53
Female	40.0	60.0	0.0	-	-	38.9	55.6	5.6	35
Occupation									
Agriculture	22.2	77.8	0.0	-	-	22.2	75.0	2.8	36
Self-employed in non-agri.	20.0	80.0	0.0	-	-	16.7	50.0	33.3	5
Wage worker	66.7	33.3	0.0	-	-	66.7	33.3	0.0	12
Salaried worker	50.0	25.0	25.0	-	-	66.7	33.3	0.0	4
HH work/student/other	51.5	48.5	0.0	-	-	51.5	42.4	6.1	33
Education									
No education	0.0	100.0	0.0	-	-	0.0	97.4	2.6	37
Primary & NFE	11.1	88.9	0.0	-	-	11.1	66.7	22.2	9
Secondary	84.6	15.4	0.0	-	-	84.6	7.7	7.7	26
Higher than secondary	76.5	17.6	5.9	-	-	81.3	18.8	0.0	17
Religion									
Hindu	35.7	62.5	1.8	-	-	36.4	61.8	1.8	56
Bouddha	44.4	55.6	0.0	-	-	42.9	50.0	7.1	27
Kirant	-	-	-	-	-	-	-	-	-
Christian	60.0	40.0	0.0	-	-	50.0	16.7	33.3	5
Caste/ethnicity									
Brahman (Hill)	37.5	62.5	0.0	-	-	37.5	62.5	0.0	8
Chhetri/Thakuri	60.0	40.0	0.0	-	-	60.0	40.0	0.0	5
Tamang	51.9	48.1	0.0	-	-	51.9	37.0	11.1	27
Newar	26.7	70.0	3.3	-	-	30.0	70.0	0.0	30
Other Hill Janajatis	0.0	100.0	0.0	-	-	0.0	85.7	14.3	6
Dalit (Hill)	54.5	45.5	0.0	-	-	54.5	45.5	0.0	11
Other	-	-	-	-	-	-	-	-	-
Total	39.8	59.1	1.1	-	-	40.9	54.5	4.5	88
Total (n)	35	52	1	-	-	36	48	4	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Table 4.5: Percent distribution of males (10+ years) by marital status whose marital status changed after the earthquake

Background variables	Before earthquake				After earthquake				Total
	Unmarried	Married	Single	Div./sep.	Unmarried	Married	Single	Div./sep.	(n)
Domain									
Severely hit	52.4	47.6	0.0	-	-	52.4	38.1	9.5	21
Crisis-hit	44.4	44.4	11.1	-	-	55.6	33.3	11.1	9
Kathmandu Valley	16.7	83.3	0.0	-	-	16.7	83.3	0.0	12
Residence									
Rural	52.2	43.5	4.3	-	-	56.5	34.8	8.7	23
Urban	30.0	70.0	0.0	-	-	30.0	70.0	0.0	20
Type of family									
Nuclear	27.8	66.7	5.6	-	-	33.3	55.6	11.1	18
Joint or extended	52.0	48.0	0.0	-	-	52.0	44.0	4.0	25
Sex of HH head									
Male	31.4	65.7	2.9	-	-	32.4	61.8	5.9	35
Female	87.5	12.5	0.0	-	-	87.5	12.5	0.0	8
Occupation									
Agriculture	17.6	82.4	0.0	-	-	17.6	76.5	5.9	17
Self-employed in non-agri.	25.0	75.0	0.0	-	-	25.0	25.0	50.0	4
Wage worker	66.7	33.3	0.0	-	-	66.7	33.3	0.0	12
Salaried worker	50.0	25.0	25.0	-	-	66.7	33.3	0.0	4
HH work/student/other	57.1	42.9	0.0	-	-	57.1	42.9	0.0	7
Education									
No education	0.0	100.0	0.0	-	-	0.0	92.9	7.1	13
Primary & NFE	0.0	100.0	0.0	-	-	0.0	75.0	25.0	7
Secondary	91.7	8.3	0.0	-	-	91.7	8.3	0.0	12
Higher than secondary	70.0	20.0	10.0	-	-	77.8	22.2	0.0	10
Religion									
Hindu	33.3	63.0	3.7	-	-	37.0	59.3	3.7	27
Bouddha	58.3	41.7	0.0	-	-	58.3	41.7	0.0	12
Kirant	-	-	-	-	-	-	-	-	-
Christian	50.0	50.0	0.0	-	-	50.0	0.0	50.0	4
Caste/ethnicity									
Brahman (Hill)	50.0	50.0	0.0	-	-	50.0	50.0	0.0	4
Chhetri/Thakuri	50.0	50.0	0.0	-	-	50.0	50.0	0.0	2
Tamang	66.7	33.3	0.0	-	-	66.7	16.7	16.7	12
Newar	26.7	66.7	6.7	-	-	33.3	66.7	0.0	15
Other Hill Janajatis	0.0	100.0	0.0	-	-	0.0	85.7	14.3	6
Dalit (Hill)	60.0	40.0	0.0	-	-	60.0	40.0	0.0	5
Other	-	-	-	-	-	-	-	-	-
Total	40.5	57.1	2.4	-	-	42.9	50.0	7.1	42
Total (n)	17	24	1	-	-	18	21	3	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Table 4.6: Percent distribution of females (10+ years) by marital status whose marital status changed after the earthquake

Background variables	Before earthquake				After earthquake				Total
	Unmarried	Married	Single	Div./sep.	Unmarried	Married	Single	Div./sep.	(n)
Domain									
Severely hit	54.2	45.8	-	-	-	52.0	40.0	8.0	24
Crisis-hit	50.0	50.0	-	-	-	50.0	50.0	0.0	4
Kathmandu Valley	11.1	88.9	-	-	-	11.1	88.9	0.0	18
Residence									
Rural	44.4	55.6	-	-	-	44.4	48.1	7.4	27
Urban	30.0	70.0	-	-	-	30.0	70.0	0.0	20
Type of family									
Nuclear	35.5	64.7	-	-	-	35.3	64.7	0.0	17
Joint or extended	37.9	62.1	-	-	-	37.9	55.2	6.9	29
Sex of HH head									
Male	57.9	42.1	-	-	-	57.9	42.1	0.0	19
Female	25.0	75.0	-	-	-	25.0	67.9	7.1	28
Occupation									
Agriculture	26.3	73.7	-	-	-	26.3	73.7	0.0	19
Self-employed in non-agri.	0.0	100.0	-	-	-	0.0	100.0	0.0	2
Wage worker	-	-	-	-	-	-	-	-	-
Salaried worker	-	-	-	-	-	-	-	-	-
HH work/student/other	50.0	50.0	-	-	-	48.1	44.4	7.4	26
Education									
No education	0.0	100.0	-	-	-	0.0	100.0	0.0	24
Primary & NFE	50.0	50.0	-	-	-	50.0	50.0	0.0	2
Secondary	78.6	21.4	-	-	-	78.6	7.1	14.3	14
Higher than secondary	85.7	14.3	-	-	-	85.7	14.3	0.0	7
Religion									
Hindu	37.9	62.1	-	-	-	37.9	62.1	0.0	29
Bouddha	33.3	66.7	-	-	-	33.3	53.3	13.3	15
Kirant	-	-	-	-	-	-	-	-	-
Christian	66.7	33.3	-	-	-	66.7	33.3	0.0	3
Caste/ethnicity									
Brahman (Hill)	40.0	60.0	-	-	-	40.0	60.0	0.0	5
Chhetri/Thakuri	50.0	50.0	-	-	-	50.0	50.0	0.0	4
Tamang	40.0	60.0	-	-	-	37.5	50.0	12.5	15
Newar	26.7	73.3	-	-	-	26.7	73.3	0.0	15
Other Hill Janajatis	-	-	-	-	-	-	-	-	-
Dalit (Hill)	50.0	50.0	-	-	-	50.0	50.0	0.0	6
Other	-	-	-	-	-	-	-	-	-
Total	37.0	63.0	-	-	-	37.0	58.7	4.3	46
Total (n)	17	29	-	-	-	17	27	2	

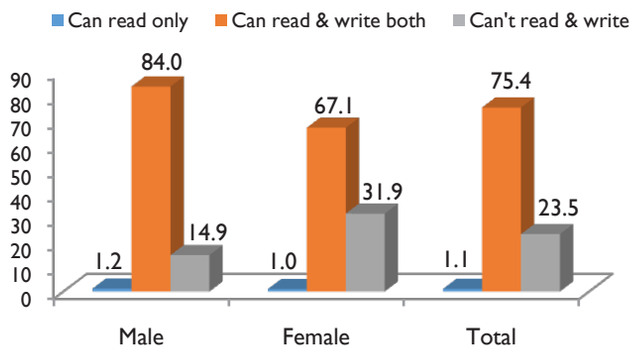
Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

4.6 Literacy status

Among the 13,999 people aged 5 years and above, 75 percent could read and write, but female's rate of literacy was lower (67.1%) than that of males (84.0%) (Figure 4.3).

The rates of literacy the study found were high in terms of national rates but slightly lower than regional rates. The 2011 census defined literacy as the ability to read and write in any language with understanding and the ability to do

Figure 4.3: Literacy status of population



simple arithmetic calculations (G.C. et al., 2014). According to the 2011 census, 66 percent of the total population were literate. The rates for males (75.2%) and females (57.4%) reveal a significant gender gap. The regional statistics on literacy were the highest for both males (84.2%) and females (68.4%) in the hill area of the central development region, where the study area lies.

As literacy is higher in the central development region than elsewhere in the country, background attributes might explain the findings of this study. For example, the severely hit districts had lower rates than crisis-hit districts and Kathmandu Valley. In terms of residence, family type, gender, religion, and caste/ethnicity, literacy rates were higher in urban areas, nuclear families, males, Hindus, and Brahmin respectively. Dalits had the lowest rate, just 69 percent (Table 4.7).

Table 4.7: Percent distribution of household population (5+ years) by sex and literacy status

Background variables	Male				Female				Total			
	Can read only	Can read & write both	Can't read & write	Total (n)	Can read only	Can read & write both	Can't read & write	Total (n)	Can read only	Can read & write both	Can't read & write	Total (n)
Domain												
Severely hit	1.3	81.9	16.9	3,587	0.8	65.8	33.4	3,674	1.1	73.7	25.2	7,262
Crisis-hit	0.7	86.8	12.5	1,991	1.1	70.0	28.9	2,077	0.9	78.3	20.8	4,069
Kathmandu Valley	1.6	85.4	13.0	1,296	1.5	66.3	32.2	1,372	1.6	75.6	22.9	2,668
Residence												
Rural	1.1	82.9	15.9	4,589	0.9	66.4	32.6	4,773	1.0	74.5	24.4	9,362
Urban	1.3	86.0	12.7	2,287	1.2	68.5	30.3	2,351	1.3	77.1	21.6	4,636
Type of family												
Nuclear	1.3	84.9	13.8	3,515	1.4	67.8	30.8	3,530	1.3	76.3	22.3	7,045
Joint or extended	1.0	83.0	15.9	3,361	0.7	66.4	32.9	3,593	0.9	74.4	24.7	6,955
Sex of HH head												
Male	1.2	83.1	15.7	5,856	1.1	67.9	31.1	5,635	1.1	75.6	23.2	11,492
Female	1.0	89.2	9.8	1,019	0.9	64.1	34.9	1,488	1.0	74.3	24.7	2,507
Religion												
Hindu	1.2	85.1	13.7	4,441	0.8	69.4	29.7	4,718	1.0	77.0	22.0	9,157
Bouddha	1.0	81.2	17.8	2,004	1.3	62.0	36.7	1,958	1.1	71.7	27.1	3,962
Kirant	1.9	88.6	9.5	105	2.8	64.2	33.0	106	2.8	75.9	21.2	212
Christian	1.8	84.0	14.1	326	1.8	65.2	33.0	342	1.9	74.3	23.8	668
Caste/ethnicity												
Brahman (Hill)	0.7	89.7	9.7	921	0.3	74.1	25.6	942	0.5	81.8	17.8	1,864
Chhetri/Thakuri	1.1	87.5	11.5	1,222	0.8	70.5	28.7	1,326	0.9	78.6	20.4	2,549
Tamang	0.9	82.4	16.7	1,835	1.3	62.0	36.7	1,819	1.1	72.2	26.7	3,654
Newar	1.7	84.9	13.4	1,140	1.4	69.3	29.3	1,175	1.6	77.0	21.5	2,315
Other Hill Janajatis	0.8	80.7	18.5	1,093	1.1	65.8	33.1	1,137	1.0	73.1	25.9	2,229
Dalit (Hill)	2.8	76.2	21.0	495	0.9	63.3	35.8	542	1.8	69.4	28.7	1,037
Other	1.8	82.2	16.0	169	1.1	62.6	36.3	182	1.4	72.2	26.4	352
Total	1.2	84.0	14.9	6,875	1.0	67.1	31.9	7,124	1.1	75.4	23.5	13,999
Total (n)	81	5,772	1,021		74	4,780	2,270		156	10,552	3,291	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

4.7 Educational status

By level of education, a simple majority of the population (29.1%) had a primary education, followed by those who had secondary (25.4%) and higher secondary (21.2%) educations. Both male and female populations had almost similar rates at different educational levels except in higher secondary level non-formal education. About 25 percent males achieved higher secondary level of education whereas it was about 18 percent among females. The proportions of males and females having non-formal education were about 16 and 33 percent respectively.

Generally, the educational attainment of males is greater than that of females, but in this case it is only at higher secondary level that the rates of male attainment exceed those of females. This result suggests that, despite the earthquake, there are opportunities available for females and the socio-economic prospects are positive. Nationally, about 26 percent of the population completed primary

school, lower than of the rate of the study population, but the national rate for secondary level of achievement, about 22 percent, is comparable to that in the study population.

Table 4.8: Percent distribution of household population (5+ years) by sex and educational attainment

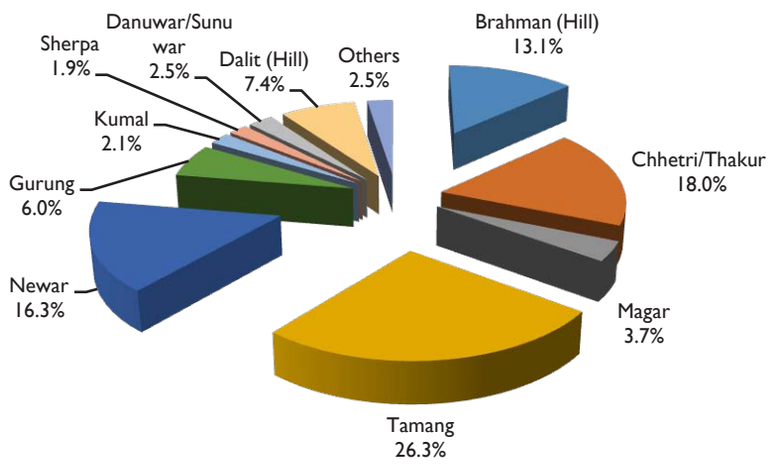
Background variables	Male					Female					Total				
	No education	Primary & NFE	Secondary	Higher than sec.	Total (n)	No education	Primary & NFE	Secondary	Higher than sec.	Total (n)	No education	Primary & NFE	Secondary	Higher than sec.	Total (n)
Domain															
Severely hit	17.8	33.5	27.8	20.9	3,587	33.9	28.0	23.1	15.0	3,674	25.9	30.7	25.4	17.9	7,262
Crisis-hit	12.9	34.0	28.7	24.4	1,991	29.6	28.3	24.1	18.0	2,077	21.4	31.1	26.4	21.2	4,069
Kathmandu Valley	14.4	22.9	27.4	35.4	1,295	33.1	20.9	20.9	25.1	1,372	24.0	21.8	24.1	30.1	2,668
Residence															
Rural	16.6	34.1	27.9	21.4	4,589	33.2	28.1	23.6	15.1	4,773	25.1	31.0	25.7	18.2	9,362
Urban	13.9	26.7	28.1	31.3	2,286	31.0	23.9	21.7	23.4	2,351	22.5	25.3	24.9	27.3	4,636
Type of family															
Nuclear	14.9	30.9	29.4	24.9	3,515	31.7	27.5	24.1	16.7	3,530	23.3	29.2	26.7	20.8	7,045
Joint or extended	16.6	32.4	26.6	24.4	3,361	33.2	26.0	21.9	18.9	3,593	25.2	29.1	24.1	21.6	6,955
Sex of HH head															
Male	16.6	31.6	27.2	24.6	5,856	31.7	27.2	23.1	18.1	5,635	24.0	29.4	25.2	21.4	11,492
Female	10.7	31.6	32.8	24.9	1,019	35.6	25.1	22.6	16.8	1,488	25.4	27.7	26.7	20.1	2,507
Religion															
Hindu	14.7	28.6	27.9	28.8	4,441	30.3	26.1	22.4	21.2	4,718	22.7	27.3	25.1	24.9	9,157
Bouddha	18.3	36.1	28.9	16.7	2,004	37.3	27.7	23.4	11.6	1,958	27.7	32.0	26.2	14.2	3,962
Kirant	10.4	45.3	26.4	17.9	105	34.6	19.6	30.8	15.0	106	22.5	32.4	28.6	16.4	212
Christian	15.6	41.1	23.9	19.3	326	33.9	31.9	25.4	8.8	342	25.0	36.3	24.7	13.9	668
Caste/ethnicity															
Brahman (Hill)	9.9	24.9	24.5	40.7	921	25.8	24.6	21.2	28.4	942	17.9	24.7	22.9	34.5	1,864
Chhetri/Thakuri	12.5	21.8	32.7	32.9	1,222	29.3	24.7	21.2	24.8	1,326	21.3	23.3	26.7	28.7	2,549
Tamang	17.1	38.3	27.8	16.8	1,835	37.5	28.8	22.7	11.0	1,819	27.3	33.6	25.3	13.9	3,654
Newar	14.8	25.9	26.3	33.0	1,140	30.1	23.6	22.1	24.2	1,175	22.6	24.7	24.2	28.5	2,315
Other Hill Janajatis	19.2	36.5	29.6	14.7	1,093	33.5	30.0	25.9	10.6	1,137	26.5	33.2	27.7	12.6	2,229
Dalit (Hill)	23.1	40.5	25.7	10.7	495	36.6	29.7	25.4	8.3	542	30.2	34.8	25.6	9.5	1,037
Other	17.1	48.2	22.4	12.4	169	36.3	22.5	26.9	14.3	182	27.1	35.0	24.8	13.1	352
Total	15.7	31.6	28.0	24.7	6,875	32.5	26.7	23.0	17.8	7,124	24.2	29.1	25.4	21.2	13,999
Total (n)	1,080	2,174	1,925	1,696		2,313	1,904	1,636	1,271		3,393	4,078	3,561	2,967	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

4.8 Caste and ethnic composition

Nepal is diverse in terms of both its caste and its ethnic (Adibasi Janajati) composition. No group has a numerical majority: the largest group is Chhetris, who, according to the 2011 census, comprised about 17 percent of the national population of 26.5 million. In Nepal, different caste and ethnic groups are densely concentrated in specific geographical areas and may be totally absent from other areas. The earthquake hit the central mountains and hills, which are the traditional home of Tamangs and Newars, as well as the western mountains and hills, where Gurungs predominate.

Figure 4.4: Percent of population by caste/ethnic composition



Tamangs comprised the largest (26.3%) proportion of the study population, followed by Chhetris/ Thakuris (18.0%), Newars (16.3%), other Hill Janajatis (16.3%), Brahmins (13.1%), Hill Dalits (7.4%)

and others[13] (2.5%) (Table 4.9). In the nation, in contrast, Dahal (2014) reported that in 2011 there were 126 caste/ethnic groups and that Chhetris were the largest caste group (16.6%), followed by Hill Brahmans (12.2%), and the Kami (4.8%). Among *Janajati* (indigenous nationalities), Tamangs comprised about 6 percent, followed by Newars (5.0%), and Rais (2.3%). In 16 districts in the central and part of the western region, the 2011 population was more than 54 percent *janajati*, followed by hill castes (33.4%), and Dalits (6.4%) (Mabuhang, 2015). Among the *Janajati*, Tamangs comprised 19 percent, followed by Newars (16.6%), Magars (6.5%), and Gurungs (3.9%). Among caste groups, Chhetris comprised 16 percent, followed by Hill Brahmin (15.0%), Kami (2.9%), Sarki (1.9%), and Damai (1.4%). In general, rural villages in the hills and mountains of Central Nepal are dominated by Tamangs and Kathmandu Valley by Newars. The proportion of Chhetris and Hill Brahmins in the study districts did not differ significantly from the national average as their distribution across the nation is fairly even.

Table 4.9: Percent distribution of household population by caste/ethnicity

Background variables	Brahman (Hill)	Chhetri/ Thakuri	Tamang	Newar	Other Hill Janajatis	Dalit (Hill)	Other	Total (n)
Domain								
Severely hit	10.6	19.6	27.6	7.3	22.5	9.7	2.8	7,829
Crisis-hit	20.3	14.9	29.8	12.4	13.9	5.5	3.2	4,347
Kathmandu Valley	9.0	18.6	17.4	47.7	2.6	4.2	0.5	2,812
Residence								
Rural	15.1	16.8	34.5	6.8	16.6	7.1	3.0	10,059
Urban	9.0	20.5	9.7	35.8	15.5	8.1	1.4	4,929
Type of family								
Nuclear	12.8	18.6	25.9	16.7	14.4	7.9	3.5	7,401
Joint or extended	13.4	17.5	26.7	15.9	18.0	6.9	1.5	7,585
Sex of HH head								
Male	13.8	17.8	27.4	16.4	15.8	6.5	2.4	12,267
Female	10.1	19.2	21.4	16.2	18.3	11.8	3.0	2,720
Occupation of HH head								
Agriculture	13.8	18.0	28.6	11.2	19.6	5.9	2.8	9,062
Self-employed in non-agri.	7.4	11.9	21.4	34.0	6.9	16.4	2.1	1,455
Wage worker	8.0	13.5	25.5	25.1	11.7	12.6	3.6	1,372
Salaried worker	18.7	30.0	19.6	14.3	14.7	1.7	1.1	961
Other	14.9	20.1	23.6	21.3	12.0	7.0	1.1	2,132
Highest education of HH member								
No education	7.3	18.6	33.8	12.0	15.8	9.5	3.2	317
Primary & NFE	4.5	7.9	33.8	10.8	18.6	17.8	6.8	1,271
Secondary	6.1	14.6	32.1	11.8	21.6	10.6	3.3	5,085
Higher secondary	17.4	20.2	24.2	17.2	14.5	4.7	1.6	5,921
Higher	22.6	25.2	14.5	27.1	8.2	1.7	0.6	2,395
Religion								
Hindu	20.0	27.6	3.0	22.3	14.7	10.5	1.8	9,762
Bouddha	0.0	0.0	76.5	4.5	18.5	0.0	0.4	4,261
Kirant	0.0	0.0	0.0	0.0	29.6	0.0	70.4	226
Christian	1.4	1.8	52.8	10.2	19.6	11.8	2.4	738
Total	13.1	18.0	26.3	16.3	16.3	7.4	2.5	14,987
Total (n)	1,963	2,705	3,948	2,446	2,437	1,114	374	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Apart from the castes and *Janajati* of significant demographic size, Nepal is home to many numerically tiny groups, most of which are classified as *janajati.* The Chepang, with a population of about 38,300, are the largest group, followed by the Majhi (37,900), Danuwar (32,400), Sunuwar (28,500), Kumal (26,600), and Thami (25,200). Another six groups have populations not exceeding 10,000—the Pahari, Baramo, Hyolmo, Darai, Hayu, and Jirel. Similarly, there are very tiny groups of Dalits, the so-

[13] Other Hill Janajatis include Gurung, Magar, Danuwar/Sunuwar, Kumal and Sherpa; and Others include groups with small populations, like Rai, Limbu, Majhi, Thami, Yakkha, Thakali, Baramo, Jirel, Khaling, Brahman (Tarai), Tharu, and Rajbanshi.

called untouchables in Hindu culture; two, the Badi and the Gaine have populations of less than 5,000. Both groups were severely affected by the earthquake.

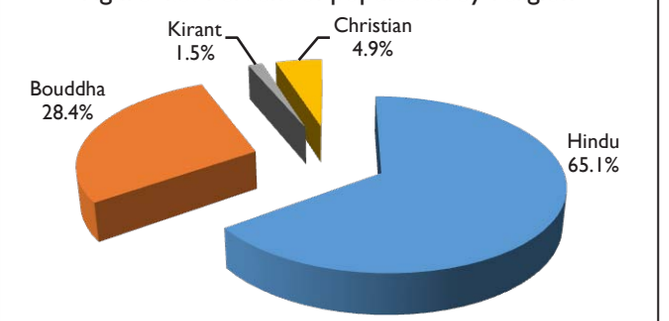
Various groups in Nepal have always had varying degrees of social, cultural, and political vulnerability, but the earthquake exacerbated those vulnerabilities as well as creating new ones, making it hard for certain groups to resist the disaster and cope with its impact.

By domain, Tamangs dominated both crisis-hit and severely hit districts, comprising 30 percent and 28 percent respectively, whereas Newars comprised 48 percent of Kathmandu Valley (Table 4.9) and Chhetris/Thakuris and Tamangs about equal percentages (18.6% and 17.4% respectively).

4.9 Religious composition

The majority (65.1%) of the population said Hindu as their religion, followed by Bouddha (28.4%), Christian (4.9%), and Kirant (1.5%). According to the 2011 census, 81 percent of the total population was Hindu, followed by Buddhist (9.0%), Muslim (4.4%), Kirant (3.0%), and Christian (1.4%). A small percentage was animists and practitioners of Bon. The number of Christians has increased substantially in the last ten years, but the number is still small compared to other religions (Dahal, 2014). Since the affected region is dominated by Tamangs and Tamangs are largely Buddhist, the percentage of Hindus in the study is less than the national figure and the percent of Buddhists is three times the national average. The proportion of Christians is also significantly larger in the study area – almost five percent versus not even two. Given these disparities, it will important to consider the implications of religion for reconstruction and adopt appropriate measures.

Figure 4.5: Percent of population by religion



4.10 Occupational status

Information on occupation was collected to household members aged 10 years and above. Out of the total population of 14,987, 12,870 were of this age, and of them the female and male populations were 6,277 and 6,570 respectively. Altogether, 34 percent reported that they were involved in agriculture, followed by 28 percent who were studying, 12 percent who did household work, 8 percent who were wage workers, 6 percent who were self-employed in the non-agriculture sector, and 5 percent salaried workers (Table 4.10).

The 2011 census reported that sixty percent of the employed population had named agriculture as their main occupation Suwal et al. (2014) argued that the proportion of the employed population that worked in the primary sector, mainly agriculture, was gradually declining across the nation, including in the earthquake-affected districts. However, the decline after the earthquake was sharp: the population working in agriculture was about halved. The comparability of figures, however, is questionable as the date of and environment for census enumeration and for this study were totally different. In addition, when the census was administered the population freely voluntarily provided information about their socio-economic, and demographic state, but in this study, many had lost their homes and were living in wretched conditions in temporary shelters, and therefore were reluctant to provide information. They were primarily concerned about what they would get if they reported information.

Table 4.10: Percent distribution of household population (10+ years) by occupation

Background variables	Agriculture	Self-employed non-agriculture	Wage worker	Salaried worker	HH work/ student/other*	Total (n)
Domain						
Severely hit	38.4	4.2	7.9	4.3	45.1	6,644
Crisis-hit	36.4	7.4	7.6	4.4	44.1	3,731
Kathmandu Valley	20.0	8.7	10.5	7.6	53.2	2,496
Residence						
Rural	39.1	4.7	7.2	4.0	44.9	8,569
Urban	24.5	8.5	10.6	7.0	49.3	4,299
Type of family						
Nuclear	34.7	5.8	8.4	4.5	46.7	6,503
Joint or extended	33.8	6.2	8.3	5.5	46.1	6,367
Sex of HH head						
Male	34.9	6.1	7.8	5.2	46.1	10,611
Female	31.5	5.4	11.2	4.1	47.9	2,260
Education						
No education	56.0	3.3	4.2	0.4	36.0	3,248
Primary & NFE	42.1	5.3	9.6	1.3	41.6	3,099
Secondary	24.8	6.4	11.2	2.7	54.9	3,555
Higher than secondary	13.5	9.2	8.1	16.6	52.6	2,967
Religion						
Hindu	31.9	6.4	8.2	5.8	47.7	8,439
Bouddha	41.4	5.2	8.0	3.6	41.8	3,632
Kirant	43.3	2.1	8.2	5.2	41.2	194
Christian	21.8	6.3	11.7	2.5	57.7	605
Caste/ethnicity						
Brahman (Hill)	34.0	4.7	4.3	7.0	50.1	1,734
Chhetri/Thakuri	33.4	4.5	6.9	7.4	47.8	2,376
Tamang	38.3	4.7	8.9	3.3	44.9	3,348
Newar	22.8	12.7	10.4	5.7	48.4	2,148
Other Hill Janajatis	42.7	3.0	8.3	4.1	42.0	2,020
Dalit (Hill)	28.8	8.7	13.0	2.2	47.3	928
Other	40.2	4.7	8.9	3.2	43.0	316
Total	34.3	6.0	8.4	5.0	46.4	12,870
Total (n)	4,409	772	1,075	643	5,971	

* Others include old aged/retired, disabled, unemployed/searching work and too young.
Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Another plausible reason for the possible under-enumeration of households working in agriculture after the earthquake is that household members were not as fully involved in agriculture as they would have been in a normal situation and thus reported that they were not involved at all. The poor state of arable land and other land used for agricultural activities, the fact that people were living in shelters, and the provision of relief materials may have impacted engagement in agricultural activities as an occupation.

The proportion of the population involved in agricultural activities was significant in all domains, with the greatest in the severely hit domain, (38.4%), followed by the crisis-hit (36.4%), and Kathmandu Valley (20.0%), but in all three domains, the proportion falling in the household work/student/other category accounted for the largest proportion, with Kathmandu Valley having the highest rate, 53 percent and severely hit districts having the second highest (45.1%) (Table 4.10).

These results demonstrate that the household work/student/other category complements agriculture-based occupations. In general, it is females in Nepal who engage in household work, but in this study, males were represented in the category household work/student/others, a fact suggesting that, irrespective of all background characteristics, the losses associated with the disaster might have pushed family members away from agricultural activities and into household work.

Because change in occupation is a measure of the impact a disaster has had on a society, household populations were asked if there was any change in occupational status after the earthquake. Out of the 12,870 eligible respondents (those aged 10 and above), 342 respondents reported that their occupation had changed.

The change in the population involved in agricultural activities was significant (Table 4.11): there was a 62 percent decline, from about 44 percent to just 17 percent. The population self-employed in non-agriculture pursuits also declined significantly, from 11 percent to 8 percent, a 33 percent drop. The population which left agriculture found alternative occupation in wage work increased by 106 percent, followed by salaried worker (66.7%), and household work/student/other (34.2%).

Table 4.11: Percent distribution of population whose occupation changed after the earthquake

Background variables	Before earthquake					After earthquake					Total (n)
	Agricul-ture	Self-employ-ed in non-agri.	Wage worker	Salaried wage worker	HH work/ student/ other	Agricul-ture	Self-employ-ed in non-agri.	Wage worker	Salaried wage worker	HH work/ student/ other	
Domain											
Severely hit	48.3	8.9	18.8	2.2	21.8	15.8	7.0	43.0	3.7	30.5	271
Crisis-hit	37.1	22.9	17.1	5.7	17.1	27.0	13.5	35.1	5.4	18.9	35
Kathmandu Valley	13.9	19.4	33.3	2.8	30.6	11.4	5.7	37.1	11.4	34.3	36
Residence											
Rural	49.0	8.4	19.0	2.3	21.3	18.3	6.8	42.6	3.8	28.5	263
Urban	26.6	20.3	24.1	3.8	25.3	11.3	10.0	38.8	6.3	33.8	79
Type of family											
Nuclear	50.7	11.8	16.6	0.9	20.1	13.2	4.8	45.6	1.8	34.6	229
Joint or extended	29.8	10.5	27.2	5.3	27.2	23.7	14.0	33.3	9.6	19.3	114
Sex of HH head											
Male	42.1	10.1	20.2	3.2	24.3	17.8	6.9	40.5	4.9	30.0	247
Female	47.9	13.5	19.8	1.0	17.7	13.7	9.5	44.2	3.2	29.5	96
Education											
No education	71.8	14.1	12.7	0.0	1.4	15.5	7.0	26.8	0.0	50.7	71
Primary & NFE	52.4	10.7	22.6	0.0	14.3	15.7	4.8	42.2	1.2	36.1	84
Secondary	37.5	8.9	26.8	1.8	25.0	24.1	8.0	46.4	2.7	18.8	112
Higher than secondary	15.8	13.2	14.5	9.2	47.4	7.8	11.7	46.8	15.6	18.2	76
Religion											
Hindu	31.6	13.5	24.5	3.2	27.1	18.1	10.3	43.9	5.2	22.6	155
Bouddha	38.6	12.0	25.3	2.4	21.7	26.8	8.5	40.2	7.3	17.1	83
Kirant	0.0	12.5	25.0	0.0	62.5	25.0	0.0	75.0	0.0	0.0	8
Christian	70.4	6.1	9.2	2.0	12.2	6.1	3.1	36.7	0.0	54.1	98
Caste/ethnicity											
Brahman (Hill)	33.3	16.7	8.3	16.7	25.0	27.3	18.2	18.2	9.1	27.3	12
Chhetri/Thakuri	45.5	11.4	9.1	4.5	29.5	14.0	11.6	58.1	7.0	9.3	44
Tamang	61.6	6.5	13.0	1.4	17.4	10.1	6.5	40.6	2.2	40.6	138
Newar	21.7	26.1	19.6	2.2	30.4	15.6	8.9	44.4	6.7	24.4	46
Other Hill Janajatis	38.3	5.0	31.7	3.3	21.7	26.7	10.0	38.3	5.0	20.0	60
Dalit (Hill)	19.4	16.1	45.2	0.0	19.4	25.0	0.0	28.1	6.3	40.6	31
Other	25.0	16.7	25.0	8.3	25.0	25.0	0.0	58.3	0.0	16.7	12
Total	43.6	11.4	20.2	2.6	22.2	16.6	7.6	41.5	4.4	29.7	342
Total (n)	149	39	69	9	76	57	26	142	15	102	
Percentage change						-61.7	-33.3	105.8	66.7	34.2	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Before the earthquake, the household population was largely involved in agricultural activities, though this varied by background characteristic.

In female-headed households, the proportion involved in agriculture dropped precipitously, from 48 percent before the earthquake to just 14 percent afterward. The decline was even more dramatic among households with no education: the rate plummeted from 72 percent to 16 percent. At the same time, the proportion in the household work/student/others category soared from slightly more than one percent to 51 percent. The ethnic characteristics of the population that changed occupation are also significant: before the earthquake, the largest proportion working in agriculture

was, at 61 percent, Tamang households; afterwards, that rate dropped to just 10 percent. Simultaneously, the proportion of Tamang households doing wage work increased from 17 percent to 41 percent.

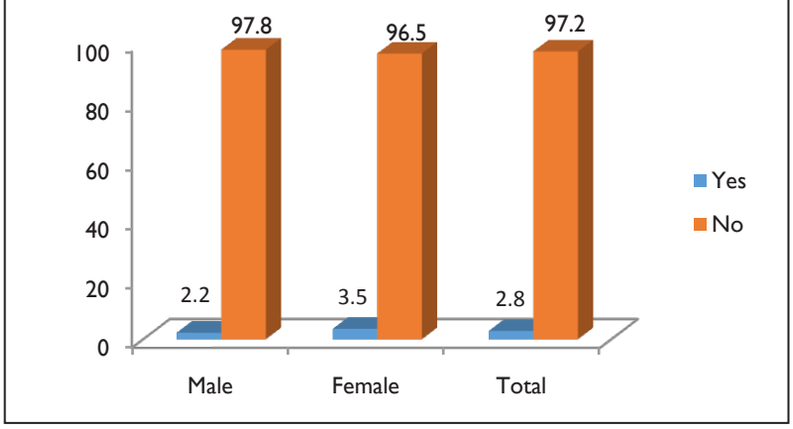
These changing occupational status of household populations indicate that the impact of earthquake disaster is undergoing despite their overwhelming concerns are related to reconstruction of their houses are expressed first and foremost need to build better back.

4.11 Psychosocial problems

Psychosocial health problems often appear among disaster-affected populations. Their magnitude varies with the intensity of the disaster and the capability of the society to cope with it. It is believed that, because of the coherence of social ties, a homogenous society copes better than a heterogeneous one.

Out of the 14,987 people surveyed, 426 (2.8%) had reported that they had experienced some symptoms of psychosocial problems after the earthquake. The fact that 4 percent of females but just 2 percent of males had psychosocial problems demonstrates that, as the literature predicts, women are more vulnerable than men (Figure 4.6). By domain, the rate of suffering was highest in severely hit districts (3.4%), followed by crisis-hit districts (2.2%), and Kathmandu Valley (2.1%). The presence of a sizable population with psychosocial problems could present problems for the reconstruction effort.

Figure 4.6: Percent of household population exhibiting psychosocial problems



While only about 3 percent of males in severely hit districts suffered from psychosocial problems, 4 percent of females in those districts did. Urban households showed higher rates than rural households for both males (2.5% versus 2.0%) and females (3.7% versus 3.4%) and rates of females of female heads of the households were 5 percent, significantly more than the 3 percent reported for females of male heads of households. Moreover, Hindus, irrespective of gender, were more afflicted with psychosocial problems than observers of other religions. Chhetri females had the highest rate of psychosocial problems among females (Table 4.12). Dalit households had the highest rates for both males and females. There was a negative relationship between educational status and psychosocial problems.

Table 4.12: Percent distribution of household population affected with psycho-social problems after the earthquake

Background variables	Affected with psycho-social problems after the earthquake					
	Male	Total (n)	Female	Total (n)	Total	Total (n)
Domain						
Severely hit	2.5	3,898	4.3	3,931	3.4	7,829
Crisis-hit	1.7	2,145	2.8	2,201	2.2	4,346
Kathmandu Valley	2.0	1,376	2.3	1,436	2.1	2,812
Residence						
Rural	2.0	4,989	3.4	5,068	2.7	10,057
Urban	2.5	2,430	3.7	2,500	3.1	4,930
Type of family						
Nuclear	2.1	3,707	3.5	3,695	2.8	7,402
Joint or extended	2.3	3,711	3.5	3,874	2.9	7,585
Sex of HH head						
Male	2.3	6,287	3.1	5,980	2.7	12,267
Female	1.7	1,132	5.0	1,589	3.6	2,720
Religion						
Hindu	2.4	4,770	3.8	4,993	3.1	9,762
Bouddha	2.0	2,169	3.1	2,091	2.5	4,260
Kirant	1.8	114	0.9	113	0.9	226
Christian	0.8	367	1.9	371	1.5	739
Caste/ethnicity						
Brahman (Hill)	1.2	981	2.2	981	1.7	1,962
Chhetri/Thakuri	3.3	1,313	5.1	1,392	4.2	2,704
Tamang	1.6	1,995	2.5	1,952	2.0	3,948
Newar	2.0	1,213	3.6	1,233	2.8	2,447
Other Hill Janajatis	2.6	1,199	3.7	1,238	3.2	2,437
Dalit (Hill)	3.4	531	5.0	584	4.2	1,115
Other	1.1	187	2.7	187	1.9	374
Total	2.2	7,419	3.5	7,568	2.8	14,987
Total (n)	162		265		426	
Education						
No education	3.8	1,081	7.1	2,313	6.1	3,394
Primary & NFE	2.5	2,174	2.3	1,904	2.4	4,079
Secondary	1.7	1,925	2.0	1,635	1.8	3,561
Higher than secondary	1.5	1,696	1.6	1,271	1.6	2,967
Total	2.2	6,876	3.7	7,123	3.0	14,001
Total (n)	154		260		416	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

4.12 Possession of citizenship cards

An adults' having a citizenship card signifies that he or she has full-fledged membership in a state. For example, he or she can exercise the right of adult franchise if she or he possesses a citizenship card. In Nepal, all individuals aged 16 and above are entitled to get a citizenship card, so those members of the surveyed households aged 16 and above were asked if they had citizenship cards or not. Of the household population of that age, a total of 10,989, population 16 years and above, 9,723 (88.5%) reported that they did had a citizenship card at the time of the survey against 1,240 (11.3%) who did not (Table 4.13). More females (14.4%) than males (8.1%) did not have citizenships cards. The rates of deprivation were greater in the severely hit and crisis-hit districts than in Kathmandu Valley.

The population without citizenship cards was asked if it had access to the state's benefits and opportunities because claimants of relief materials and facilities needed to show proof that they were citizens of Nepal. Their nature was also determined, as is discussed below.

About 25 percent of Dalit females did not possess citizenship cards, followed by 20 percent of other Hill Janajati females, 16 percent females each of other caste/ethnic group and Tamang. In contrast,

only 11 percent each of Brahmins and Chhetris/Thakuris, and 10 percent of Newars were deprived of a citizenship card.

Table 4.13: Percentage distribution of household population (16+ years) by possession of citizenship certificate

Background variables	Possession of citizenship certificate											
	Male				Female				Total			
	Yes	No	DK	Total (n)	Yes	No	DK	Total (n)	Yes	No	DK	Total (n)
Domain												
Severely hit	90.9	9.0	0.1	2,751	83.7	15.8	0.5	2,858	87.2	12.4	0.3	5,609
Crisis-hit	92.1	7.8	0.1	1,532	83.4	16.3	0.3	1,616	87.6	12.2	0.2	3,147
Kathmandu Valley	93.8	6.1	0.1	1,083	91.8	8.1	0.1	1,150	92.8	7.1	0.1	2,233
Residence												
Rural	91.0	8.9	0.1	3,513	83.3	16.3	0.4	3,691	87.0	12.7	0.2	7,205
Urban	93.5	6.4	0.1	1,852	89.1	10.7	0.3	1,932	91.2	8.6	0.2	3,784
Type of family												
Nuclear	90.3	9.6	0.0	2,686	84.8	15.0	0.2	2,705	87.6	12.3	0.1	5,389
Joint or extended	93.3	6.5	0.2	2,681	85.7	13.8	0.5	2,920	89.4	10.3	0.4	5,598
Sex of HH head												
Male	92.2	7.6	0.1	4,644	85.2	14.5	0.3	4,443	88.8	11.0	0.2	9,087
Female	89.2	10.7	0.1	721	85.7	13.9	0.4	1,180	87.0	12.7	0.3	1,902
Occupation												
Agriculture	97.6	2.4	0.0	2,030	92.6	7.3	0.1	2,310	94.9	5.0	0.1	4,339
Self-employed non-agri.	98.3	1.7	0.0	522	95.9	3.3	0.8	244	97.5	2.2	0.3	766
Wage worker	97.2	2.8	0.0	916	89.8	10.2	0.0	147	96.1	3.9	0.0	1,064
Salaried worker	100.0	0.0	0.0	438	98.0	2.0	0.0	205	99.4	0.6	0.0	643
HH work/ student/other	75.8	23.9	0.3	1,458	76.9	22.5	0.6	2,719	76.5	23.0	0.5	4,177
Education												
No education	98.7	1.1	0.2	996	96.1	3.7	0.2	2,240	96.9	2.9	0.2	3,236
Primary & NFE	96.4	3.6	0.0	1,238	90.0	10.0	0.0	1,035	93.5	6.5	0.0	2,274
Secondary	82.2	17.7	0.1	1,451	59.8	39.7	0.5	1,096	72.6	27.2	0.2	2,545
Higher than secondary	92.6	7.2	0.2	1,682	84.3	14.9	0.7	1,252	89.1	10.5	0.4	2,933
Religion												
Hindu	92.7	7.1	0.1	3,501	86.2	13.5	0.4	3,750	89.3	10.4	0.2	7,252
Bouddha	90.8	9.0	0.1	1,559	84.8	14.8	0.3	1,531	87.9	11.9	0.2	3,089
Kirant	85.1	14.9	0.0	74	78.8	21.2	0.0	85	81.8	18.2	0.0	159
Christian	86.6	13.4	0.0	232	77.0	22.6	0.4	257	81.8	18.0	0.2	488
Caste/ethnicity												
Brahman (Hill)	92.8	7.0	0.3	745	89.1	10.5	0.4	764	91.0	8.7	0.3	1,508
Chhetri/Thakuri	94.3	5.7	0.0	965	89.5	10.5	0.0	1,056	91.8	8.2	0.0	2,021
Tamang	91.0	9.0	0.0	1,416	84.4	15.5	0.1	1,403	87.7	12.2	0.1	2,819
Newar	94.4	5.5	0.1	927	89.3	10.2	0.5	965	91.8	7.9	0.3	1,893
Other Hill Janajatis	87.2	12.5	0.2	830	79.2	19.8	1.0	878	83.1	16.3	0.6	1,708
Dalit (Hill)	91.2	8.8	0.0	365	74.2	25.4	0.5	418	82.1	17.6	0.3	783
Other	89.8	10.2	0.0	118	83.7	16.3	0.0	141	86.5	13.5	0.0	259
Total	91.8	8.1	0.1	5,365	85.3	14.4	0.4	5,624	88.5	11.3	0.2	10,989
Total (n)	4,928	433	6		4,795	809	20		9,723	1,240	26	

DK: Do not know

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

By educational background, the household population with a secondary level of education showed an alarming rate of deprivation of a citizenship card. The rate of deprivation among this group was 27 percent in total, 40 percent among females and 18 percent among males. The result of the question about occupation suggests that a large proportion of the population were students, so it is likely that it is this group that is deprived of citizenship cards. More specifically, the proportion of those without citizenship cards in the housework/student/other category is 23 percent irrespective of gender, since male population of this category accounts for 24 percent against female population (22.5%) (Table 4.13).

Conclusions

The total population living in the 3,000 sampled households with sex ratio 98.0 implies that both male and female population have an equal parity in disaster affected districts in a backdrop of predominantly foreign labour migration of male population. It is also shown by high percentage of

economically active population observed. Nepalese society is still predominantly agrarian and traditional characterized with joint or extended family. But nuclear type of family overwhelmingly high indicates that the loss and damage of very traditional type of houses of household population naturally tends to build a temporary shelter more, since the temporary shelters built somehow would be smaller than the permanent buildings allured families to build nuclear family shelters than to be intact extended family after the earthquake. For relief distribution and receiving purpose also be a separate and nuclear family registration compels them to register different family or household. However, average household size is five, which is almost same with national census 2011.

Nepal is known for being a mosaic of diverse caste and ethnic groups. The sample population also shows multiethnic, multi-religious, and multilingual population composition. Among caste and ethnic groups, Tamangs Indigenous Nationality, followed by Chhetris/Thakuris, and so forth account for larger groups, whereas, there are more than dozens of tiny INs groups badly shaken by the earthquake. As a social indicator, the marital status of household population is one of the prominent indicators. Over one out of three population of a household is found to be unmarried. Though it is a small size of population found to change their marital status heading towards the single (widow/ widower), and divorce and separated condition.

About three out of four population of a household found to be literate show a strong social infrastructure which is needed to build better back of the affected population. The population largely engaged in agricultural activities is shifting towards non-agricultural activities after the earthquake. However, the alternative occupations against the agriculture is yet to be developed; so during emergency and disaster affected moment, most of the family members might be occupied by relief distribution or rent seeking behaviour might have impacted in the change in occupation than the agriculture.

Psychosocial problems are cropped up in the survey districts with a small proportion less than four percent, but the spreadness of such a problem among the social groups characterized with lose cohesion or heterogeneous shows higher than the society that are more homogenous and cohesive. One of the important queries made among population of a household with holding of citizenship, because it is the basic requirement to get any kind of support from the state, and it is also an entitlement of a citizen against the state. About 9 out of ten population reported that they have possessed the citizenship card whereas of them, female has less percentage than their male counterparts.

Chapter V
Participation of Stakeholders in Rehabilitation and Reconstruction

Many persons, communities, and teams were mobilized during the rescue, relief and rehabilitation of affected communities and populations. They included the security forces as well as non-military teams, foreign medical teams both within and outside the country, cadres from various political parties and their sister organizations, and a number of civil society organizations, including traditional and community organizations, religious organizations, and youth clubs and organizations. The role of the private sector was also instrumental. All of these categories are referred to as "stakeholders" in this study. This chapter is devoted to issues related to rescue, relief distribution, and rehabilitation as it was provided to affected communities and populations by various stakeholders.

5.1 Damage and rescue

5.1.1 Knowledge about earthquakes

Respondents from the surveyed households were asked if they had known anything about safety, rescue, and relief management during earthquakes before the 25 April, 2015, earthquake struck. Slightly over two-fifths (43.1%), of the respondents replied that they had had some knowledge. By domain, over half of households in Kathmandu Valley and crisis-hit districts (53.0% and 52.2% respectively) were knowledgeable, but only one-third (34.9%) of households in severely hit districts were knew about it (Table 5.1). Knowledge about safety, rescue, and relief management during earthquakes was higher among urban households (51.7%) than rural ones (38.9%).

Respondents who were knowledgeable were then asked what the main source of their knowledge was. Over two-thirds (66.6%) named the media, both print and electronic, followed by 19 percent who reported that they had learned from past earthquakes, including that of 1934 and those which struck afterwards (Table 5.1).

FGD participants gave a variety of responses regarding their knowledge about safety, rescue, and relief management during earthquakes. Many communities, including the Bhujel (Sindhuli), Brahman (Nuwakot), Chhetri (Sindhuli), Jirel (Dolakha), Newar, Pahari (Lalitpur), and Sherpa, Surel (Dolakha), said that they had learned "*to crouch under a table*" whereas those from the Majhi (Ramechhap), Sanyasi (Nuwakot), and Tamang (Sindhupalchowk, Makawanpur and Rasuwa) communities said that they had learned "*to crouch under a table or bed or in a doorway.*"

Other knowledge about safety, rescue, and relief management during earthquakes that various FDG participants shared is listed below.

- *It's good to build small houses of wood as far as possible.* -Bhujel, Brahman (Nuwakot), Chhetri (Sindhuli), Damai (Dhading), Gurung (Gorkha), Jirel (Dolakha), and Sherpa (Okhaldhunga) communities
- *It's good to assume the "duck. hold, and cover" position taught by Nepal Red Cross*. -Newar, Pahari (Lalitpur), Sanyasi (Nuwakot), and Sherpa (Okhaldhunga)
- *We'd heard about similar earthquakes in the past, like those in 1934 and 1961* -Kami (Dhading)
- *We were informed by the media.* -Hayu (Ramechhap), Kami (Dhading), and Newar, Pahari (Lalitpur)

Table 5.1: Percent distribution of respondents by knowledge about safety, rescue and relief management during earthquakes before the 25 April 2015 earthquake; source of knowledge; and perception of knowledge as useful during the earthquake

Background variables	Knowledge about		Source of knowledge					Know-ledge was useful	Total (n)
	Safety, rescue and relief management during EQ	Total (n)	Had heard about 1934 or later earthquake	Training on minimizing earthquake damage	Newspapers, pamphlets, radio and television	Course - books	Aware-ness posters/ NGOs		
Domain									
Severely hit	34.9	1,601	30.1	5.4	53.9	10.0	0.5	47.8	558
Crisis-hit	52.2	791	14.2	4.1	73.7	7.7	0.2	41.6	415
Kathmandu Valley	53.0	607	6.8	9.3	79.3	3.4	1.2	40.1	323
Residence									
Rural	38.9	2,004	24.6	5.6	59.6	9.8	0.4	44.1	779
Urban	51.7	996	10.9	6.4	77.4	4.3	1.0	43.7	514
Type of family									
Nuclear	43.2	1,830	18.7	5.9	66.7	7.7	0.9	46.5	790
Joint or extended	43.1	1,169	19.8	6.0	66.7	7.3	0.2	40.0	504
Sex of HH head									
Male	44.4	2,382	18.3	5.9	67.2	7.8	0.8	43.0	1,058
Female	38.3	619	23.2	6.3	63.7	6.8	0.0	47.9	237
Occupation of HH head									
Agriculture	38.0	1,786	22.3	4.9	65.0	7.2	0.6	46.0	677
Self-employed in non-agri.	54.2	299	15.4	6.2	71.0	6.2	1.2	45.3	162
Wage worker	42.2	294	12.1	4.8	73.4	8.9	0.8	39.5	124
Salaried worker	73.3	202	10.8	10.8	66.9	11.5	0.0	39.2	148
Other	43.4	419	22.4	6.6	63.9	6.6	0.5	41.8	183
Highest edu. of HH member									
No education	23.1	173	62.5	0.0	35.0	0.0	2.5	55.0	40
Primary & NFE	25.5	329	31.0	4.8	61.9	2.4	0.0	50.6	84
Secondary	33.7	976	22.8	4.0	64.4	8.2	0.6	44.7	329
Higher secondary	51.2	1,106	15.9	5.7	69.4	8.5	0.5	43.2	566
Higher	66.2	417	12.0	10.1	69.2	8.0	0.7	40.9	276
Religion									
Hindu	47.4	1,968	15.9	5.6	71.0	7.0	0.5	42.7	931
Bouddha	34.3	828	28.5	7.7	58.1	5.3	0.4	47.2	284
Kirant	16.3	49	11.1	11.1	55.6	22.2	0.0	12.5	9
Christian	45.2	155	25.7	2.9	44.3	24.3	2.9	50.7	70
Caste/ethnicity									
Brahman (Hill)	58.8	396	9.0	4.3	77.4	9.4	0.0	39.3	234
Chhetri/Thakuri	50.0	566	21.5	5.6	66.5	5.6	0.7	43.1	284
Tamang	37.1	781	24.5	7.6	58.6	9.3	0.0	45.5	290
Newar	50.7	487	11.7	6.5	76.5	3.6	1.6	36.3	247
Other Hill Janajatis	31.4	446	32.9	6.4	50.0	10.7	0.0	62.1	140
Dalit (Hill)	33.2	235	25.6	3.8	57.7	10.3	2.6	46.8	78
Other	25.3	87	4.5	4.5	81.8	9.1	0.0	40.9	22
Total	43.1	3,000	19.2	5.9	66.6	7.6	0.6	43.9	1,294
Total (n)	1,294		249	77	862	99	8	569	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Respondent were also asked if the knowledge they had about safety, rescue, and relief management during earthquakes was useful to them during the April earthquake. On average, 44 percent said it was useful, but in Kathmandu Valley and crisis-hit districts, the rates were lower than average, just 40 percent and 42 percent respectively, while in severely hit district it was considerably higher (47.8%) (Table 5.1).

FGD participants were asked the same questions, whether their knowledge had been useful or not. Most said that they had been unable to use their knowledge properly during emergencies, whether main earthquake or its aftershocks. Many, including participants from the Brahman, Chhetri (Sindhuli), Majhi (Ramechhap), Newar, Pahari (Lalitpur), and Sherpa (Okhaldhunga) communities said that many organizations had taught them messages without contextualizing them locally. The result was the loss of innocent people's lives. They made remarks like the following: "*What's the use of crouching under a bed or table or in a doorway if the whole house has completely collapsed? Many people died due to this miscommunication. It would have been better to teach them to run out of the house securely and safely.*"

According to the Gurung (Gorkha) community, children even made the mistake of going back inside to duck, hold, and cover as he had been taught: "*One child in our locality was standing outside during the earthquake, but, thinking he would be safe, he went inside and crouched under the table. Then the entire house collapsed and he died.*"

5.1.2 Damage to houses

Respondents were first asked what type of damage they had sustained. The overwhelming majority (98.5%) lost only assets but nearly 2 percent had sustained loss of human lives as well. Respondents in severely hit districts reported the highest rate of total damage to their houses (94.1%) (Table 5.3).

Key informants from Bhaktapur, Dhading, Kathmandu, Kavre, Gorkha, Lalitpur, Nuwakot, Ramechhap and Sindhupalchowk noted that almost all ancient structures made of mud mortar and brick or stone had been damaged or destroyed, but they also noted that modern buildings were not immune: "*Even newly designed houses were destroyed.*" They also expressed rue at not having been able to save their assets: "*We could not take our property from ours houses. We had to leave behind things like TVs, computers, solar panels, water tanks, valuables, including jewelry, and kitchen utensils.*"

Key informants from Kathmandu noted losses to people and animals as much as damage to houses: "*A 75-year-old died in earthquake and four or five people were seriously injured. One became disabled. . . . In our locality, as many as 1,600 roosters, 14 cattle, and 253 houses were lost.*"

Table 5.2: Percent distribution of households according to type of damage occurred in the house

Background variables	Damage of assets only	Damage of both assets & human loss	Total (n)
Domain			
Severely hit	97.8	2.2	1,601
Crisis-hit	99.9	0.1	792
Kathmandu Valley	98.5	1.5	607
Residence			
Rural	98.3	1.7	2,004
Urban	98.9	1.1	996
Type of family			
Nuclear	98.9	1.1	1,831
Joint or extended	97.9	2.1	1,169
Sex of HH head			
Male	98.5	1.5	2,382
Female	98.5	1.5	618
Occupation of HH head			
Agriculture	98.3	1.7	1,786
Self-employed in non-agri.	99.7	0.3	299
Wage worker	97.3	2.7	294
Salaried worker	100.0	0.0	202
Other	98.3	1.7	420
Highest education of HH member			
No education	97.1	2.9	172
Primary & NFE	98.2	1.8	329
Secondary	98.2	1.8	976
Higher secondary	98.7	1.3	1,106
Higher	99.5	0.5	417
Religion			
Hindu	99.0	1.0	1,969
Bouddha	97.6	2.4	827
Kirant	100.0	0.0	49
Christian	96.8	3.2	155
Caste/ethnicity			
Brahman (Hill)	100.0	0.0	396
Chhetri/Thakuri	98.9	1.1	566
Tamang	98.1	1.9	781
Newar	97.7	2.3	488
Other Hill Janajatis	97.1	2.9	446
Dalit (Hill)	100.0	0.0	235
Other	100.0	0.0	87
Total	98.5	1.5	3,000
Total (n)	2,955	45	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The extent of the damage was great, as the following comments by key informants indicate:

- Kirtipur: Eighteen people died and 87 were injured.
- Bhaktapur: Ten to fifteen people died, 300-400 houses were destroyed, and the overall loss was billions of rupees.
- Nuwakot: Thirty-nine people died, 3,031 were injured, 730 houses were destroyed, and the loss of livestock was huge.

- Okhaldhunga: One primary school was completely damaged.
- Dhading: In one VDC alone, 35 people and 800-900 livestock died.

5.1.3 Extent of damage to houses

The extent of damage was categorized as complete, partial, and slight. Records were collected for up to three houses owned by a single household. Of the 3,000 households selected for this study, 2,497 (83.2%) had only one house. Of this group, over 84 percent saw their single house completely damaged, followed by 14 percent with partial damage, and 2 percent with slight damage. Among the 326 households with two houses, three-quarters (73.9%) saw both completely damaged and among the 51 with three houses, over 83 percent reported that all three houses had collapsed (Table 5.3).

Table 5.3: Percent distribution of households by number and extent of damage houses

Background variables	HH with one house damage				HH with two houses damage					HH with three houses damage				
	Com-pletely	Par-tially	Slightly	Total (n)	Both com-pletely	1 com-pletely	Both par-tially	1 par-tially	Total (n)	All 3 com-pletely	2 com-pletely	1 com-pletely	All 3 par-tially	Total (n)
Domain														
Severely hit	94.1	5.8	0.2	1,283	83.7	13.8	1.8	0.7	276	90.9	4.5	0.0	4.5	44
Crisis-hit	59.9	33.4	6.6	664	44.7	39.5	14.0	1.8	114	35.7	28.6	28.6	7.1	14
Kathmandu Valley	89.9	8.3	1.8	553	70.0	30.0	0.0	0.0	50	80.0	0.0	20.0	0.0	5
Residence														
Rural	85.5	12.5	2.0	1,615	74.9	19.2	5.3	0.6	338	82.4	9.8	5.9	2.0	51
Urban	81.5	15.7	2.8	885	63.0	33.0	2.0	2.0	100	63.6	9.1	9.1	18.2	11
Type of family														
Nuclear	86.7	11.4	1.9	1,605	73.0	22.1	3.4	1.5	204	86.4	9.1	4.5	0.0	22
Joint or extended	79.4	17.7	2.9	895	71.4	22.6	5.6	0.4	234	75.0	10.0	10.0	5.0	40
Sex of HH head														
Male	83.8	13.7	2.5	1,959	73.6	21.2	4.6	0.5	368	78.6	10.7	8.9	1.8	56
Female	85.0	13.5	1.5	541	63.4	28.2	5.6	2.8	71	71.4	0.0	0.0	28.6	7
Occupation of HH head														
Agriculture	85.7	12.5	1.8	1,471	75.1	19.5	4.0	1.4	277	73.7	13.2	7.9	5.3	38
Self-employed in non-agri.	75.4	20.8	3.8	240	61.2	34.7	4.1	0.0	49	72.7	9.1	9.1	9.1	11
Wage worker	84.6	12.4	3.0	267	76.0	12.0	12.0	0.0	25	100.0	0.0	0.0	0.0	2
Salaried worker	85.0	13.2	1.8	167	68.8	25.0	6.3	0.0	32	100.0	0.0	0.0	0.0	4
HH work/student/other	82.6	14.6	2.8	356	64.9	29.8	5.3	0.0	57	87.5	0.0	12.5	0.0	8
Highest edu. of HH member														
No education	85.9	13.5	0.6	163	57.1	28.6	0.0	14.3	7	100.0	0.0	0.0	0.0	2
Primary & NFE	84.9	13.5	1.6	304	79.2	20.8	0.0	0.0	24	0.0	100.0	0.0	0.0	1
Secondary	84.6	13.3	2.1	812	80.7	12.9	5.7	0.7	140	88.0	4.0	4.0	4.0	25
Higher secondary	84.6	13.5	1.9	898	67.4	26.8	4.7	1.1	190	77.8	11.1	11.1	0.0	18
Higher	79.8	15.2	5.0	322	65.8	27.8	5.1	1.3	79	64.7	11.8	11.8	11.8	17
Religion														
Hindu	83.5	14.1	2.3	1,661	67.1	27.1	4.7	1.1	277	66.7	16.7	10.0	6.7	30
Bouddha	83.7	13.9	2.4	663	80.3	14.6	4.4	0.7	137	89.3	3.6	7.1	0.0	28
Kirant	86.0	11.6	2.3	43	57.1	28.6	14.3	0.0	7	-	-	-	-	-
Christian	92.5	7.5	0.0	133	84.2	10.5	5.3	0.0	19	100.0	0.0	0.0	0.0	4
Caste/ethnicity														
Brahman (Hill)	84.2	13.7	2.1	329	69.4	27.4	1.6	1.6	62	83.3	16.7	0.0	0.0	6
Chhetri/Thakuri	8.5	12.9	2.1	466	68.2	27.3	2.3	2.3	88	53.8	15.4	15.4	15.4	13
Tamang	82.3	15.2	2.5	645	81.3	10.7	7.1	0.9	112	91.7	4.2	4.2	0.0	24
Newar	81.9	16.2	1.9	425	52.6	40.4	5.3	1.8	57	50.0	33.3	16.7	0.0	6
Other Hill Janajatis	90.9	6.7	2.3	342	78.9	15.6	5.6	0.0	90	71.4	7.1	14.3	7.1	14
Dalit (Hill)	82.9	14.8	2.3	216	78.9	21.1	0.0	0.0	19	-	-	-	-	-
Other	81.1	17.6	1.4	74	46.2	38.5	15.4	0.0	13	100.0	0.0	0.0	0.0	1
Total	84.1	13.7	2.2	2,500	72.1	22.4	4.6	0.9	438	77.8	9.5	7.9	4.8	62
Total (n)	2,102	342	56		316	98	20	4		49	6	5	3	

Note: Where two damaged houses are considered, the proportion of households with one completely damaged house also includes either a partially or slightly damaged second house and the proportion with one partially damaged house includes a slightly damaged second house. Likewise where three damaged houses are considered, the proportion of households with two completely damaged houses also include a partially or slightly damaged third house, and the proportion with one completely damaged house includes either two partially or slightly damaged houses or one partially and one slightly damaged house.

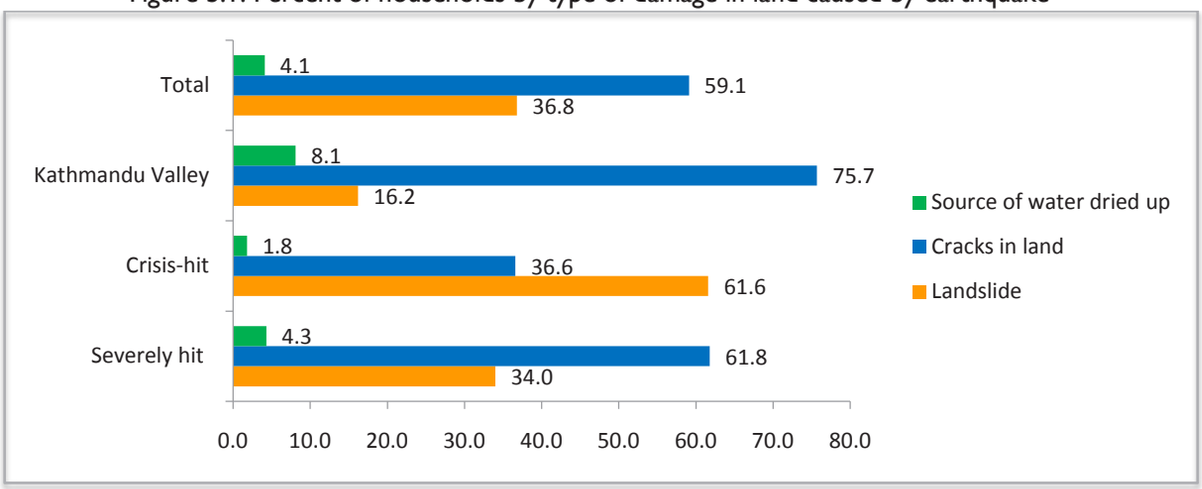
Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

5.1.4 Types of damage

Respondents were asked about the damage caused to their land. A large majority (59.1%) said that their land had cracked, about two-fifths (36.8%) that landslides had occurred, and 4 percent that

water sources had dried up (Figure 5.2). The proportion whose land had cracked was greatest in Kathmandu Valley (75.7%), whereas the greatest proportion reporting landslides (61.6%) were in crisis-hit areas (Figure 5.1).

Figure 5.1: Percent of households by type of damage in land caused by earthquake



Many of the FGD participants said that the earthquake had caused water resources to dry up. The Brahman (Nuwakot), Danuwar (Kavre), and Gurung (Gorkha) communities as well as female groups complained, "*Sources of water have been drying up since the earthquake and we women have a greater burden.*" The Gurung (Gorkha), Kami (Dhading), Newar (Kathmandu) and Sunuwar (Okhaldhunga) communities explained that springs no longer came to the surface as they once did:
"*Sources of water were disturbed by the earthquake and have now ceased to come out of the earth's surface. We are now facing an acute shortage of water.* "The Newar community in Bhaktapur, in contrast, experienced a shortage of piped water: *We are having problems getting drinking water due to the cracked pipelines.*"

A variety of other water-related problems were also noted. For example, female participants from Nuwakot and participants in the mixed community FDG said that, since the earthquake, they have had to walk up to three hours daily to fetch water and that this has made livestock rearing problematic: "*Because of the shortage of the water, it has been very difficult to keep cattle as usual.*"

Some people shared their thoughts about why damage had been extensive. During the screening survey, both the key informants and the community people in Rasuwa said that severe damage occurred because housing structures were weak (they had simply piled stone on top of stone), a fact they attributed to poverty, powerlessness, and ignorance. They also complained that government authorities had not listened to or addressed their problems in mainstream development plans and programs.

Other issues related to damage were various and include the following. The screening survey discovered that, in Gorkha, losses of family members were due more to panic than the loss of houses. According to the affected community people, partially damaged buildings are more difficult to deal with than completely damaged buildings. In some places, child- and women-friendly spaces were created in part as an effort to deal with the damage.

People of moderately affected Ward No. 8 of Dhunche expressed dissatisfaction over the distribution of relief materials. They claimed that relief was mixed up with politics and claimed that the chief district officer had, instead of providing justice to survivors, offered lucrative jobs to influential persons.

5.2 Relief and rehabilitation

As the screening survey team in Dolakha noted, reconstruction and rehabilitation is a challenging issue since it covers socio-cultural, demographic, economic, and psychological dimensions. Some of the issues raised are described below.

In Kathmandu, key informants suggested that reconstruction be based on community need and, in this vein, the government must create a conducive environment for the reconstruction of personal houses.

The earthquake-affected expressed concerns regarding the building code issued by the government, particularly in urban areas where landholdings are less than the recently proclaimed minimum land requirements. Participants in urban areas like Bhaktapur said that they would rather have a new home built than get monetary support because they did not think they would get enough money to rebuild their homes.

The dilemma in urban areas and municipalities was clearly visible regarding the implementation of standard norms for construction/reconstruction. The screening survey team from Lalitpur, for example, found it ironical that government buildings themselves did not pass the structural design regulations issued by the municipality. They also discovered that while government officials do follow the advice of their consultants, not all consultants were earthquake-sensitive.

Key informants in Rasuwa made several suggestions about the nature of reconstruction:

- Housing designs should be linked with the socio-cultural characteristics of various populations and tourism in order to promote sustained livelihoods.
- The relationship between reconstruction and socio-cultural diversity must be considered
- Some consideration toward how to meaningfully involve the affected at the grassroots level in collective reconstruction action, which includes all phases—planning, implementation, and monitoring.

5.2.1 Rescue immediately after the earthquake

The highest proportion of respondents (37.8%) was rescued by family members, including themselves, and rates of family rescue did not vary significantly in rural (38.1%) and urban (37.1%) areas. About one-fourth (24.4%) of respondents did not require rescue and about the same proportion (23.9%) were rescued by neighbours or community people. More than 50 percent of respondents in crisis-hit areas said that rescue efforts had not been needed (Table 5.4).

5.2.2 Rescue operations provided by those outside the community

The overwhelming majority of respondents (82.8%) said that they had not gotten help from outside community in rescue operation. This rate was slightly higher (88.8%) in crisis hit area and lower in Kathmandu valley (74.5%) (Table 5.4).

Table 5.4: Percent distribution of respondents reporting rescuer from inside the community involved immediately after the earthquake and rescuer engaged from outside community

Background variables	Rescuer from inside the community involved immediately after the earthquake				Rescuer from outside community	Total (n)
	Family member, including oneself	Neighbour/ community people	Both family & neighbour/ community	Search & rescue not required		
Domain						
Severely hit	43.5	30.1	18.8	7.6	17.0	1,601
Crisis-hit	26.8	14.5	6.6	52.1	11.2	792
Kathmandu Valley	37.1	19.8	10.5	32.6	25.5	607
Residence						
Rural	38.1	27.5	15.6	18.8	16.9	2,004
Urban	37.1	16.6	10.5	35.7	17.9	996
Type of family						
Nuclear	37.2	25.5	15.0	22.3	18.6	1,831
Joint or extended	38.6	21.5	12.2	27.7	15.0	1,168
Sex of HH head						
Male	38.9	22.6	14.2	24.2	16.0	2,381
Female	33.4	28.8	12.6	25.2	21.7	619
Occupation of HH head						
Agriculture	39.6	26.4	14.6	19.4	16.9	1,785
Self-employed non-agri.	29.2	22.1	13.8	34.9	17.4	298
Wage worker	39.1	17.3	12.2	31.3	17.3	294
Salaried worker	36.9	19.7	16.3	27.1	19.7	203
Other	35.7	21.4	10.7	32.1	16.9	420
Highest edu. of HH member						
No education	31.8	23.7	22.0	22.5	19.2	173
Primary & NFE	38.6	23.1	16.7	21.6	15.5	329
Secondary	43.5	20.9	12.2	23.4	14.2	975
Higher secondary	35.6	27.2	14.1	23.1	19.0	1,105
Higher	32.2	22.8	11.5	33.4	20.1	416
Religion						
Hindu	37.0	22.8	12.5	27.6	17.1	1,969
Bouddha	42.0	24.2	14.0	19.8	16.4	828
Kirant	14.3	53.1	22.4	10.2	39.6	49
Christian	31.6	27.7	28.4	12.3	16.1	155
Caste/ethnicity						
Brahman (Hill)	39.5	22.7	10.1	27.7	12.6	397
Chhetri/Thakuri	34.0	25.2	16.4	24.3	20.5	567
Tamang	39.8	24.5	14.7	21.0	16.6	781
Newar	34.2	22.1	12.5	31.1	22.0	488
Other Hill Janajatis	44.5	22.0	14.4	19.1	12.3	445
Dalit (Hill)	37.0	24.3	11.1	27.7	14.0	235
Other	24.1	33.3	20.7	21.8	29.9	87
Total	37.8	23.9	13.9	24.4	17.2	3,000
Total (n)	1,133	717	417	733	516	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

5.2.3 First external rescuers

The overwhelming majority (90.5%) of respondents said that the first external rescuers were from the security personnel. Only about 8 percent of first rescuers were volunteers and remaining a very few percentage were from non-government organizations (NGOs) and international non-government organizations (INGOs) (Table 5.5).

Table 5.5: Percent distribution of households by first rescuer, the nationality of security force rescuers and types of volunteer rescuers

First rescuer	%	Total (n)	Nationality of security force rescuers	%	Total (n)	Type of volunteer rescuers	%	Total (n)
Security personnel	90.5	467	National	99.2	463	From national organizations	22.1	9
Volunteers	8.1	42	International	0.2	1	Of political parties	54.8	23
NGOs	1.0	5	Both	0.6	3	Members of village committees	9.1	4
INGOs	0.4	2	Total	100.0	467	Friends	8.7	4
Total	100.0	516				From other villages/*Gumba*	5.3	2
						Total	100.0	42

5.2.4 Nationality of first rescuers from security force

Almost all the first rescuers (99.2%) were national security personnel. International security personnel and combined forces of national and international security personnel comprised just about one percent of the total (Table 5.7).

5.2.5 Types of volunteer rescuers

Five categories of volunteer rescuers were identified in the field: members of national organizations, members of political parties, officials of village development committee, friends, and volunteers from neighbouring villages. The majority of volunteer rescuers (54.8%) were members of political parties, followed by one-fifth (22.1%) from national organizations. Fewer than 10 percent were residents in other VDCs, friends, or volunteers from other villages or, in the case of Rasuwa, Sindhupalchowk, and Dolakha districts, from *Gumbas.* Rates in severely hit districts and Kathmandu Valley did not vary much from each other or the average but in crisis-hit districts, there were no volunteers from political parties and about 63 percent of volunteer rescuers were from national organizations (Table 5.7).

Roles of non-government organizations

The screening survey found that non-government organizations, including external development partners, were actively involved in rescue, relief, rehabilitation, and early recovery. On the day the study team was to visit government officials at the district headquarters, there were more than 100 vehicles lined up at Tundikhel and all of them belonged to external development partners. However, these partners were not able to reach all needy areas. One 80 years-old complained, "*None of them came to our VDC, Sangachowk-6.*"

Roles of political parties

According to almost all of the screening survey teams, local political leaders were positive about and actively involved in rescue, relief, and rehabilitation processes. However, local people in Sindhupalchowk complained that the game of politics was played to acquire relief packages and in Karnama, Makwanpur, some interest groups distributed relief to anyone living in a tent in order to gain popularity. In some places, interest groups collected money from 1,500 survivor families, luring them to re-settle in the Monohari area of Makwanpur, only to force the local administration to evacuate them later. The politicization of rescue, relief, and reconstruction was also evident in Rasuwa, where high levels of political influence and many connections were, it was claimed, needed to be able to get relief.

Absence of local bodies

Local DRMCs were active in almost all of the 14 most earthquake-affected districts even though there were no local elected bodies but they did not coordinate effectively with ward citizen's forums to carry out rescue work or collect information.

The dependency syndrome

It is difficult to manage the expectations of the earthquake-affected people. According to the study participants, they now ask the police for help doing basic tasks like disposing of the dead body of a cow. People seek attention and government from the State for every little thing. According to the chief development officer of Gorkha, not a single person or community took any initiative to rescue people since all were expecting the State to act. Many people tried to acquire relief through undue political and social influence. In some districts, survivors submitted bills that showed they had spent more money than the actual cost of relief items.

Local initiatives

Despite the hardships they faced, some earthquake-affected people, such as those in Makawanpur, had, in an example of unusual social participation and mobilization, established women- and child-friendly spaces and were according children top priority. Women's awareness groups were also formed to serve as watchdog. Key informants in Makawanpur expressed regret that they had not acted collectively earlier: "*If we had done this earlier, there would have been fewer incidences of girl trafficking in the past.*"

Educated girls and adolescents got opportunities to work as facilitators in child-friendly spaces and, as a result, developed their skills in counseling and opened up a future working in the development sector. They also established good habits of personal cleanliness and sanitation, matters about which they used to be careless. In some places, returnees from the Middle East again went abroad to work, while others sought self-employment options locally.

Key informants said that they had been able to link their villages with national and international development organizations like Plan Nepal, UNICEF-ENPHO, and Tear Fund because of the earthquake despite the fact that no organization had shown interest earlier. The earthquake also raised awareness about maternal, child, and reproductive health issues.

One-door system

After the earthquake Government of Nepal declared a state of emergency and issued an official request to NGOs and INGOs to provide immediate rescue and relief. The one-door system adopted by the government was effective in omitting duplication and making sure relief reached genuine survivors. The chief district officer of Gorkha bragged about the success of the policy, saying that it enabled Gorkha to save NPR 3.8 million of the government’s money.

However, some earthquake-affected people, for example, some in Lalitpur, expressed frustration with the government because, in many places, survivors did not receive relief packages. In Thula Durlung, for example, some survivors with contacts in high places got relief, but others got nothing.

The rescue effort was complicated by the number of agents involved in rescue, relief and rehabilitation. In Sindhupalchowk, for example, a total of 160 organizations, both government and non-government, were involved in three clusters: Total district has been divided into three clusters: Barabishe, Chautara, and Melamchi. To simplify matters on the national scale, the government, following the UN model, divided the affected areas into eight clusters. No information on that model was available.

Like Sindhupalchowk, Gorkha also organized its relief effort. According to DDC officials in Rasuwa, 113 different persons, both Nepali and foreign, and governmental, national and international organizations were involved in rescue, relief, and rehabilitation efforts. Many of the INGOs, namely, ActionAid International (AI), Luthran World Federation (LWF), World Food Program (WFP), Karuna Foundation, Helen Killer Foundation, Non-Resident Nepalis, Canadian Red Cross, Centre for Mental Health and Counselling (CMC), Transcultural Psycho-social Organization, See Change Foundation *(*SCF), Action Center LaFaim, UNICEF, UNFPA, LACOS, Samaritan Purse, and Handicap International provided various kinds of support. To ensure that the response was effectively coordinated, the Rasuwa DDC decided that INGOs and NGOs should register with it and pay registration fees of NPR 5,000 and NPR 2,000 respectively.

The distribution of NPR 15,000 to affected families is complete and a progress report on that distribution is being compiled. The number of households increased from 62,000 as given in the census of 2011 to 80,000. The reasons for the increase are two: first, four years have transpired since the census so naturally data would need to be updated, and, second, some joint and extended family households divided their property shares so that each affected nuclear family would get relief and subsidies separately.

Each household that had lost a family member, 2,200 altogether, was provided with NPR 40,000 to conduct funeral rites. Each affected family is also entitled to NPR 100,000 to cover the cost of temporary settlement. In Ramechhap, FGD groups appreciated the rescue process but said that it arrived late in remote areas and that immediate rescue was conducted by locals. Most respondents were still waiting to get their government allowances of NPR 185,000 (NPR 200,000 minus the NPR given initially) to rebuild their houses.

Because of the promises of NPR 200,000 from the government, people have not demolished many vulnerable houses, fearing they will not get compensation if they do. Some respondents were seeking the help of a generous organization like Chaudhary Group, which rebuilt Gaikhura, Ramechhap. Others are economically vulnerable so they have been compelled to take shelter in temporary accommodations like bamboo huts and tent. The 71 government-built cottages in Ramechhap are spurned by the people of Majhi Gaun because they are too far from their land and their original houses. Besides, there are no toilets near the cottages.

5.2.6 Types of relief items

Different types of relief items were distributed to the respondents, including cash, tents, tarpaulins, mattress, galvanized iron sheets, flattened rice, pulses, oil, noodles, biscuits, blankets, clothes, and dignity kits. The most commonly received goods were cash (90.8%) and flattened rice and pulses (80.7%) (Table 5.6).

5.2.7 Reasons for not receiving cash relief (other than compensation for a death)

On average, nearly one-third (30.4%) of respondents did not receive cash relief because their houses had not been damaged completely and they did not have earthquake survivor identification cards testifying that they had been. One-fifth (20.8%) did not receive cash because they got galvanized iron sheets instead. About 15 percent households did not receive cash because they had earthquake survivor identification cards for households with partially damaged houses (Table 5.9).

The screening survey found that people believed that people with concrete houses did not get relief as it was presumed that they were rich. Radha Parajuli of Mankha VDC, Sindhupalchowk, expressed a typical view: *"I spent more than NPR 100,000 building my house, but even though it was damaged by the earthquake, I am not eligible to get relief*." Another indignant house owner in Lalitpur District who received no compensation complained, "A family with a damaged straw-mud house received NPR 15,000." Because the rich also experienced adversity, "*Is the government only for poor*?" was a question

posed by many survivors. Not everyone found fault with this policy. As local people in Rasuwa said, "[The] earthquake made the influential and rich people even richer and the poor suffered a lot on all fronts."

Table 5.6: Percent distribution of household receiving different kind of relief items

Background variables	Cash*	Tent	Tarpau-lin	Mat-tress	Galvani-zed iron sheets	Flatten-ed/rice, pulses	Oil	Nood-les, biscuits	Blankets	Clothes	Dignity kits	Total (n)
Domain												
Severely hit	95.2	34.8	72.8	28.4	64.6	94.6	76.6	72.5	68.5	15.9	44.2	1,601
Crisis-hit	88.1	51.3	49.4	21.7	22.0	65.3	36.1	40.5	45.9	7.2	15.2	792
Kathmandu Valley	82.7	30.5	42.7	14.5	35.6	64.1	39.9	49.1	28.2	5.9	15.5	607
Residence												
Rural	93.2	38.6	69.1	29.1	56.5	89.7	68.6	68.1	66.5	13.4	36.9	2,004
Urban	86.0	37.7	43.3	13.2	29.4	62.6	38.1	41.7	30.0	7.9	18.2	996
Type of family												
Nuclear	91.1	35.5	61.9	22.9	48.3	81.3	59.2	60.1	56.0	11.6	31.0	1,831
Joint or extended	90.4	42.9	58.5	25.2	46.2	79.7	57.3	58.2	51.9	11.6	30.3	1,169
Sex of HH head												
Male	91.3	40.0	59.8	24.6	48.2	80.8	59.2	59.5	54.3	11.1	29.9	2,381
Female	89.2	31.9	63.4	20.8	44.8	80.6	55.9	58.8	54.7	13.6	33.9	619
Occupation of HH head												
Agriculture	93.4	40.1	64.0	25.5	51.3	85.5	63.2	63.9	59.2	11.0	32.4	1,786
Self-employed in non-agri.	84.2	40.6	46.2	16.8	34.9	68.7	45.3	46.0	41.9	11.0	22.1	298
Wage worker	88.1	31.0	62.2	25.5	45.6	81.9	61.6	60.7	53.6	13.6	27.9	294
Salaried worker	85.7	44.3	54.2	19.3	36.9	68.8	49.3	49.3	45.8	8.9	34.2	203
Other	89.3	31.3	57.9	22.1	46.4	74.0	49.8	53.5	46.9	14.5	30.2	420
Highest edu. of HH member												
No education	91.9	32.9	59.3	19.7	44.5	87.3	66.9	60.1	61.6	11.0	22.0	173
Primary & NFE	92.4	38.0	63.8	27.1	52.6	86.3	66.0	73.5	62.6	14.9	33.7	329
Secondary	92.0	36.1	65.8	26.5	50.7	86.0	63.1	63.6	62.1	13.6	32.8	976
Higher secondary	91.2	40.3	59.0	23.1	47.4	80.4	56.5	56.5	50.6	10.3	32.5	1,105
Higher	85.4	40.5	49.9	18.5	37.4	62.3	43.5	45.7	36.9	7.9	22.3	417
Religion												
Hindu	90.2	40.3	54.7	19.1	40.5	76.2	51.5	52.8	49.4	11.5	27.7	1,968
Bouddha	91.5	38.6	67.0	31.4	56.2	88.3	68.6	70.1	58.9	7.9	29.5	827
Kirant	93.8	20.8	91.8	22.4	75.5	91.8	79.2	79.2	87.8	24.5	70.8	48
Christian	94.2	16.1	90.3	43.2	80.6	94.2	87.1	78.7	81.4	28.4	63.2	155
Caste/ethnicity												
Brahman (Hill)	92.4	46.6	50.6	16.2	40.7	73.5	52.4	48.4	45.1	7.1	27.2	396
Chhetri/Thakuri	91.7	40.5	55.0	19.1	39.7	69.8	41.5	47.1	49.1	11.6	27.9	566
Tamang	95.5	38.3	67.3	30.1	57.1	89.3	69.4	68.4	56.9	8.2	29.8	782
Newar	86.3	32.6	47.4	15.8	32.6	71.7	45.7	48.2	40.2	7.4	23.4	488
Other Hill Janajatis	85.2	35.5	75.3	41.1	64.0	90.1	76.0	73.3	71.5	25.1	49.6	446
Dalit (Hill)	91.5	39.8	61.3	12.3	37.0	89.8	62.7	67.4	62.6	13.2	19.1	235
Other	88.5	28.4	75.9	20.7	69.0	85.1	68.2	77.0	77.0	13.8	49.4	87
Total	90.8	38.3	60.5	23.8	47.5	80.7	58.5	59.3	54.4	11.6	30.7	3,000
Total (n)	2,725	1,148	1,816	714	1,424	2,421	1,754	1,780	1,631	348	921	

* Cash received for a reason other than compensation for dead family member from any government or non-government agency.
Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
Note: Multiple responses possible.

5.2.8 Life in shelters and camps

The overwhelming majority (95.5%) of respondents were not living in a shelter or camp at the time of the survey. Only 5 percent lived in a shelter or camp, with 7 percent in severely hit areas and about 2 percent each in Kathmandu Valley and crisis-hit areas respectively.

The four main reasons respondents had left their homes were that their place of origin was inhabitable because of cracked land and debris (94.5%), neighbours' advice (68.3%), geologists' remarks (26.0%), and the government's decision (11.9%) (Table 5.7). Smaller proportions had moved because a family member had died or they feared another earthquake.

Table 5.7: Percent distribution of households living in camps and reasons for leaving place of origin

Background variables	Living in camps		Reasons for leaving place of origin						
	%	Total (n)	Cracked lands/debris	Neigh-bours' advice	Govern ment's decision	Geo-logists' remarks	Loss of household member	Similar disaster may occur	Total (n)
Domain									
Severely hit	6.7	1,601	100.0	68.7	9.0	19.4	4.5	11.9	107
Crisis-hit	1.6	792	58.8	47.1	47.1	100.0	0.0	0.0	13
Kathmandu Valley	2.1	607	86.4	86.4	0.0	4.5	0.0	0.0	13
Residence									
Rural	6.0	2,004	95.4	66.2	13.2	28.4	4.0	10.6	121
Urban	1.3	996	86.4	86.4	0.0	4.5	0.0	0.0	13
Type of family									
Nuclear	5.6	1,830	97.3	65.6	10.8	23.0	4.7	10.9	103
Joint or extended	2.6	1,170	85.2	77.3	15.5	36.2	0.0	5.2	31
Sex of HH head									
Male	4.1	2,382	94.5	71.7	12.3	17.9	3.3	13.2	97
Female	6.0	618	94.7	59.2	10.7	47.2	4.3	0.0	37
Occupation of HH head									
Agriculture	2.9	1,785	87.3	70.1	24.8	49.2	3.1	0.0	51
Self-employed in non-agri.	3.0	299	93.0	62.8	0.0	0.0	0.0	37.2	9
Wage worker	9.9	294	100.0	72.1	5.6	11.2	11.2	16.8	29
Salaried worker	0.0	202	-	-	-	-	-	-	-
Other	10.7	419	98.7	64.7	3.5	14.1	0.0	10.6	45
Highest edu. of HH member									
No education	1.2	172	66.9	100.0	33.1	33.1	0.0	0.0	2
Primary & NFE	11.2	329	100.0	53.0	10.8	21.5	4.3	13.0	37
Secondary	5.6	975	90.0	72.5	14.5	24.6	5.8	2.9	55
Higher secondary	3.1	1,106	90.6	72.8	7.0	30.6	0.0	18.9	34
Higher	1.4	418	75.1	85.9	14.1	39.0	0.0	0.0	6
Religion									
Hindu	1.7	1,968	70.7	80.1	21.4	47.3	4.8	0.0	33
Bouddha	3.5	828	94.4	83.3	27.8	38.9	5.6	0.0	29
Kirant	8.2	49	100.0	0.0	0.0	100.0	0.0	0.0	4
Christian	43.9	155	100.0	60.0	1.2	5.8	2.4	18.8	68
Caste/ethnicity									
Brahman (Hill)	0.3	397	100.0	100.0	100.0	100.0	0.0	0.0	1
Chhetri/Thakuri	0.0	567	-	-	-	-	-	-	-
Tamang	7.6	781	100.0	64.9	0.0	0.0	2.7	21.6	59
Newar	3.5	488	79.3	79.3	9.7	23.0	0.0	0.0	17
Other Hill Janajatis	11.7	445	86.2	72.4	23.0	53.7	6.2	0.0	52
Dalit (Hill)	0.0	235	-	-	-	-	-	-	-
Other	6.8	88	71.6	28.4	28.4	42.6	0.0	0.0	6
Total	4.5	3,000	94.5	68.3	11.9	26.0	3.6	9.6	134
Total (n)	134		127	92	16	35	5	13	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
Note: Multiple responses possible.

5.2.9 Experience of living in a shelter or camp

Nearlt two-third of respondents (65.0%) labeled their experience in a camp or shelter as bad and only 35 percent said it was good (Table 5.8). Almost all respondents in Kathmandu Valley (95.5%) said that the experience in the shelter or camp they lived in was bad (data not shown).

Table 5.8: Percent distribution of households by experience of living in a camp and the likely solutions, if the experience was not good

Experience of living in camp	%	Solutions to not good experiences	%
Good	35.0	Willing to leave immediately	19.6
Not good	65.0	Expecting that the government will resettle elsewhere	76.0
Total	100.0	Staying in the camp because of no alternative	4.4
Total (n)	134	Total	100.0
		Total (n)	87

The 87 households that had a bad experience staying in shelters and camps were asked how they thought this problem would be solved. Over three-quarters (76.0%) expected that the government

would resettle them elsewhere, and almost one-fifth (19.6%) said that they were willing to leave their shelter or camp immediately (Table 5.8).

5.3 Reconstruction

5.3.1 Plans to build a new home

Overall, 76 percent of respondents, altogether 2,280 households, wished to build a new house, but responses ranged from 81 percent in severely hit areas to about three-quarters (73.9%) in crisis-hit areas to only 65 percent in Kathmandu Valley.

Those respondents who planned to build a house in the future were asked what resources they would use to do so. The majority (57.9%) said that they would build if the government provided support, followed by one-fifth (20.7%), who said that they would build if the government provided them with loans at low rates (Table 5.9). Very few, just 6 percent, said that they would use their own resources.

Table 5.9: Percent distribution of households planning to build a new house and resources considered in doing so

Background variables	Have plan to build a new house	Total (n)	Resources to use to build a new house						Total (n)
			Own resources	Taking a loan	Some-one else will build	Govern-ment will build	Will build if government provides supports	Will build if government provides loan at low rate	
Domain									
Severely hit	81.2	1,601	4.5	9.5	0.8	5.3	61.1	18.7	1,299
Crisis-hit	73.9	792	7.5	8.2	0.3	6.8	59.1	17.9	585
Kathmandu Valley	65.0	608	6.8	14.2	0.8	1.5	45.3	31.4	395
Residence									
Rural	81.2	2,004	5.4	9.0	0.7	5.8	58.8	20.2	1,628
Urban	65.5	996	6.6	12.3	0.6	3.1	55.5	22.0	651
Type of family									
Nuclear	75.7	1,830	5.3	10.2	1.0	5.4	58.2	19.9	1,385
Joint or extended	76.5	1,170	6.4	9.6	0.2	4.5	57.3	22.0	895
Sex of HH head									
Male	77.2	2,382	5.9	10.2	0.3	4.7	57.0	21.9	1,839
Female	71.5	618	5.0	8.8	2.5	6.6	61.3	15.8	442
Occupation of HH head									
Agriculture	79.7	1,786	4.7	9.4	0.7	6.5	60.8	18.0	1,425
Self-employed in non-agri.	65.4	298	8.7	14.4	0.5	1.5	46.2	28.7	195
Wage worker	74.5	294	4.5	6.4	0.5	4.1	56.8	27.7	220
Salaried worker	77.7	202	13.4	13.4	0.0	1.3	40.1	31.8	157
Other	67.9	420	5.6	10.5	1.1	3.2	61.8	17.9	285
Highest edu. of HH member									
No education	75.0	172	1.6	3.9	1.6	13.3	73.4	6.3	128
Primary & NFE	73.9	329	2.1	7.9	1.7	8.7	64.9	14.9	242
Secondary	76.4	976	5.4	9.7	0.7	5.5	59.1	19.7	746
Higher secondary	76.3	1,106	6.3	12.0	0.5	3.1	57.5	20.7	844
Higher	76.3	417	9.7	9.1	0.0	3.1	44.3	33.6	318
Religion									
Hindu	74.6	1,969	5.7	10.0	0.6	4.4	57.1	22.2	1,467
Bouddha	80.1	828	6.6	9.5	0.5	6.0	58.7	18.7	663
Kirant	95.9	49	2.1	23.4	4.3	8.5	46.8	14.9	47
Christian	65.8	155	2.0	5.9	2.0	5.9	68.6	15.7	102
Caste/ethnicity									
Brahman (Hill)	80.6	396	6.3	8.2	0.9	4.1	58.5	22.0	318
Chhetri/Thakuri	73.5	566	7.7	7.9	0.0	3.6	57.0	23.8	416
Tamang	75.8	781	5.9	9.1	0.2	5.2	59.1	20.4	592
Newar	71.5	487	4.6	14.7	0.3	2.6	47.1	30.7	348
Other Hill Janajatis	80.3	446	5.9	9.5	1.1	8.7	63.4	11.5	358
Dalit (Hill)	73.7	236	4.0	8.0	2.3	7.5	64.4	13.8	174
Other	82.8	87	0.0	20.5	2.7	4.1	58.9	13.7	73
Total	76.0	3,000	5.7	10.0	0.7	5.0	57.9	20.7	2,280
Total (n)	2,280		131	227	16	115	1,319	472	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Respondents who did plan to build new houses were asked where they wanted to do so. The overwhelming majority (87.3%) said that they would build where their previous house had been located. Only 13 percent wished to build in a new place (Table 5.10). Nearly half (48.9%) of them had desire of building a new house where it is accessible for cultivation, livestock and friendly culture.

Table 5.10: Percent distribution of households by place of planning to build a new house and whereabouts of the new place for building a new house

Background variables	Place of planning to build a new house			Whereabouts of the new place			
	Previous place	New place	Total (n)	Where different services and facilities are available	Suitable for cultivation, livestock and own culture	Wherever a house is provided (by the government or others)	Total (n)
Domain							
Severely hit	85.7	14.3	1,300	41.6	46.5	11.9	185
Crisis-hit	87.0	13.0	585	48.0	49.3	2.7	75
Kathmandu Valley	93.1	6.9	394	35.7	64.3	0.0	28
Residence							
Rural	85.4	14.6	1,628	40.5	50.2	9.3	237
Urban	92.2	7.8	651	52.9	43.1	3.9	51
Type of family							
Nuclear	86.2	13.8	1,386	41.9	50.3	7.9	191
Joint or extended	89.0	11.0	894	43.4	46.5	10.1	99
Sex of HH head							
Male	87.4	12.6	1,838	41.8	50.9	7.3	232
Female	87.1	12.9	442	45.6	40.4	14.0	57
Occupation of HH head							
Agriculture	87.7	12.3	1,424	33.5	56.8	9.7	176
Self-employed non-agri.	88.7	11.3	195	63.6	36.4	0.0	22
Wage worker	86.4	13.6	220	62.1	20.7	17.2	29
Salaried worker	84.8	15.2	158	60.9	39.1	0.0	23
Other	86.3	13.7	285	46.2	46.2	7.7	39
Highest edu. of HH member							
No education	89.2	10.8	130	30.8	53.8	15.4	13
Primary & NFE	85.6	14.4	243	41.7	52.8	5.6	36
Secondary	83.8	16.2	746	39.7	47.9	12.4	121
Higher secondary	89.6	10.4	843	44.9	48.3	6.7	89
Higher	90.3	9.7	318	51.6	48.4	0.0	31
Religion							
Hindu	88.8	11.2	1,468	43.6	50.3	6.1	163
Bouddha	87.9	12.1	663	35.4	51.9	12.7	79
Kirant	70.2	29.8	47	13.3	86.7	0.0	15
Christian	69.6	30.4	102	68.8	18.8	12.5	32
Caste/ethnicity							
Brahman (Hill)	81.5	18.5	319	33.9	66.1	0.0	59
Chhetri/Thakuri	90.2	9.8	417	65.9	29.3	4.9	41
Tamang	88.3	11.7	592	45.7	48.6	5.7	70
Newar	90.8	9.2	348	37.5	53.1	9.4	32
Other Hill Janajatis	81.8	18.2	358	35.4	40.0	24.6	65
Dalit (Hill)	96.0	4.0	173	25.0	75.0	0.0	8
Other	79.2	20.8	72	46.7	53.3	0.0	15
Total	87.3	12.7	2,280	42.6	48.8	8.7	289
Total (n)	1,990	289		123	141	25	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The 289 respondents who planned to build houses in new places were asked where they intended to build. On average, nearly half (48.9%), but nearly two-thirds (64.4%) of respondents in Kathmandu Valley, reported that they planned to build in a place suitable for cultivation and livestock and that had a friendly social environment. Over two-fifths (42.6%) of all respondents wanted to build their houses where different services and facilities were available to them (Table 5.10).

5.3.2 Consultations made regarding the reconstruction of houses

All 3,000 respondents were asked if they had engaged in any discussion or been consulted about the reconstruction of their homes by any government or non-government organization. Only a very few (5.6%) reported to have had such a consultation (Table 5.11).

Table 5.11: Percent distribution of households engaged in a discussion with an agent about the reconstruction of an earthquake-affected house; identity of agent; and whether a house is constructed after discussion

Discussion held	%	Discussion held with	%	Whether house is constructed after discussion	%
Yes	5.6	Government officer	53.1	House is being constructed	2.6
No	94.4	NGO	20.4	Plans for construction are underway	10.1
Total	100.0	INGO	29.7	No	87.3
Total (n)	3,000	Individual donor	6.3	Total	100.0
		Total	NA*	Total (n)	169
		Total (n)	169		

*Multiple responses possible. NA: Not applicable.

Those respondents who had had a consultation were asked with whom they had spoken. A little more than half (53.1%) said that government officers had consulted them, followed by INGO staff (29.7%) and NGO staff (20.4%) (Table 5.11). These same respondents were asked if, in fact, they had rebuilt their homes. Not one had, but one in ten was making plans for reconstruction.

5.3.3 Views about reconstruction

The views of affected people and communities about reconstructing their own houses as well as the reconstruction issue in general are very pertinent now, as the state plunges into its campaign for reconstruction. The views of respondents were varied and many (Table 5.12). Nearly two-fifths (37.7%) said it was good if they were provided with all kinds of facilities, while about one-third (29.8%) said it was best to build if they were provided with only construction materials. Another 29 percent said that it was best if they were consulted about the details of the reconstruction work carried out in their communities.

FGD participants also shared their views regarding the reconstruction of their localities. Many said that they had heard that the government planned to give NPR 200,000 to those who had lost homes in the earthquake. The Magar (Gorkha), Sunuwar (Okhaldhunga), Surel, and Tamang (Sindhupalchowk, Makwanpur and Rasuwa) communities as well as people living in tents said, "*We have heard that the Government of Nepal has decided to provide NPR 200,000 to those whose houses collapsed but we wonder when we will receive it."* Other communities, like the Brahman (Nuwakot), Jirel (Dolakha), Magar (Gorkha), Sunuwar (Okhaldhunga), and Surel (Dolakha) communities expressed skepticism that this would be enough money to rebuild: "*It will be very difficult to build a new house following the regulations of the government with only NPR 200,000.*" The FGD participants from the Gurung (Gorkha), Magar (Gorkha) and Sherpa (Okhaldhunga) communities also expressed concern about the financial support given by the government: they thought that money should be provided in three phases and that otherwise it would not be possible to rebuild.

Participants from the Tamang (Sindhupalchowk, Makwanpur and Rasuwa) community said that they had heard they could get a loan up to NPR 1,500,000. One FGD participant from the Jirel (Dolakha) community added that he had heard that money would be forthcoming only after the house was completed and only if it adhered to the prescriptions of the government: "*I have heard that we need to make our house according to the model and design prescribed by the government. Only after completing our house as per that design, we can get money from the government.*"

Table 5.12: Percent distribution of households by opinions about how reconstruction should be done

Background variables	Discuss reconstruc-tion in detail with us	Help us rebuilt by providing all kinds of facilities	Settle us elsewhere because there are many difficulties in our place of origin	Help us rebuild by providing construction materials	Total (n)
Domain					
Severely hit	24.1	38.2	5.1	32.6	1,601
Crisis-hit	39.5	32.8	2.3	25.4	792
Kathmandu Valley	28.7	42.7	0.7	28.0	607
Residence					
Rural	29.3	36.0	4.7	29.9	2,004
Urban	28.7	41.0	0.8	29.4	996
Type of family					
Nuclear	27.2	36.8	4.5	31.4	1,830
Joint or extended	32.0	39.0	1.8	27.2	1,169
Sex of HH head					
Male	29.7	36.7	3.2	30.4	2,381
Female	27.0	41.3	4.2	27.5	618
Occupation of HH head					
Agriculture	29.6	37.8	2.7	29.9	1,785
Self-employed non-agri.	28.5	41.6	3.7	26.2	298
Wage worker	27.2	32.3	4.4	36.1	294
Salaried worker	30.5	35.5	0.5	33.6	203
Other	27.7	39.6	7.2	25.5	419
Highest edu. of HH member					
No education	19.2	43.0	4.1	33.7	172
Primary & NFE	27.1	35.6	4.9	32.5	329
Secondary	29.2	36.2	4.5	30.1	975
Higher secondary	28.3	40.4	2.8	28.5	1,106
Higher	36.4	33.3	1.4	28.9	418
Religion					
Hindu	30.1	39.2	2.0	28.7	1,968
Bouddha	27.7	36.8	2.3	33.2	828
Kirant	26.5	20.4	4.1	49.0	49
Christian	25.8	27.7	27.1	19.4	155
Caste/ethnicity					
Brahman (Hill)	30.3	43.4	1.8	24.5	396
Chhetri/Thakuri	30.2	37.6	1.8	30.5	567
Tamang	27.1	37.2	6.8	28.9	782
Newar	29.1	36.3	1.0	33.6	488
Other Hill Janajatis	31.8	35.4	3.8	28.9	446
Dalit (Hill)	28.1	40.4	2.6	28.9	235
Other	22.7	29.5	6.8	40.9	88
Total	29.1	37.7	3.5	29.8	3,000
Total (n)	873	1,131	104	893	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Many participants commented on methods and materials for reconstruction. Some, such as the Sherpa (Okhaldhunga) community said that they had learned that houses made of mud mortar and stone were not safe, instead, they believed, "*We need to make our houses of timber.*" The Newar communities from Kathmandu and Bhaktapur said that the huge loss of houses during the earthquake was due to the fact that people had not followed any standards regarding their construction and that it was now necessary to follow the regulations prescribed by the government while reconstructing houses.

Different ideas about what the government should provide also emerged. The Gurung (Gorkha) community said that they had heard through the media that the DDRC would lead reconstruction work in their localities but that it had not happened yet. The Magar (Gorkha) community wanted only materials: "*The assistance from the government should be utilized to buy construction goods and we*

should construct the house ourselves." The Newar community in Bhaktapur said that the government had to select open spaces for the reconstruction of houses.

Some of the other suggestions made and information heard by the different communities regarding reconstruction are listed below.

- *We should make a house with red mud.* -Brahman (Nuwakot)
- *The government has to finalize the geographical location with experts in the field before reconstructing houses in new places.* -Hayu (Ramechhap)
- *We should make only a one-storey house.* -(Danuwar (Kavre)
- *The government needs to sign memorandums of understanding with the donors who pledged money on 25 June, 2015, for the reconstruction as soon as possible.* -Tamang (Sindhupalchowk, Makwanpur and Rasuwa)
- *Other organizations have not been able to work due to delays in government action regarding reconstruction activities* (Tamang (Sindhupalchowk, Makwanpur and Rasuwa).
- *The government should initiate reconstruction only after listening to our voices and consulting us.* -Chhetri (Sindhuli), Danuwar (Kavre), and Sherpa, Sunuwar (Okhaldhunga)
- *We want to return to our own place as far as possible.*-People in temporary shelters from Rasuwa
- *No house is safe in our village, nor is the school. We want, therefore, to be resettled in another place where we can find open space.* -People in temporary shelters
- If the government provides NPR 200,000 promptly, we will be able to buy land in other places to make new houses. -Hayu (Ramechhap)
- *We participated in a 90-day training on making earthquake-resistant houses and thus we are confident that we can do so.* -Kami (Dhading)
- *We are worried: we need to make a new house as soon as possible, but we have not received the government's design. If we use our own design, the government will not provide us with the money it promised.* -Hayu (Ramechhap) and Sunuwar (Okhaldhunga)
- *We would prefer that the government make us new houses than give us monetary support.* -Pahari (Lalitpur)
- *We wish to get loans at cheap interest rates so we can make new houses*.-Newar community from Kathmandu.

5.3.4 Current situation of household assets and facilities

In response to the impact of the earthquake on their household assets, respondents could provide one of four responses about ownership: they had the asset before but not after the earthquake, they had the asset before and after the earthquake, they did not have the asset either before or after the earthquake, of they had it after the earthquake but not before. A long list of facilities and assets was inquired about: electricity, drinking water, toilet, landline telephone, mobile phone, gas stove, motorcycle, car/jeep/van, sewing machine, and computer/laptop.

The change in possession of toilet facilities was dramatic, on average over 15 percent lost the facility they had had before the earthquake and that figure increased to 22 percent in severely hit areas. Over 9 percent and nearly 8 percent households no longer had drinking water and electricity services respectively.

Table 5.13: Percent distribution of households owning various assets and having access to various facilities in their dwelling at the time of survey

Background variables	Electri-city	Drinking water	Toilet	Landline phone	Cell phone	Gas stove	Motor-cycle	Cycle	Car, jeep, van	Sewing machine	Computer, laptop	Total (n)
Domain												
Severely hit	78.8	60.9	72.8	2.7	89.0	29.1	6.1	2.2	1.4	5.5	5.4	1,601
Crisis-hit	81.9	84.8	83.8	7.1	89.9	42.8	15.3	5.9	4.3	9.4	12.5	792
Kathmandu Valley	93.6	77.8	89.5	17.1	95.1	80.3	37.4	17.3	5.4	12.0	22.2	607
Residence												
Rural	77.7	68.0	74.3	2.9	89.0	29.7	8.0	2.8	1.9	6.0	6.6	2,004
Urban	92.6	75.8	88.8	14.5	93.5	69.9	28.7	13.1	5.1	11.6	18.8	996
Type of family												
Nuclear	80.7	69.2	76.2	6.2	87.3	41.2	12.6	5.0	2.3	6.9	9.5	1,831
Joint or extended	85.7	72.9	83.5	7.7	95.4	46.0	18.5	8.2	3.9	9.3	12.6	1,169
Sex of HH head												
Male	84.1	71.6	80.3	7.2	91.0	44.0	16.3	6.3	3.2	7.9	11.4	2,381
Female	77.1	66.9	74.3	5.3	88.5	39.5	9.5	5.8	2.1	7.6	8.1	619
Occupation of HH head												
Agriculture	83.1	69.0	78.2	3.4	88.6	30.7	9.7	4.6	2.3	5.7	6.7	1,786
Self-employed in non-agri.	86.0	79.2	84.6	17.8	94.6	64.8	28.1	8.7	5.0	9.7	20.1	298
Wage worker	78.6	65.6	75.2	6.5	92.9	60.2	17.3	7.8	3.4	11.2	8.5	294
Salaried worker	90.1	84.7	89.1	17.2	97.5	70.3	38.1	11.3	5.0	16.3	31.2	203
Other	77.6	68.1	76.8	8.6	90.2	55.4	14.8	7.6	3.1	9.5	12.6	420
Highest edu. of HH member												
No education	72.3	69.9	61.8	0.6	48.0	18.5	0.6	0.6	0.6	0.6	0.6	173
Primary & NFE	68.1	62.5	65.3	1.5	81.2	23.8	4.3	1.8	1.8	4.3	2.4	329
Secondary	78.5	67.7	77.3	3.2	91.8	32.1	7.4	4.2	1.7	5.7	2.9	976
Higher secondary	88.9	71.2	83.0	8.1	95.8	53.3	18.4	7.1	3.6	9.7	12.2	1,105
Higher	91.4	82.5	90.9	18.5	98.3	67.1	37.4	14.8	6.2	13.9	35.5	417
Religion												
Hindu	86.3	71.5	82.7	8.0	93.1	48.5	18.5	7.6	3.5	9.0	13.1	1,968
Bouddha	81.8	72.3	75.6	5.2	87.2	31.0	8.7	4.0	2.2	6.0	6.7	827
Kirant	26.5	87.5	65.3	0.0	81.6	8.2	4.1	4.1	4.1	2.0	4.2	48
Christian	58.1	45.8	56.8	2.6	76.8	50.3	4.5	1.9	0.6	4.5	3.9	155
Caste/ethnicity												
Brahman (Hill)	96.0	73.3	83.6	6.8	97.0	52.8	18.6	5.5	2.5	5.8	14.4	396
Chhetri/Thakuri	91.4	79.3	83.9	8.8	93.3	44.8	18.4	7.4	3.4	6.4	13.1	566
Tamang	83.5	70.0	72.4	3.8	85.4	35.0	7.3	3.5	2.2	4.6	6.0	782
Newar	83.8	75.2	88.1	15.8	94.9	73.1	34.8	16.0	5.7	14.3	22.2	488
Other Hill Janajatis	65.8	58.2	76.5	3.4	88.8	22.2	4.0	2.5	2.0	8.3	4.9	446
Dalit (Hill)	77.9	57.4	73.6	1.3	86.8	33.6	6.8	1.7	1.3	11.1	2.6	235
Other	50.0	79.5	64.4	2.3	81.6	24.1	8.0	4.5	4.5	9.1	5.7	87
Total	82.6	70.6	79.1	6.8	90.5	43.1	14.9	6.2	3.0	7.9	10.7	3,000
Total (n)	2,479	2,118	2,373	203	2,714	1,292	446	187	89	236	320	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
Note: Multiple responses possible.

Table 5.14: Percent distribution of households owning various assets and having access to various facilities in their dwelling before the earthquake but no more after the earthquake

Background variables	Electri-city	Drinking water	Toilet	Landline phone	Cell phone	Gas stove	Motor-cycle	Cycle	Car, jeep, van	Sewing machine	Computer, laptop	Total (n)
Domain												
Severely hit	11.2	9.7	22.1	0.9	2.3	2.2	0.4	0.4	0.2	0.9	1.5	1,601
Crisis-hit	2.1	9.1	9.5	1.0	2.7	1.5	0.8	0.5	0.1	0.5	0.5	792
Kathmandu Valley	5.6	8.2	7.1	4.4	0.5	8.2	0.7	1.5	0.2	0.8	2.0	607
Residence												
Rural	9.4	10.2	19.5	0.8	2.6	2.0	0.4	0.4	0.1	0.6	1.1	2,004
Urban	4.3	7.4	8.3	3.2	0.9	5.7	0.8	1.1	0.2	1.1	1.7	996
Type of family												
Nuclear	8.6	10.8	17.6	1.4	2.6	2.8	0.5	0.7	0.2	0.7	1.5	1,831
Joint or extended	6.2	6.8	12.8	2.0	1.0	3.8	0.7	0.6	0.2	0.9	1.1	1,169
Sex of HH head												
Male	6.4	9.0	14.8	1.8	2.1	2.9	0.6	0.7	0.2	1.0	1.3	2,381
Female	12.4	10.2	19.2	1.0	1.8	4.5	0.3	0.3	0.0	0.2	1.5	619
Occupation of HH head												
Agriculture	7.2	8.2	15.9	1.1	2.2	2.9	0.4	0.6	0.2	0.8	1.1	1,786
Self-employed in non-agri.	5.4	6.7	11.0	2.3	1.0	5.7	0.3	0.3	0.3	1.3	1.3	298
Wage worker	9.5	16.0	20.3	1.7	2.7	0.3	1.0	1.0	0.0	1.4	0.7	294
Salaried worker	3.5	3.9	7.9	2.5	1.0	3.9	1.5	1.0	0.0	0.5	4.5	203
Other	12.2	13.6	18.9	2.9	2.1	4.5	0.7	0.2	0.0	0.2	1.2	420
Highest edu. of HH member												
No education	8.7	8.7	24.3	0.0	2.9	1.2	0.0	0.0	0.0	0.6	0.0	173
Primary & NFE	16.1	15.5	24.6	1.2	5.2	2.4	0.0	0.3	0.0	0.9	0.0	329
Secondary	8.8	9.0	16.7	1.2	2.1	2.6	0.4	0.7	0.3	1.1	0.4	976
Higher secondary	5.2	8.5	13.9	1.4	1.4	4.2	0.9	0.6	0.1	0.6	2.2	1,105
Higher	4.6	7.2	7.7	4.1	1.0	3.8	0.7	1.0	0.0	0.5	2.6	417
Religion												
Hindu	4.9	8.2	13.6	1.8	1.5	3.6	0.8	0.9	0.1	0.8	1.2	1,968
Bouddha	9.7	7.5	17.6	1.0	2.5	2.8	0.2	0.2	0.4	0.8	1.7	827
Kirant	53.1	12.5	20.8	2.0	6.1	6.3	0.0	0.0	0.0	0.0	4.1	48
Christian	18.7	31.4	31.0	2.6	3.9	0.6	0.0	0.6	0.0	1.3	0.0	155
Caste/ethnicity												
Brahman (Hill)	1.3	8.1	14.6	0.8	0.5	3.8	1.3	0.8	0.0	0.5	1.0	396
Chhetri/Thakuri	2.8	6.7	12.7	1.4	1.6	2.3	0.9	0.5	0.2	0.5	1.2	566
Tamang	6.5	12.9	18.8	1.2	2.9	3.1	0.3	0.3	0.3	0.5	1.3	782
Newar	7.0	8.6	10.2	5.1	1.0	5.1	0.6	1.4	0.4	1.6	2.5	488
Other Hill Janajatis	16.6	5.6	18.6	0.9	2.2	1.6	0.4	0.4	0.0	0.2	1.3	446
Dalit (Hill)	6.0	11.5	17.9	0.0	3.4	3.8	0.0	0.8	0.0	2.6	0.4	235
Other	40.9	14.8	23.9	1.1	4.5	4.5	0.0	0.0	0.0	0.0	2.3	87
Total	7.7	9.3	15.7	1.6	2.0	3.2	0.6	0.6	0.2	0.8	1.3	3,000
Total (n)	231	278	472	49	60	97	17	19	5	24	40	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
Note: Multiple responses possible.

Table 5.15: Percent distribution of households owning various assets and having access to various facilities in their dwelling after the earthquake those were not before the earthquake

Background variables	Electri-city	Drinking water	Toilet	Landline phone	Cell phone	Gas stove	Motor-cycle	Cycle	Car, jeep, van	Sewing machine	Computer, laptop	Total (n)
Domain												
Severely hit	0.5	0.7	1.0	0.1	1.3	4.4	0.5	0.1	0.0	0.0	0.5	1,601
Crisis-hit	0.3	0.4	0.8	0.1	0.1	0.4	0.3	0.0	0.0	0.3	0.3	792
Kathmandu Valley	0.3	0.2	0.2	0.2	0.0	0.0	0.2	0.0	0.2	0.2	0.2	607
Residence												
Rural	0.3	0.5	1.0	0.1	0.9	3.3	0.3	0.0	0.0	0.1	0.4	2,004
Urban	0.5	0.5	0.3	0.1	0.3	0.6	0.4	0.2	0.1	0.1	0.3	996
Type of family												
Nuclear	0.5	0.6	0.8	0.2	0.7	3.3	0.2	0.1	0.0	0.0	0.4	1,831
Joint or extended	0.2	0.3	0.8	0.1	0.8	1.1	0.5	0.0	0.1	0.3	0.4	1,169
Sex of HH head												
Male	0.3	0.5	0.8	0.1	0.5	2.6	0.4	0.1	0.0	0.1	0.3	2,381
Female	0.8	0.6	0.5	0.2	1.6	1.9	0.0	0.0	0.2	0.2	0.6	619
Occupation of HH head												
Agriculture	0.4	0.3	0.7	0.1	0.4	1.1	0.3	0.0	0.1	0.2	0.3	1,786
Self-employed in non-agri.	0.0	0.7	0.7	0.7	1.0	2.0	1.0	0.0	0.0	0.0	0.7	298
Wage worker	1.0	0.7	1.4	0.0	0.7	4.7	0.0	0.0	0.0	0.0	0.0	294
Salaried worker	0.0	0.5	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	203
Other	0.2	1.2	0.5	0.0	2.4	7.6	0.5	0.0	0.0	0.0	0.5	420
Highest edu. of HH member												
No education	1.2	0.0	0.0	0.6	2.9	1.2	0.0	0.0	0.0	0.0	0.0	173
Primary & NFE	1.2	0.6	1.2	0.0	1.5	4.3	0.0	0.0	0.0	0.0	0.0	329
Secondary	0.6	0.8	1.4	0.0	0.6	2.9	0.2	0.2	0.1	0.1	0.2	976
Higher secondary	0.1	0.4	0.2	0.3	0.5	2.7	0.6	0.0	0.0	0.2	0.6	1,105
Higher	0.0	0.5	0.7	0.0	0.5	0.0	0.2	0.0	0.2	0.2	0.5	417
Religion												
Hindu	0.3	0.4	0.7	0.1	0.5	1.1	0.5	0.1	0.1	0.1	0.5	1,968
Bouddha	0.5	0.5	1.0	0.0	0.7	0.4	0.2	0.0	0.0	0.1	0.2	827
Kirant	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
Christian	1.3	2.6	0.0	1.3	3.9	30.8	0.0	0.0	0.0	0.0	0.0	155
Caste/ethnicity												
Brahman (Hill)	0.0	0.3	0.5	0.3	0.0	0.9	0.8	0.0	0.0	0.0	0.5	396
Chhetri/Thakuri	0.4	0.2	0.4	0.2	0.4	1.1	0.4	0.4	0.0	0.0	0.7	566
Tamang	0.0	0.6	0.6	0.0	1.2	6.1	0.3	0.0	0.0	0.1	0.3	782
Newar	0.4	0.4	0.4	0.2	0.4	0.0	0.6	0.0	0.2	0.4	0.8	488
Other Hill Janajatis	0.7	0.7	2.2	0.4	1.1	0.4	0.0	0.0	0.0	0.0	0.0	446
Dalit (Hill)	1.3	1.3	0.4	0.0	1.3	2.1	0.0	0.0	0.0	0.0	0.0	235
Other	2.3	0.0	2.3	0.0	2.3	5.7	1.1	0.0	0.0	0.0	0.0	87
Total	0.4	0.5	0.8	0.1	0.7	2.5	0.3	0.1	0.0	0.1	0.4	3,000
Total (n)	12	15	24	4	22	74	10	2	1	3	12	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
Note: Multiple responses possible.

5.4 Behaviour of governmental and non-governmental organizations towards affected communities

FGD participants provided a variety of responses, many of them not positive, regarding the behaviour of the government, non-government organizations deputed to distribute the relief packages. Whereas those from the Chhetri (Sindhuli), female groups, Jirel (Dolakha), Kami (Dhading), Pahari (Lalitpur), and Rai (Okhaldhunga) complained that relief packages were provided mostly to those who had more access and louder voices, some complained that their houses were categorized as partially damaged when, in fact, they were completely damaged. In particular, the Sunuwar (Okhaldhunga) and Tamang (Sindhupalchowk, Makwanpur and Rasuwa) claimed that partially damaged households were categorized as completely damaged due to pressure from political parties. Similarly, some said that government authorities distributed earthquake identification cards based on the recommendations of political parties.

Other compliants of FGD participants from the Jirel (Dolakha) and Kumal (Gorkha) communities, and female Tamangs (Sindhupalchowk, Makwanpur, and Rasuwa) were about the relief goods: "*The*

quality of the distributed goods was very poor." The Brahman (Nuwakot), Kumal (Gorkha), Rai (Okhaldhunga), and Sherpa (Okhaldhunga) communities complained that relief packages reached only accessible areas. According to them, "*Relief packages did not reach remote areas inaccessible by road.*"

Some FGD participants shared that they had experienced discrimination during the distribution of government relief packages and that the distribution of the relief packages of the non-government sector favoured particular communities. The Kumal community in Gorkha and the Rai community in Okhaldhunga, in particular, complained of favouritism and that distribution was carried out at night so that those deprived of relief would not complain. However, most FGD participants told the study team that there was no discriminatory behaviour or injustice. In particular, the Newar community in Kathmandu, the Surel community in Dolakha, and the participants in the mixed-community FDG reported, "*Discriminatory and unjust activities did not happen in our communities because of us and our localities.*"

Conclusion

The overwhelming majority of the surveyed households had only one house. Affected people in urban areas where landholdings are smaller than the recently proclaimed minimum area are facing problems. They want their homes rebuilt rather than monetary support directly because they do not think the money will be enough for reconstruction. The majority of respondents were rescued by family members or they rescued themselves. They did not get help from outside the community for rescue operation. Five categories of volunteer rescuers were identified in the field: volunteers from national organizations, cadres of political parties, officials of village development committee, friends, and volunteers from neighbouring villages. Different types of relief items were distributed to earthquake- affected households, including cash, tents, tarpaulins, mattresses, galvanized iron sheets, flattened rice, pulses, oil, instant noodles, biscuits, blankets, clothes, and dignity kits. Very few households were still living in shelters or camps, and the proportions were almost equal in all three domains, severely hit and crisis-hit districts and Kathmandu Valley. Almost two-thirds (65.0%) of the households did not find shelters and good. Over three-quarters (76.0%) planned to build a house. The change in toilet facilities before and after the disaster was significant and nearly 10 percent lost the drinking water services they had had. Electricity was another utility cut off in a significant proportion of households.

Chapter VI
Social Impact of the Earthquake

This chapter deals with the impact of the earthquake on livelihoods, assets, and changes in employment and social functions. Social impacts include psychosocial, socio-demographic, socioeconomic, and sociopolitical consequences. Because they can develop over a long period of time, social impacts can be difficult to measure and assess. Despite this difficulty, it is nonetheless important to monitor social impacts because they can cause significant problems for the long-term functioning of specific types of households and businesses in an affected community. A good understanding of the social impacts of a disaster can provide the basis for pre-impact predictions of the impacts a disaster will have and help develop in the development of contingency plans to prevent adverse consequences from occurring (Lindell & Prater, 2003).

An impact assessment of a disaster provides a basis for estimating the financing needed to achieve full recovery and reconstruction as well as for developing livelihood recovery programs. In addition, such an estimate can help in determining if public assistance is needed, and, if so, what quantity and character of assistance is required. Lindell & Prater (2003: 176) highlighted three important reasons for assessing the social or community impacts of natural disasters:

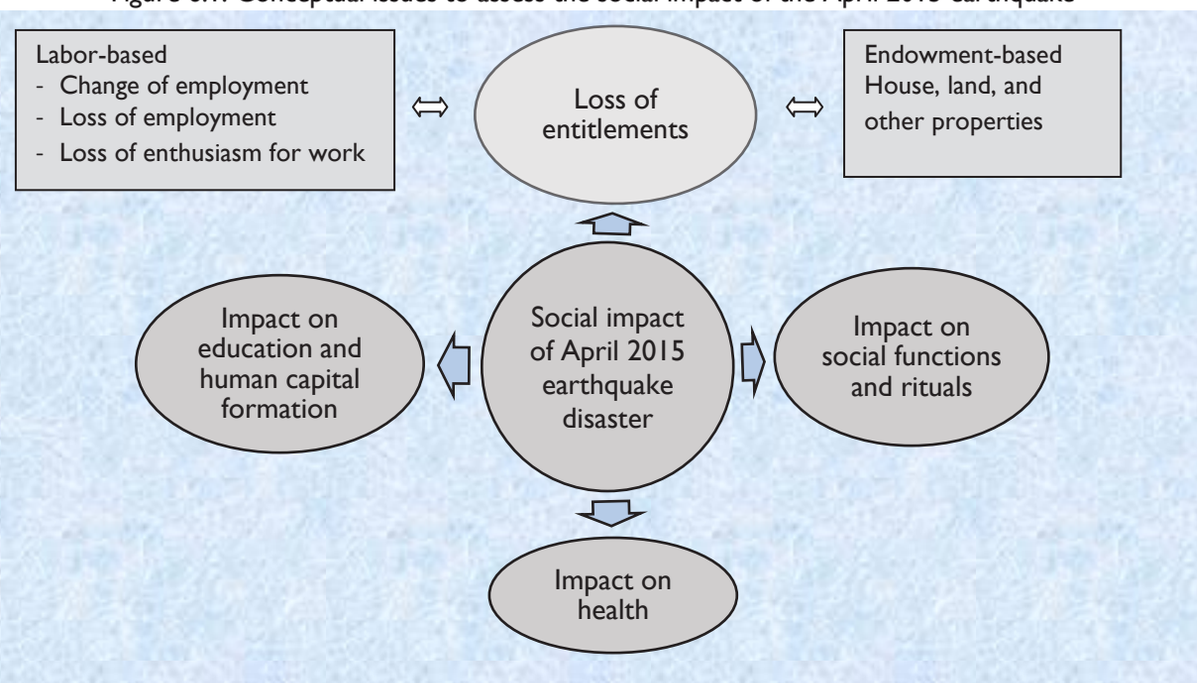
- To collect, compile and disseminate evidence-based useful information to community leaders, administrators and program planners in order to determine the level of need for internal coping mechanisms and external assistance
- To identify specific segments of the community that has been affected disproportionately such as low-income households, ethnic minorities, different age and gender groups or specific types of businesses/occupational groups whose social standing might be further affected in the future, and
- With the help of such assessments planners and policy makers can develop disaster impact projections before disasters strike to assess potential consequences of alternative hazard adjustments.

Conducting a social impact assessment is a complex undertaking because the physical impact of any disaster causes multilevel social impacts. Perry & Quarantelli (2005) argue that the effects of the *characteristics of a hazard agent* on the *physical impacts* of a disaster depend upon the affected community's *hazard mitigation* and *emergency preparedness practices* because these practices can reduce the physical impacts of the hazard agent. The social impact of a natural disaster can be reduced through *community recovery resources* and *extra-community assistance*. The general consensus among disaster studies is that a disaster is an event that results from the interface of nature, technology, and social conditions.

Earthquakes destroy buildings but also infrastructures, economies, and livelihoods in the affected locations. The destruction produces many more spin-off social and economic impacts (Figure 6.1). A disaster first hits a population's livelihoods through the process of entitlement losses: it alters endowment-based entitlements by destroying agricultural land and houses and damaging stored food grains. A disaster also affects labour-based entitlement and reduces overall productivity and opportunities for earning income. These impacts result in long-term psychosocial stress. They also affect the process of human capital formation by disrupting children's education, a situation that can have an impact on their future world of work. In addition, gender-based violence increases or is exacerbated as a result of disruption in the societal fabric. Health impacts include disaster-induced injuries and disabilities, psychosocial stresses, declines in sexual and reproductive health (including the availability of family planning, antenatal check-ups and safe delivery), and irregularity in children's immunization schedules. A disaster can also reduce the usual level of food intake, with consequences such as chronic malnutrition. Likewise, a disaster may alter the observance of social and familial interactions, rituals, festival, and other social events.

Using the endowment approach outlined in Figure 6.1 as its lens, this chapter assesses the impact of the April 2015 earthquake on livelihoods in the affected areas. It also describes people's attitudes towards celebrating major events such as festivals and family and social rituals as well as the postponement of social events such as weddings.

Figure 6.1: Conceptual issues to assess the social impact of the April 2015 earthquake



This chapter deals with two of the four dimensions of the social impacts of the April 2015 earthquake shown in Figure 6.1, 1) entitlement losses such as changes in employment and the loss of endowments, and 2) impacts on celebrations, social functions, and rituals. The earthquake's impact on health and education are discussed in Chapter 7.

6.1 Impact on livelihoods

Lindell & Prater (2003) argue that the ultimate economic or livelihood impact of a disaster depends upon the disposition of the damaged assets. Some assets are not replaced, so their loss either reduces consumption (causing a decrease in quality of life) or reduces investment (causing a decrease in economic productivity). Other assets are replaced, either through commercial purchases or in-kind donations of items like food and clothing. In the case of commercial purchases, the cost of replacement must come from some source of recovery funding, which generally can be characterized as either inter-temporal transfers (to the present time from past savings or future loan payments) or interpersonal transfers (from one group to another at a given time). Some of the specific mechanisms for financing recovery include obtaining tax deductions or deferrals, unemployment benefits, loans (paying back the principal at low or zero interest rates), grants (requiring no return of the principal), insurance payoffs, or additional employment. Other sources include depleting cash financial assets (e.g., savings accounts), selling tangible assets, or migrating to an area with available housing, employment, or less risk (in most instances, only the principal wage earner migrates).

In addition to causing direct economic losses, a disaster results in indirect losses due to the interdependence of community subunits (Lindell & Prater, 2003). Research on the socioeconomic impacts of disasters suggests that the relationships among the social units within a community can be described as a state of dynamic equilibrium involving a steady flow of resources, especially money. Specifically, a household's linkages with the community it resides in are defined by the money that it

must pay for products, services, and infrastructural support. This money is obtained from the wages that employers pay for the household's labour. Similarly, the linkages that a business has with the community it established itself in are defined by the money it provides to its employees, suppliers, and infrastructure in exchange for their respective inputs of labour, materials, and services, which include electricity, fuel, water, sanitation, telecommunications, and transportation as well as the money it takes from customers in exchange for its products or services.

Disaster risks to livelihoods are primarily two, endowment losses and labour-based losses. The former include the risk of losing productive assets, such as livestock, standing crops, tools, market stalls, and irrigation infrastructure i.e. endowment losses; while the latter include the risk of interrupted income flow due to disaster-caused disruption, particularly the loss of work for the self-employed and either (temporary or permanent) dismissal of wage earners.

This section analyzes how the earthquake impacted consumption, particularly of food, both immediately after the earthquake and at the date of the survey. It also assesses the impact the earthquake had on land endowment. Finally, it looks at its impact on land cultivation, cropping patterns, and food sufficiency.

6.1.1 Immediate food arrangements

Table 6.1 illustrates the level of food consumption of the earthquake-affected communities and the long-term impact on their nutritional status and quality of life. The households surveyed were asked about the arrangements for and availability of food in the evening after the earthquake struck.

Table 6.1: Percent distribution of households by management of food in the evening of the day of the earthquake hit

Background variables	Did not eat	Ate in a group	Borrowed or bought food	Collected food from debris	Took food of own shop or cooked outside home	Total	% of HHs with reduced food consumption after EQ	Total (n)
Domain								
Severely hit	58.7	28.2	4.5	6.2	2.4	100.0	11.4	1,601
Crisis-hit	45.6	27.6	6.1	9.0	11.7	100.0	5.7	792
Kathmandu Valley	40.3	37.3	15.5	4.0	2.9	100.0	6.0	607
Place of residence								
Rural	55.5	29.2	4.3	6.4	4.6	100.0	10.0	2,004
Urban	43.6	31.2	12.8	6.7	5.7	100.0	6.5	996
Sex of HH Heads								
Male	51.0	29.7	7.4	6.6	5.3	100.0	8.8	2,381
Female	53.7	30.7	6.0	6.0	3.6	100.0	8.8	619
Median age of family								
< 20 years	61.1	21.5	4.9	7.7	4.8	100.0	11.0	493
20-30 years	53.5	27.6	7.1	6.2	5.7	100.0	6.4	1,100
30+years	45.2	35.8	8.3	6.2	4.4	100.0	7.6	1,406
Highest edu. of 15+ member								
All Illiterate	54.7	28.2	5.9	6.0	5.1	100.0	9.1	680
All primary & NFE	57.7	24.0	5.8	8.2	4.4	100.0	7.6	834
At least one secondary+	45.9	34.6	8.7	5.7	5.2	100.0	7.1	1,485
Caste/ethnic groups								
Brahman	44.7	36.6	7.2	6.8	4.6	100.0	6.4	396
Chhetri/Thakuri	41.5	35.3	9.0	8.1	6.2	100.0	8.5	567
Tamang	60.6	26.7	4.6	4.6	3.5	100.0	8.0	781
Newar	41.4	38.4	11.5	4.1	4.7	100.0	6.3	488
Other Hill Janajati	62.2	17.1	6.1	9.4	5.2	100.0	11.8	445
Hill Dalits	53.8	26.3	5.5	8.7	5.7	100.0	16.1	235
Other	62.8	20.8	2.7	4.6	9.1	100.0	8.2	87
Total	51.5	29.9	7.1	6.5	5.0	100.0	8.8	3,000
Total (n)	1,545	897	213	195	150	3,000	264	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
NFE: Non-formal education

Nearly 52 percent said they had no food, about 30 percent said that they had prepared and eaten food in groups, and some seven percent either bought food from a shop or borrowed it from neighbours and relatives. Slightly over six percent collected food from the debris and or from agricultural fields (in the case of fresh vegetables) while another five percent prepared food in open places outside of their houses after taking it from their own shops.

The proportion of households not having food in the evening of 25 April was highest among households with a young age structure (61.1%), followed by households in severely hit districts (58.7%) and rural areas (55.5%), and households of the Tamang (60.6%) and other Hill Janajati (62.2%) communities. About nine percent of the surveyed households reported that their level of food consumption following the earthquake declined. The level of reduction in food intake was high for households in severely hit districts and rural areas, for households with young age structures, and for households of other Hill Janajatis and Dalits. These findings suggest that vulnerability increased due to factors like rural residence, young age structure, and caste and ethnicity.

Participants in FGDs and informal conversations spoke about conditions related to food and eating on the day of the earthquake and the days following it. Some of what they said included the fact they had had no appetite for many days due to the fact that the recurrent tremors and their worry that another earthquake would strike made them feel dizzy. They also said that, after the earthquake, it was difficult to find suitable foods for new mothers and children. Many said that they had been left with no house to live in and had found eating food next to impossible. They also explained that earthquake survivors had money to buy basic daily necessities like salt and cooking oil.

The above statements expressed by earthquake survivors support theoretical literature on the psychological impact of a disaster. This literature suggests that affected people often develop psycho-physiological effects such as fatigue, gastrointestinal upset, and tics (Lindell & Prater, 2003).

6.1.2 Impact on land endowment

From the entitlement perspective, the size and type of land assets draw attention to different bases of claims on resources which prevail in societies. In rural agrarian societies, ownership of land assets in combination with household labour power (land and labour endowments) are believed to determine the possession of other fixed and productive assets such as the type of house, agricultural equipment, livestock, store of food, and other consumer durables. The exchange of labour power with land (to exploit that land) creates a production-based entitlement, and the robustness of the production-based entitlement fosters trade-based exchange entitlements[14] that can prevent the potential occurrence of destitution. Land, a valuable asset a person or household becomes entitled to either through inheritance transfer or trade based processes, yields production-based opulence through the ability to employ one's own labour's assets to secure their rights.

The survey found that 97 percent of households had some agricultural land endowment. The proportions of relatively landless households were high in Kathmandu Valley (8.5%) and in urban areas (6.8%). Nearly two-thirds of the surveyed households possessed less than 0.5 hectare of land. Only 11 percent owned more than one hectare of land. The average size of landholding was 0.45 hectare (Table 6.2).

The average size of landholding in Kathmandu Valley was just 0.2 ha and that in urban areas (0.3 ha) was only slightly larger. The average female-headed household owned less land (not even 0.4 ha) than the average male-headed household (nearly 0.5 ha). Households with an old age structure had also a relatively low average landholding (0.429 ha). In terms of caste and ethnicity, other Hill Janajati

[14] Sen's 1981 list of entitlements includes, among others, those based on trade, production, one's own labor, inheritance, and transfer.

and Chhetri/Thakuri households owned, on average, the biggest landholdings (0.567 ha and 0.506 ha respectively), followed by Tamangs (0.486 ha).

Table 6.2: Percent distribution of households by landholding status

Background variables	HHs with land	Total (n)	Size of landholding (in ha.)			Total (%)	Total (n)	Average landholding (in ha.)
			< 0.5	0.5-1	1+			
Domain								
Severely hit	98.6	1,601	56.1	30.0	14.0	100.0	1,571	0.527
Crisis-hit	96.6	792	65.5	22.3	12.2	100.0	760	0.491
Kathmandu Valley	91.5	607	92.7	5.4	1.9	100.0	542	0.168
Place of residence								
Rural	98.4	2,004	57.6	29.0	13.3	100.0	1,967	0.523
Urban	93.2	996	82.5	10.8	6.6	100.0	906	0.291
Sex of HH Heads								
Male	96.9	2,381	63.4	24.3	12.3	100.0	2,287	0.472
Female	95.7	619	73.6	19.4	6.9	100.0	585	0.362
Median age of family								
< 20 years	96.6	476	67.4	21.0	11.6	100.0	581	0.463
20-30 years	96.0	1,056	68.5	22.0	9.6	100.0	1,071	0.467
30+ years	94.9	1,334	74.6	16.8	8.6	100.0	1,220	0.429
Highest edu. of 15+ member								
All Illiterate	94.6	643	70.3	21.0	8.7	100.0	695	0.443
All primary & NFE	96.8	807	69.3	20.8	9.9	100.0	863	0.455
At least one secondary+	95.4	1,416	72.6	17.9	9.5	100.0	1,314	0.449
Caste/ethnic groups								
Brahman	99.0	396	62.4	29.4	8.2	100.0	392	0.455
Chhetri/Thakuri	97.1	567	63.4	18.5	18.1	100.0	545	0.506
Tamang	98.1	781	57.8	30.4	11.8	100.0	765	0.486
Newar	91.2	488	81.5	12.2	6.2	100.0	431	0.292
Other Hill Janajati	98.0	445	57.9	27.1	15.0	100.0	433	0.567
Hill Dalits	94.3	235	79.7	17.7	2.5	100.0	219	0.312
Other	99.1	87	82.5	12.9	4.6	100.0	87	0.293
Total	96.6	3,000	65.5	23.3	11.2	100.0	2,872	0.450
Total (n)	2,898		1,881	669	322	2,872		

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

About one-fourth of the surveyed households reported that their agriculture land had sustained damage due to the earthquake. The extent of damage was highest in severely hit districts (37.9% of households with agricultural land sustained damage to it) as well as in rural areas (33.2%) and among households with a young age structure (38.0%) and of other Hill Janajatis (43.7%). The highest proportions of other Hill Janajatis reporting damage to their agriculture land were the Gurungs and Magars of Gorkha (Table 6.3).

Over half (59.1%) of the surveyed households reporting that their land had been damaged said their land was cracked or broken into pieces and 37 percent said that landslides had swept across their land. Some four percent of the surveyed households whose land was damaged by the earthquake reported that the source of water they had relied on for irrigation and land moisture had dried up (Table 6.3).

Many participants in the FGDs said that they had witnessed the occurrence of dry landslides in their localities. Others stated that the land had developed such big cracks that it was unsuitable for either habitation or farming. In many places, the earthquake damaged stone mines, thereby rendering villagers jobless.

The average area of land damaged by the earthquake (0.15 hectare) accounted for over a one-third of the total arable land (0.45 hectare) owned by the average household. This figure implies that over one-third of the land endowment or land-based economy was damaged or destroyed by the earthquake.

Table 6.3: Percent distribution of households by earthquake-induced destruction of and damage type to the agriculture land

Background variables	Land damage		Type of damage			Total (%)	Total (n)	Average damaged land (in ha.)
	%	Total (n)	Crack land	Landslide	Dried source of spring water			
Domain								
Severely hit	37.9	1,579	61.8	34.0	4.3	100.0	599	0.156
Crisis-hit	11.6	765	36.6	61.6	1.8	100.0	89	0.130
Kathmandu Valley	4.0	556	75.7	16.2	8.1	100.0	22	0.083
Place of residence								
Rural	33.2	1,971	59.6	36.5	3.9	100.0	654	0.155
Urban	6.0	928	52.9	40.7	6.4	100.0	56	0.089
Sex of HH Heads								
Male	24.1	2,307	61.6	33.8	4.6	100.0	557	0.152
Female	25.9	592	49.9	48.0	2.1	100.0	153	0.144
Median age of family								
< 20 years	38.0	586	32.7	63.4	3.9	100.0	223	0.151
20-30 years	23.9	1,081	44.0	53.2	2.8	100.0	259	0.141
30+ years	18.6	1,231	33.0	61.7	5.4	100.0	228	0.160
Highest edu. of 15+ member								
All Illiterate	25.7	700	50.1	47.7	2.2	100.0	180	0.138
All primary & NFE	29.2	871	30.1	63.7	6.2	100.0	254	0.168
At least one secondary+	20.8	1,326	31.5	64.9	3.6	100.0	276	0.141
Caste/ethnic groups								
Brahman	17.5	393	61.2	33.3	5.5	100.0	69	0.119
Chhetri/Thakuri	17.4	550	57.1	32.2	10.7	100.0	96	0.166
Tamang	28.6	766	58.8	36.4	4.7	100.0	219	0.207
Newar	9.9	445	66.0	23.5	10.5	100.0	44	0.133
Other Hill Janajati	43.7	437	63.7	36.3	0.0	100.0	191	0.129
Hill Dalits	24.3	222	39.7	60.3	0.0	100.0	54	0.072
Other	43.4	87	57.5	42.5	0.0	100.0	38	0.074
Total	24.5	2,899	59.1	36.8	4.1	100.0	710	0.150
Total (n)	710		420	261	29	710		

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Many of the FGD participants claimed that water resources had depleted due to the earthquake and some said that they had dried up altogether. One female participant from Nuwakot said she had to walk up to three hours daily to fetch water because of the water crisis. The participants in Okhaldhunga said that their water source had been buried by the earthquake and had ceased to provide water at the earth's surface. As a result, they had to collect and use rain water.

6.1.3 Impact on agricultural operations

The United Nations Food and Agricultural Organization (FAO) estimates that the agriculture sector, comprising crops, livestock, fisheries, and forestry, absorbs approximately 22 percent of the economic impact caused by medium- and large-scale natural hazards and disasters in developing countries (FAO, 2015). Such a high level of impact calls for enhancing the mainstreaming of disaster risk reduction and resilience-building strategies within the agricultural sector.

However, since most impact studies of disasters and natural hazards find it difficult to collect and compile agricultural impact statistics, there are major data gaps regarding the impact of natural hazards and disasters on the agriculture sectors of developing countries. The systematic collection and analysis of agriculture sector-specific data and the upgrading of national and international disaster loss databases is a crucial need in order to better inform appropriate risk reduction policies and investments for and within the sector. Humanitarian aid and official development assistance to the agriculture sector is claimed to be small in proportion to the economic impact and needs of the sector (FAO, 2015). Impact assessments of natural hazards and disasters in the agriculture sector are imperative if we are to identify the needed level of investment in disaster risk reduction measures to

build resilient livelihoods and food production systems. The agriculture sector needs to be mobilized as a proactive implementation partner for the delivery of a nation's framework on disaster risk reduction in order to enhance local action and build the resilience of the most vulnerable, who are often also the most food insecure (FAO, 2015).

Rates of land ownership and the extent of land damage by a disaster signify the level of a disaster's impact on endowment loss. The impact of a disaster on agricultural operations signifies the level at which family-based labour is carried out on land endowment to generate production entitlement from it. If a household's own agricultural land is damaged and labour market opportunities are bleak, the losses in both land endowment and labour-based entitlement deteriorates that household's livelihood support system and increases the state of its food insecurity and nutritional jeopardy. The most common and significant impact of an earthquake on arable farming is the interruption of water services due to the shaking of the ground and the resultant to irrigation lines and systems.

Of the households that owned some agricultural land about 86 percent cultivated some crop during the post-earthquake period, but seven percent each either did not cultivate their land or did not have a large enough area to cultivate (Table 6.4). The proportion of households not having adequate land for cultivation was highest in Kathmandu Valley (24.9% of surveyed households) and in urban areas (19.1%).

Table 6.4: Percent distribution of households that owned agricultural land by status of cultivation of any crop after the earthquake

Background variables	Cultivated	Not cultivated	No adequate land to cultivate	Total (%)	Total (n)
Domain					
Severely hit	88.7	10.0	1.2	100.0	1,579
Crisis-hit	91.9	2.2	5.9	100.0	765
Kathmandu Valley	69.0	6.1	24.9	100.0	556
Place of residence					
Rural	90.4	8.3	1.3	100.0	1,971
Urban	76.0	4.9	19.1	100.0	928
Sex of HH Heads					
Male	86.8	7.2	6.0	100.0	2,307
Female	82.0	7.3	10.7	100.0	592
Median age of family					
< 20 years	85.5	10.8	3.8	100.0	586
20-30 years	86.7	6.7	6.6	100.0	1,081
30+ years	85.1	6.0	8.9	100.0	1,231
Highest edu. of 15+ member					
All Illiterate	84.1	9.7	6.2	100.0	700
All primary & NFE	87.8	8.2	4.0	100.0	871
At least one secondary+	85.4	5.3	9.4	100.0	1,326
Caste/ethnic groups					
Brahman	92.0	3.2	4.8	100.0	393
Chhetri/Thakuri	89.1	4.1	6.8	100.0	550
Tamang	84.2	11.4	4.5	100.0	766
Newar	76.4	6.8	16.8	100.0	445
Other Hill Janajati	89.9	7.3	2.8	100.0	437
Hill Dalits	83.5	7.5	9.0	100.0	222
Other	84.7	9.2	6.0	100.0	87
Total	85.8	7.2	7.0	100.0	2,899
Total (n)	2,487	209	203	2,899	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The major crops cultivated were paddy, which 60 percent of the surveyed households cultivated, maize (52.8%), and millet (45.3%). Other crops widely cultivated were potatoes, wheat, buckwheat and barley, green vegetables, oilseeds, mustard, and lentils and pulses (Table 6.5). Rates of paddy

cultivation were highest for Newar, Tamang communities, which cultivated 80 and 72 percent respectively, considerably more than the average of about 60 percent.

Table 6.5: Percent distribution of households cultivating different crops aftermath of the earthquake

Background variables	Paddy	Maize	Millet	Potato	Wheat	Vegeta-bles	Mustard	Lentils/ pulses
Domain								
Severely hit	62.3	46.6	65.4	7.2	8.5	3.4	4.7	7.6
Crisis-hit	53.9	76.9	28.3	21.4	7.7	13.9	8.9	3.3
Kathmandu Valley	63.1	32.8	8.1	18.9	13.5	9.8	17.0	1.4
Place of residence								
Rural	59.0	56.9	53.6	11.3	9.3	7.6	5.8	5.6
Urban	62.5	43.2	25.7	17.6	8.8	6.9	13.2	4.8
Sex of HH Heads								
Male	61.2	54.8	44.9	13.9	9.1	7.0	8.1	5.0
Female	55.4	44.6	47.0	10.0	9.5	9.0	7.5	6.7
Median age of family								
< 20 years	52.9	49.1	63.4	11.0	9.3	5.9	4.6	6.0
20-30 years	62.3	56.2	43.8	13.3	8.5	8.0	7.4	5.6
30+ years	61.5	51.6	38.1	14.1	9.7	7.6	10.0	4.9
Highest edu. of 15+ member								
All Illiterate	51.4	48.9	52.0	11.9	10.7	5.6	5.7	5.3
All primary & NFE	57.2	57.2	50.7	10.9	10.2	8.1	6.3	7.0
At least one secondary+	66.5	51.9	38.2	15.3	7.6	7.9	10.3	4.3
Caste/ethnic groups								
Brahman	47.7	65.3	54.8	13.9	10.5	12.3	4.6	5.2
Chhetri/Thakuri	69.2	31.8	20.8	10.7	9.6	4.8	14.1	2.1
Tamang	71.9	43.2	47.7	10.3	7.6	6.5	11.8	6.8
Newar	80.2	63.5	22.9	19.3	7.5	9.0	7.3	3.2
Other Hill Janajati	54.0	56.4	57.2	17.5	8.3	3.8	4.4	10.2
Hill Dalits	37.8	56.9	64.2	4.7	6.5	5.1	6.9	3.6
Other	36.5	33.2	65.7	7.5	24.8	2.2	6.4	3.2
Total	60.1	52.8	45.3	13.2	9.1	7.4	8.0	5.4

Note: Sum of percentages may exceed 100 because of multiple responses.

Table 6.6: Percent distribution of households having agricultural land that they did not cultivate this year by reasons of not cultivation

Background variables	Land damaged	No enthusiasm for work	Staying in distant camp	Time passed for cultivation	Source of water dried	Other reasons	HHs not cultivating this year
Domain							
Severely hit	51.5	38.4	30.3	20.2	18.2	20.2	159
Crisis-hit	19.0	38.1	0.0	38.1	19.0	19.0	17
Kathmandu Valley	10.7	60.7	14.3	25.0	5.4	26.8	34
Place of residence							
Rural	50.9	39.0	29.4	22.5	18.1	18.5	164
Urban	11.5	52.7	10.7	22.1	9.2	30.9	46
Sex of HH Heads							
Male	40.4	45.3	23.8	25.3	17.1	21.8	166
Female	49.7	29.3	31.1	11.2	12.6	18.6	43
Caste/ethnic groups							
Brahman	37.9	63.6	0.0	22.3	31.6	4.8	13
Chhetri/Thakuri	24.0	61.7	10.8	17.9	28.5	17.0	23
Tamang	61.0	22.9	43.6	15.1	9.8	22.0	87
Newar	11.3	53.6	4.0	23.1	17.2	19.9	30
Other Hill Janajati	37.7	55.4	20.1	37.7	10.1	27.1	32
Hill Dalits	28.9	57.9	9.6	47.0	28.9	31.3	17
Other	60.1	30.0	40.1	0.0	20.0	9.9	8
Total	42.3	42.0	25.3	22.4	16.2	21.2	209
Total (n)	88	88	53	47	34	44	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data and sum of percentages may exceed 100 because of multiple responses.

The major reasons households had not cultivated their land in the season after the earthquake included damage to arable land (42.3%) and the lack of enthusiasm for working in the fields because of the earthquake (42.0%). About a one-fourth of the households that did not cultivate their land did not do so because they were staying in far-off camps. Another 22 percent of households said that it was the off-season and 16 percent said that their source of irrigation water had dried up (Table 6.6). Disturbances to irrigation systems and damage to sources of irrigation (water) were mentioned by FDGs participants as prominent reason for not cultivating.

Among the surveyed households, 47 percent said that their harvests of crops cultivated in the post-earthquake season were fair; 42 percent, that their harvest had declined; and 11 percent, that their harvests were good (Table 6.7). Harvests were particularly bad in severely hit districts (47.1%), in rural areas (43.8%), and in households of other Hill Janajatis (33.5%), Tamangs (41.6%), and Dalits (48.5%).

Table 6.7: Percent distribution of households that cultivated crops by the status of harvests

Background variables	Status of harvest			Total	
	Good	Okay	Not good	%	n
Domain					
Severely hit	10.5	42.4	47.1	100.0	1,401
Crisis-hit	11.7	48.9	39.4	100.0	703
Kathmandu Valley	10.6	60.2	29.2	100.0	383
Place of residence					
Rural	11.0	45.2	43.8	100.0	1,782
Urban	10.5	51.4	38.1	100.0	705
Sex of HH Heads					
Male	11.3	46.5	42.2	100.0	2,001
Female	9.1	48.9	42.0	100.0	486
Caste/ethnic groups					
Brahman	16.3	50.1	33.5	100.0	361
Chhetri/Thakuri	13.4	45.0	41.6	100.0	490
Tamang	11.9	46.5	41.6	100.0	645
Newar	10.0	54.9	35.2	100.0	340
Other Hill Janajati	4.3	41.7	54.1	100.0	392
Hill Dalits	6.7	44.9	48.5	100.0	185
Other	8.7	45.6	45.6	100.0	73
Total	10.9	47.0	42.2	100.0	2,487
Total (n)	271	1,169	1,050	2,487	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Over 42 percent of the earthquake-affected households reported that their post-earthquake harvests were not good, a fact signifying that there was an increase in food insecurity in the affected areas. Reasons given for the decline included bad weather (59.2%), followed by land damage due to the earthquake (27.9%), being late for cultivation or its being the off-season for cultivation, and not being able to nurture crops with needed levels of weeding, irrigation, and other inputs (Table 6.8). These findings imply that crop production declined due not only to natural and seasonal factors but also to a decline in enthusiasm for working in the fields and staying in camps too far away from agricultural land to be able to provide timely inputs.

During the FGDs, the Tamang community in Sindhupalchowk expressed the bitter reality that as the earthquake had destroyed a nearby bridge, they could no longer cross the river to cultivate crops where they had land. The Gurung community in Gorkha said that odd insects had destroyed the crops planted in their fields and that an increase in the number of mice in their fields caused damage costing over NPR 30,000 per month. The Surel community in Dolakha said that they had suffered a huge decline in their incomes from agriculture after the earthquake.

Many of the FGD participants said that their production of food crops declined because they had lost interest in cultivating land as wholeheartedly as they used to. As a result, the amount of food products in their localities had decreased sharply.

Table 6.8: Percent distribution of households by reasons that harvests were not good

Background variables	Bad weather	Land cracked/ dried/slipped due to earthquake	Late in cultivation	Unable to nurture	Other	Total (%)	Total (n)
Domain							
Severely hit	57.5	31.1	7.8	2.9	0.7	100.0	660
Crisis-hit	58.3	25.1	12.0	3.4	1.1	100.0	277
Kathmandu Valley	71.7	15.8	8.2	3.3	1.1	100.0	112
Place of residence							
Rural	57.5	29.4	9.4	2.9	0.8	100.0	660
Urban	64.3	23.5	7.6	3.6	1.0	100.0	269
Sex of HH Heads							
Male	60.2	27.1	8.0	3.6	1.1	100.0	845
Female	55.2	31.0	12.6	1.2	0.0	100.0	204
Caste/ethnic groups							
Brahman	52.8	29.0	14.9	3.3	0.0	100.0	121
Chhetri/Thakuri	63.8	25.1	9.3	1.5	0.3	100.0	204
Tamang	55.1	30.0	8.0	5.5	1.4	100.0	268
Newar	67.6	24.0	4.7	3.7	0.0	100.0	120
Other Hill Janajati	56.4	29.4	11.3	2.5	0.4	100.0	212
Hill Dalits	67.0	27.6	1.8	0.0	3.6	100.0	90
Other	54.8	28.6	11.9	2.4	2.4	100.0	33
Total	59.2	27.9	8.9	3.1	0.9	100.0	1,048
Total (n)	620	292	93	32	9	1,048	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

6.1.4 Impact on food security

Within agriculture, the crop sub-sector has no alternative to their crops to manage food security, so it is the sector most affected by natural hazards. Participants in the study were of the view that food production declined this year because people paid more attention to house reconstruction and the maintenance of temporary shelters than working in their agricultural fields. The first impact of any type of natural disaster is to breakdown the usual cycle of food consumption and food supply in a family. This fact leaves people and families destitute if both the internal support of communities and sources of external support mechanism are weak. After the earthquake, the survey found that only about 29 percent of the surveyed households had year-round food sufficiency from either their own sources of income or their own agricultural production. More than two-thirds suffered a year-round food deficit (Table 6.9).

Year-round food security is more pronounced among households in rural areas (32.4%), male-headed households (30.5%), households with old age structures (32.6%) and secondary-level-educated families (32.0%). It is also higher among Brahmin (46.7%), Chhetri/Thakuri (35.0%), and Tamang (31.2%) households. The lowest rates of year-round food security were among those households that were female-headed (21.9%), had a young age structure (22.1%), and were comprised all illiterate adults (25.4%). Hill Dalits were the most food-insecure: not even one in ten (9.4%) had enough food for the entire year.

Figure 6.2 and Table 6.10 demonstrate that over one-half of the households surveyed experienced severe food deficits between the months of Baisakh (April-May) and Shrawan (July-August). The months between Mangsir (November-December) and Magh (January-February) were relatively food secure months.

Table 6.9: Percent distribution of households with agricultural land by months of food security from their own production

Background variables	Months of food sufficiency from own production					Total (%)	Total (n)
	Up to 3	4-6	7-9	10-11	12		
Domain							
Severely hit	10.6	35.9	16.6	3.5	33.4	100.0	1,559
Crisis-hit	12.7	36.7	18.4	5.4	26.8	100.0	720
Kathmandu Valley	38.6	35.2	9.2	1.9	15.1	100.0	417
Place of residence							
Rural	10.8	35.0	17.7	4.1	32.4	100.0	1,946
Urban	27.5	38.7	11.4	3.0	19.4	100.0	750
Sex of HH Heads							
Male	14.8	34.3	16.5	3.9	30.5	100.0	2,167
Female	18.1	43.1	13.7	3.2	21.9	100.0	529
Median age of family							
< 20 years	14.2	42.7	17.0	4.0	22.1	100.0	564
20-30 years	14.7	36.2	16.8	3.8	28.4	100.0	1,010
30+ years	16.6	32.6	14.7	3.6	32.6	100.0	1,121
Highest edu. of 15+ member							
All Illiterate	14.5	39.0	17.5	3.7	25.4	100.0	656
All primary & NFE	14.8	38.8	16.1	3.3	27.0	100.0	837
At least one secondary+	16.4	32.5	15.0	4.1	32.0	100.0	1,202
Caste/ethnic groups							
Brahman	6.6	26.7	15.4	4.6	46.7	100.0	374
Chhetri/Thakuri	14.1	34.9	12.8	3.2	35.0	100.0	513
Tamang	12.3	34.5	17.7	4.2	31.2	100.0	732
Newar	26.3	33.7	13.1	2.4	24.5	100.0	370
Other Hill Janajati	10.6	43.1	22.1	6.0	18.2	100.0	424
Hill Dalits	31.9	48.0	9.5	1.2	9.4	100.0	202
Other	28.4	44.2	18.6	0.0	8.8	100.0	81
Total	15.5	36.0	15.9	3.8	28.8	100.0	2,696
Total (n)	418	971	429	102	776	2,696	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Figure 6.2: Months of food deficit

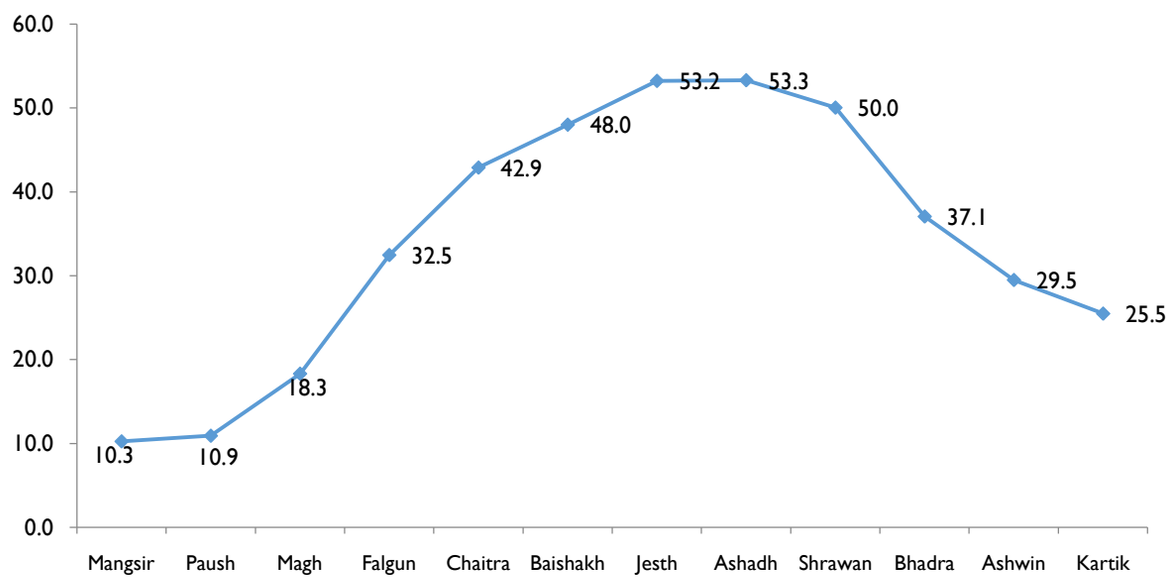


Table 6.10: Percent distribution of food deficit households by months of deficit

Background variables	Baishakh	Jesth	Ashadh	Shrawan	Bhadra	Ashwin	Kartik	Mangsir	Paush	Magh	Falgun	Chaitra	Total (n)
Domain													
Severely hit	49.9	54.7	53.1	47.6	31.7	25.8	22.5	9.4	9.3	17.5	32.8	45.1	1601
Crisis-hit	47.9	51.9	54.9	53.2	37.8	26.5	20.3	10.5	10.8	16.0	30.2	40.2	792
Kathmandu Valley	43.1	51.0	51.7	52.3	50.2	43.1	40.1	12.2	15.4	23.5	34.5	40.5	607
Place of residence													
Rural	49.1	53.8	53.2	49.2	34.5	26.7	22.7	8.7	9.3	16.9	30.9	43.5	2004
Urban	45.8	52.0	53.5	51.7	42.2	35.0	31.1	13.4	14.2	21.2	35.7	41.7	996
Sex of HH Heads													
Male	46.6	52.0	52.2	49.1	36.6	29.1	25.3	10.2	10.6	17.6	31.3	41.2	2381
Female	53.3	57.9	57.3	53.6	38.8	30.9	26.2	10.6	12.0	20.9	36.7	49.5	619
Median age of family													
< 20 years	56.5	62.1	60.7	55.9	38.9	29.5	26.8	10.0	11.4	19.1	35.6	50.6	603
20-30 years	49.1	52.5	53.7	50.6	37.1	30.1	26.1	10.3	11.0	18.0	33.5	44.4	1,111
30+ years	43.0	49.6	49.4	46.7	36.2	29.0	24.4	10.2	10.6	18.1	30.0	37.8	1,284
Highest edu. of 15+ member													
All Illiterate	51.1	57.6	56.2	51.3	36.8	29.4	25.1	7.4	8.7	18.1	34.4	47.9	728
All primary & NFE	52.9	56.6	57.1	53.8	38.6	29.9	24.9	11.8	12.6	20.6	35.9	45.7	891
At least one secondary+	43.1	48.7	49.2	46.9	36.2	29.3	26.1	10.7	10.9	16.9	29.1	38.3	1,379
Caste/ethnic groups													
Brahman	29.0	36.5	39.9	39.2	32.2	25.3	21.0	8.5	5.5	10.9	17.2	23.5	396
Chhetri/Thakuri	42.4	49.5	49.9	46.5	35.8	30.0	25.4	9.0	8.6	15.4	28.1	39.1	567
Tamang	48.5	53.7	52.1	50.4	38.9	29.4	23.2	7.3	9.8	14.6	26.2	40.4	781
Newar	43.1	48.8	50.3	49.3	42.7	34.8	32.2	11.1	12.8	20.2	30.6	38.0	488
Other Hill Janajati	58.9	60.7	60.8	53.3	29.7	24.4	21.7	14.1	12.4	22.8	45.6	56.0	445
Hill Dalits	72.1	74.0	73.0	64.8	42.6	30.1	29.5	15.9	17.5	31.5	58.3	67.4	235
Other	73.1	78.5	72.1	66.6	42.0	40.2	37.5	13.6	24.6	35.6	60.3	71.2	87
Total	48.0	53.2	53.3	50.0	37.1	29.5	25.5	10.3	10.9	18.3	32.5	42.9	3,000
Total (n)	1,440	1,596	1,599	1,500	1,113	885	765	309	327	549	975	1,287	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data and sum of percentages may exceed 100 because of multiple responses.

Buying and borrowing in combination was the main strategy that food-deficit households employed to manage food during the crisis period. In fact, over 90 percent of such households followed this strategy. The second most common strategy was depending on wages or getting an advance on wages. Wage labour and in-country employment was the major source of money to buy food (65.7%), followed by support from livestock (selling of livestock products and animals themselves). About 14 percent of households managed the money to buy food from livestock sources. Other sources of money to buy foodstuffs include remittances from wage labourers abroad (9.5%) and family businesses (5.9%) (Table 6.11).

Table 6.11: Percent distribution of food deficit households by ways of managing food in deficit months

Background variables	Ways of managing food deficit			Sources of money					
	Buying/borrowing	Wage labour/ wage in advance	Total (n)	In-country employment &wage labour	Support of livestock	Wage labour abroad	Business	Other	Total (n)
Domain									
Severely hit	89.1	10.9	1,039	66.1	11.5	13.7	5.9	2.8	922
Crisis-hit	92.6	7.4	527	56.7	25.7	5.7	10.7	1.1	483
Kathmandu Valley	96.6	3.4	354	77.0	5.2	3.6	13.9	0.4	341
Place of residence									
Rural	90.2	9.8	1,315	62.7	17.1	11.3	6.7	2.2	1,179
Urban	94.0	6.0	605	71.9	8.0	5.8	13.1	1.2	567
Type of family									
Nuclear	91.9	8.1	1,160	65.7	14.3	8.9	9.0	2.1	1,063
Joint or extended	90.7	9.3	759	65.7	13.9	10.6	8.4	1.4	683
Sex of HH Heads									
Male	91.0	9.0	1,507	68.5	14.6	5.6	9.6	1.7	1,363
Female	92.9	7.1	413	55.7	12.8	23.5	5.8	2.2	384
Caste/ethnic groups									
Brahman	92.8	7.2	199	52.8	29.2	6.8	8.2	3.0	185
Chhetri/Thakuri	96.2	3.8	333	58.9	21.9	10.5	8.0	0.7	320
Tamang	91.6	8.4	503	66.0	13.8	9.6	8.7	1.9	458
Newar	92.2	7.8	280	71.6	3.1	5.5	18.6	1.2	257
Other Hill Janajati	86.6	13.4	347	66.3	11.5	15.1	4.4	2.7	297
Hill Dalits	89.2	10.8	183	79.3	4.4	8.7	4.7	2.9	163
Other	90.3	9.7	74	72.6	16.7	4.8	5.9	0.0	67
Total	91.4	8.6	1,920	65.7	14.2	9.5	8.8	1.9	1,746
Total (n)	1,755	165		1,147	248	166	154	33	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

After the earthquake, the problem of buying food increased for 41 percent of the surveyed households, remained the same for 42 percent, and decreased for 18 percent (Table 6.12). The increase in the problem of food purchase required securing money from either of the two sources of recovery-funding, either inter-temporal transfers or inter-personal transfers. For the most part, surveyed families managed through inter-temporal transfers: over 91 percent of the food-deficit families either turned to the past and used their savings or turned to the future and got a loan or took an advance on their wages to pay for food.

The reasons given for the decrease in the problem of buying food were the provision of food in relief packages (94.9%) and the provision of money in relief packages (5.1%). Though nearly 18 percent of households reported having found a short-term solution to the problem of food purchases through relief, their level of sustained food security actually declined as, at some point, they will stop receiving relief packages. If the proportions of households which experienced an increase in the problem of buying food (40.8%) and those which experienced a decrease (17.5%) are added, it is clear that, in the post-disaster period, 59 percent of households (1,746) suffered an increase in year-round food deficit.

Table 6.12: Percent distribution of households according to whether they were more or less able to buy food after the earthquake and reasons for decreased problem

Background variables	Status of the problem of buying			Total (n)	If decreased, reasons		Total (n)
	Same as earlier	Increased	Decreased		Received food relief	Received cash relief	
Domain							
Severely hit	30.4	40.3	29.3	922	94.7	5.3	271
Crisis-hit	48.0	47.5	4.4	483	100.0	0.0	21
Kathmandu Valley	63.3	32.7	3.9	341	90.9	9.1	13
Place of residence							
Rural	37.3	38.7	24.0	1,179	94.9	5.1	283
Urban	50.7	45.2	4.0	567	94.7	5.3	23
Type of family							
Nuclear	41.6	37.9	20.5	1,063	94.3	5.7	218
Joint or extended	41.9	45.3	12.8	683	96.3	3.7	87
Sex of HH Heads							
Male	40.9	42.7	16.4	1,363	94.0	6.0	223
Female	44.4	34.1	21.4	384	97.3	2.7	82
Caste/ethnic groups							
Brahman	35.9	55.1	9.0	185	90.4	9.6	17
Chhetri/Thakuri	43.8	42.9	13.3	320	84.9	15.1	42
Tamang	43.8	37.5	18.6	458	99.3	0.7	85
Newar	57.8	36.2	6.0	257	96.1	3.9	16
Other Hill Janajati	33.3	39.2	27.5	297	100.0	0.0	82
Hill Dalits	35.4	47.4	17.2	163	82.9	17.1	28
Other	23.7	22.6	53.7	67	95.6	4.4	36
Total	41.7	40.8	17.5	1,746	94.9	5.1	305
Total (n)	728	712	306		289	16	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Buying and borrowing were the major strategies used by households that did not have enough food during the crisis period. There may be a future decrease in food sufficiency as apathy for farming was high. FGD participants from Dhading explain, "*We have observed a decrease in food production in our communities. We have lost interest in cultivating our crops now.*"

Affected households found it hard to manage immediate food security: the majority (51.5%) spent the day of the earthquake without food and some nine percent households claimed to have reduced the frequency and quantity of their food consumption. Households with agricultural lands reported that over one-third of their arable land was damaged. Of the households with agricultural land, over seven percent did not cultivate in the post-earthquake season. Damage to land was one of the major reasons for not cultivating any crops in the season after the earthquake (it was provided by 42.3% of households), followed by bad weather, lack of enthusiasm for work, the fact that it was the off-season, and staying in distant camps. Damage to arable land resulted in a decline in food production. Over 71 percent of the surveyed households experienced food insecurity during some months of the year, particularly from Falgun (February-March) to Ashwin (September-October). Food buying and borrowing are the major strategies used to manage during deficit periods. Money to manage periods of food deficit comes from employment, wage work, and foreign labour. On the whole, the problem of buying food is likely to increase substantially in the days to come due to the substantial reduction in local food production coupled with the inevitable cessation in the distribution of relief packages, whether in kind or cash.

6.1.5 Impact on labour, employment, and occupational change

Standard data on occupation and employment are useful for characterizing employment at the individual level and livelihoods at the household level. The main categories of occupation and or employment are the following: economic activity (a person belongs to the labour force); employment (having a job), economic sector of employment (agriculture, construction,

manufacturing, etc.), and status in employment (wage job, self-employed, employer, unpaid family help). When more than one household member works on a family farm or micro-enterprise, usually one of them is recorded as self-employed and the others as unpaid family help. The self-employed may or may not include employers. An employer is a self-employed person who has at least one wage-earning employee. The net impact of an earthquake disaster on labour and employment can be measured accurately only if there is pre-disaster data in hand. Since there was no such data, the research term decided to record how many people aged 10 and above in the surveyed households had changed their occupational or employment status due to the earthquake.

Of the 12,870 population aged 10 and above enumerated, only three percent reported having changed their usual occupation. In contrast, more than five times as many households (16.5%) had changed their family-based traditional occupation or regular source of income or seen it affected by the earthquake. Over 80 percent of the households whose occupation was affected or changed opined that they would be able to return to their previous occupation (Table 6.13).

Table 6.13: Percent distribution of population age 10 and above by status of occupation change, effect on family's traditional occupation and possibility of returning to the previous occupation

Background variables	Changed occupation		Affected traditional occupation		Total (n)	Possibility of returning to previous occupation		Total (n)
	%	Total (n)	Yes	No		Yes	No	
Domain								
Severely hit	4.5	6,643	25.2	74.8	1,601	79.8	20.2	403
Crisis-hit	1.1	3,731	5.3	94.7	792	81.1	18.9	42
Kathmandu Valley	1.6	2,497	8.3	91.7	607	81.9	18.1	50
Place of residence								
Rural	3.4	8,571	19.5	80.5	2,004	78.9	21.1	391
Urban	2.1	4,300	10.5	89.5	996	84.5	15.5	105
Type of family								
Nuclear	3.9	6,503	16.2	83.8	1,830	74.5	25.5	296
Joint or extended	2.0	6,367	17.1	82.9	1,170	88.4	11.6	200
Sex of HH Heads								
Male	2.5	10,610	16.1	83.9	2,381	81.4	18.6	383
Female	4.9	2,260	18.2	81.8	619	75.7	24.3	113
Median age of family								
< 20 years	3.8	2,609	21.9	78.1	605	72.5	27.5	132
20-30 years	3.3	5,311	17.7	82.3	1,111	84.5	15.5	196
30+ years	2.1	4,951	13.0	87.0	1,284	81.0	19.0	167
Highest edu. of 15+ member								
All Illiterate	3.3	2,477	16.2	83.8	730	79.4	20.6	118
All primary & NFE	4.0	3,830	21.0	79.0	891	74.3	25.7	187
At least one secondary+	2.2	6,564	13.8	86.2	1,379	86.2	13.8	190
Caste/ethnic groups								
Brahman	0.9	1,727	7.1	92.9	396	100.0	0.0	28
Chhetri/Thakuri	2.1	2,377	9.8	90.2	567	82.0	18.0	56
Tamang	4.5	3,353	16.2	83.8	781	57.4	42.6	126
Newar	2.3	2,150	12.4	87.6	488	82.0	18.0	60
Other Hill Janajati	3.5	2,020	30.7	69.3	445	91.8	8.2	137
Hill Dalits	3.8	933	27.7	72.3	235	92.6	7.4	65
Other	3.5	310	27.5	72.5	87	66.7	33.3	24
Total	2.9	12,870	16.5	83.5	3,000	80.1	19.9	496
Total (n)	373		495	2,505		397	99	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Though less than three percent of the population aged 10 and above reported having changed their occupation after the earthquake, 17 percent of the surveyed households reported that the earthquake had affected their family-based traditional occupations and sources of livelihood. Over 80 percent of those who had changed occupations were not satisfied with their current work.

6.2 Impact on social functions and rituals

The term "social functions" has many definitions, but here it is regarded as the collection of beliefs, norms, roles, and practices of a given group, organization, institution, or society.

The research team assessed the impacts of the earthquake on several aspects of social functions, including changes in the celebration of major feasts and festivals, the arrangement of marriages and conduction of weddings, and the observation of rituals. Over 80 percent of the surveyed households celebrated Dashain and Tihar as their major festivals. Other festivals they celebrated included Lhosar (12.8%), Christmas (4.5%), Mhapuja (1.1%) and other local festivals (0.9%), and other festivals (Table 6.14). This year, however most of the surveyed households said that they celebrated the festivals just for formality as they felt neither enthusiasm for nor joy in the celebrations.

Table 6.14: Percent distribution of households celebrating various festivals

Background variables	Dashain & Tihar	Lhosar	Christmas	Mhapuja & local festivals	Other festivals	Total (n)
Domain						
Severely hit	78.4	12.8	7.0	0.3	1.5	1,601
Crisis-hit	80.2	17.5	2.0	0.2	0.1	792
Kathmandu Valley	87.3	6.8	1.2	4.4	0.3	607
Place of residence						
Rural	75.7	17.0	5.9	0.2	1.2	2,004
Urban	90.7	4.4	1.7	3.0	0.2	996
Type of family						
Nuclear	78.8	12.7	6.3	1.2	1.1	1,830
Joint or extended	83.7	12.9	1.8	1.0	0.6	1,170
Sex of HH Heads						
Male	80.0	13.8	4.4	1.1	0.6	2,381
Female	83.4	8.9	4.8	0.9	1.9	619
Median age of family						
< 20 years	75.8	13.1	9.1	0.3	1.9	605
20-30 years	79.8	14.5	4.2	0.9	0.7	1,111
30+ years	83.8	11.3	2.6	1.7	0.6	1,284
Highest edu. of 15+ member						
All Illiterate	76.4	14.5	6.8	0.5	1.9	730
All primary & NFE	78.4	14.7	5.7	0.8	0.4	891
At least one secondary+	84.4	10.7	2.5	1.6	0.7	1,379
Caste/ethnic groups						
Brahman	99.4	0.0	0.2	0.0	0.4	396
Chhetri/Thakuri	99.2	0.0	0.7	0.1	0.0	567
Tamang	50.5	38.5	10.3	0.3	0.4	781
Newar	91.9	0.4	1.9	5.7	0.1	488
Other Hill Janajati	72.4	18.3	5.6	0.5	3.2	445
Hill Dalits	95.2	0.0	4.8	0.0	0.0	235
Other	85.6	0.9	5.3	0.0	8.2	87
Total	80.7	12.8	4.5	1.1	0.9	3,000
Total (n)	2,421	384	135	33	27	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Overall, 57 percent of the surveyed households said that they celebrated festivals in name only, another 29 percent households said that they had celebrated as usual, nine percent celebrated by taking a loan, and some six percent did not celebrate at all (Table 6.15).

In response to a question about how they planned to manage the expenses required for any upcoming marriage, social function, and rituals 71 percent of households answered that they did not have any such plan in the near future, one in ten each replied that they would conduct the event only as a formality, and seven percent said that they planned to take a loan (Table 6.16).

Table 6.15: Percent distribution of households according to how they celebrated major festivals after the earthquake

Background variables	As a formality only	As usual	By taking a loan or borrowing	Did not celebrate	Total (%)	Total (n)
Domain						
Severely hit	55.1	29.9	11.2	3.8	100.0	1,601
Crisis-hit	55.0	32.5	8.8	3.7	100.0	792
Kathmandu Valley	63.4	19.8	4.7	12.1	100.0	607
Place of residence						
Rural	55.2	30.3	10.2	4.3	100.0	2,004
Urban	59.8	25.1	7.3	7.8	100.0	996
Type of family						
Nuclear	57.2	27.7	9.2	5.8	100.0	1,830
Joint or extended	56.0	29.9	9.3	4.9	100.0	1,170
Sex of HH Heads						
Male	56.7	29.6	9.2	4.6	100.0	2,381
Female	57.1	24.5	9.4	8.9	100.0	619
Median age of family						
< 20 years	55.2	26.3	14.2	4.3	100.0	605
20-30 years	54.8	30.0	9.8	5.5	100.0	1,111
30+ years	59.2	28.3	6.5	6.0	100.0	1,284
Highest edu. of 15+ member						
All Illiterate	57.3	27.0	10.3	5.4	100.0	730
All primary & NFE	58.1	26.3	10.1	5.4	100.0	891
At least one secondary+	55.5	30.8	8.1	5.5	100.0	1,379
Caste/ethnic groups						
Brahman	60.1	28.9	6.5	4.5	100.0	396
Chhetri/Thakuri	55.8	31.1	8.2	5.0	100.0	567
Tamang	57.6	30.9	6.5	5.0	100.0	781
Newar	59.8	24.8	6.5	9.0	100.0	488
Other Hill Janajati	53.6	30.3	12.2	3.9	100.0	445
Hill Dalits	51.2	19.5	23.7	5.6	100.0	235
Other	54.6	26.2	14.6	4.6	100.0	87
Total	56.8	28.5	9.3	5.5	100.0	3,000
Total (n)	1,704	855	279	165	3,000	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Table 6.16: Percent distribution of households by management of expenditure for marriage, death or other ritual

Background variables	No plan	Observe formality only	Own resources	Takea loan	No ways to celebrate	Total (%)	Total (n)
Domain							
Severely hit	73.9	6.9	9.6	7.6	2.0	100.0	1,601
Crisis-hit	68.3	12.5	10.9	7.2	1.1	100.0	792
Kathmandu Valley	64.6	16.8	9.2	5.0	4.4	100.0	607
Place of residence							
Rural	71.8	8.8	9.2	7.8	2.4	100.0	2,004
Urban	68.0	13.6	11.1	5.3	2.0	100.0	996
Type of family							
Nuclear	73.5	9.6	8.8	5.7	2.4	100.0	1,830
Joint or extended	65.9	11.6	11.6	8.9	2.0	100.0	1,170
Sex of HH Heads							
Male	69.9	10.6	10.1	7.3	2.1	100.0	2,381
Female	72.9	9.4	8.9	5.8	3.0	100.0	619
Median age of family							
< 20 years	75.9	9.6	6.7	6.2	1.5	100.0	605
20-30 years	69.3	9.0	10.3	9.0	2.4	100.0	1,111
30+ years	69.1	12.0	11.0	5.6	2.4	100.0	1,284
Highest edu. of 15+ member							
All Illiterate	76.1	8.3	7.9	5.8	1.9	100.0	730
All primary & NFE	73.8	11.4	6.3	5.8	2.7	100.0	891
At least one secondary+	65.5	10.8	13.2	8.3	2.1	100.0	1,379
Caste/ethnic groups							
Brahman	59.5	12.2	16.2	9.7	2.5	100.0	396
Chhetri/Thakuri	70.7	9.4	11.3	6.6	2.0	100.0	567
Tamang	68.3	12.6	10.1	6.2	2.8	100.0	781
Newar	74.7	10.5	7.4	5.2	2.2	100.0	488
Other Hill Janajati	76.0	6.1	8.4	7.4	2.0	100.0	445
Hill Dalits	73.9	11.6	4.3	8.6	1.6	100.0	235
Other	79.9	6.6	5.3	7.3	0.9	100.0	87
Total	70.5	10.4	9.9	7.0	2.2	100.0	3,000
Total (n)	2,115	312	297	210	66	3,000	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The surveyed households were asked if they had postponed the date of a marriage ceremony or other social events due to the earthquake. Some one percent of households said that they had. Another three percent of households had arranged a marriage after the earthquake (Table 6.17).

Table 6.17: Percent distribution of households that postponed the date of a marriage ceremony or arranged a marriage after of the earthquake and the ages of people who got married

Background variables	Postponing the date of a marriage ceremony	Arranging a marriage	Total (n)	Age of those married		Total (n)
				< 18	18+	
Domain						
Severely hit	0.9	2.9	1,601	17.2	82.8	46
Crisis-hit	0.9	4.8	792	29.2	70.8	38
Kathmandu Valley	1.4	1.2	607	25.0	75.0	7
Place of residence						
Rural	0.9	3.1	2,004	22.8	77.2	63
Urban	1.2	2.9	996	22.9	77.1	29
Type of family						
Nuclear	1.4	1.9	1,830	35.7	64.3	35
Joint or extended	0.4	4.9	1,170	15.0	85.0	57
Sex of HH Heads						
Male	1.1	3.0	2,381	23.1	76.9	71
Female	0.5	3.4	619	21.9	78.1	21
Median age of family						
< 20 years	0.8	2.2	605	64.7	35.3	14
20-30 years	0.9	5.4	1,111	12.9	87.1	60
30+ years	1.2	1.4	1,284	24.5	75.5	18
Highest edu. of 15+ member						
All Illiterate	1.1	2.2	730	29.1	70.9	16
All primary & NFE	1.1	3.3	891	26.8	73.2	30
At least one secondary+	0.9	3.4	1,379	18.1	81.9	46
Caste/ethnic groups						
Brahman	1.0	2.0	396	0.0	100.0	8
Chhetri/Thakuri	0.5	2.8	567	10.0	90.0	16
Tamang	1.6	3.4	781	20.2	79.8	27
Newar	1.1	3.2	488	38.3	61.7	16
Other Hill Janajati	0.9	2.9	445	43.7	56.3	13
Hill Dalits	0.7	3.7	235	0.0	100.0	9
Other	0.0	4.6	87	59.9	40.1	4
Total	1.0	3.1	3,000	22.8	77.2	92
Total (n)	30	93		21	71	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

About 23 percent of those who married after the earthquake disaster were under the age of 18 years. The reasons that this group had married were their own wish (81.4%) and tradition (18.6%).

FGD participants said that they had changed how they observed feasts, festivals, and social rituals. The participants in FGDs in all districts stated that all the affected people, whether rich or poor, helped each other wherever possible in the crisis without any discrimination whatsoever. Participants from communities of the Danuwar in Kavre, the Jirelin Dolakha, the Magar in Gorkha, the Pahari in Lalitpur, and the Surel in Dolakha said that in a crisis like this one, people have been found to be more united than usual and fought together against the immediate problems that arose. FGD participants from the communities of the Brahman in Nuwakot, the Chhetri in Sindhuli, the Danuwarin Kavre, the Hayu in Ramechhap, the Magarin Gorkha, the Majhi in Ramechhap, and the Newar in Kathmandu said that so-called high-caste groups engaged in less discriminatory behaviour. The Jirel in Dolakha remarked in particular that they had observed many positive social changes in their society. People, they averred, developed demonstrated less caste-based socio-cultural discrimination and that while so-called high caste groups used to dominate the so-called lower castes, after the earthquake, everyone came together to end discrimination on the ground.

The Jirel and Surel communities of Dolakha said that while they used to conduct rituals inside their houses after the earthquake, damage to their houses forced them to conduct rituals in open places.

Perspectives on religious organizations varied. FGD participants of Kathmandu, for example, pointed out the positive: "The roles of the traditional organizations like Dharma Kirti Bihar during the rescue, relief distribution, and rehabilitation operations were good." In contrast, FGD participants from Satungal expressed their concern: "We are worried about the extinction of our *Guthis* [religious organizations]"

The temple of the goddess Namrung in Gorkha Municipality-4, Faslang, Gorkha, was destroyed along with 36 houses belonging to the Magar community. The temple used to be the site of a large three-day annual pilgrimage, and respondents stated, "*We are worried how we will resume our worship of Namrung-Mai.*"

The impacts on cultural practice were varied and many. Most earthquake-affected communities stated that, this year, they had celebrated Nepal's main religious festivals, including Dashain, Tihar, Lhosar, and Christmas, merely for the sake of formality year. Before the earthquake, they used to have plenty of plans and money to buy a variety of goods and food items but after earthquake they had neither the food grains nor the money to buy anything. They had no interest in celebrating either. Extravagant rituals were scaled back, as a key informant in Laprak, Gorkha, explained: "*We lost most of our Ghatu Nach* [a dance observed for more than three months starting from *Fagu Purnima* and ending in *Chandi Nach*, that is, during the spring season] *due to the earthquake and performed it for only two days. It has taught us that we can shorten the rituals like this.*"

Conclusions

Social impacts, which include psychosocial, socio-demographic, socio-economic, and socio-political impacts, can develop over a long period of time and can be difficult to assess when they occur. Despite the difficulty in measuring these social impacts, it is nonetheless important to monitor them because they can cause significant problems for the long-term functioning of specific types of households and businesses in an affected community. A better understanding of disasters' social impacts can provide a basis for pre-impact prediction and the development of contingency plans to prevent adverse consequences from occurring (Lindell & Prater, 2003).

In Nepal, the social impacts of the 25 April, 2015, earthquake were diverse. Over fifty percent of the households (51.5%) surveyed had no food in the evening of the day of earthquake for various reasons, including fear, psycho-physiological stress, and appetite loss as well as damage to homes and the lack of a place to prepare food. Nearly nine percent of the surveyed households said that, at the time of the survey, the quantity and frequency of their food consumption was less that it was before the earthquake.

Agriculture was the major source of living of the surveyed households. Ninety-seven percent of them were cultivating agricultural land at the time of the survey. One-fourth of houses with land reported that the earthquake had damaged their agricultural land. Among those affected, the average area of damaged land was 0.15 hectares, or one-third of the average arable landholding. The extent of damage to land was high in severely hit districts. The types of damage reported included the development of cracks in agricultural terraces, dry landslides, and depletion of sources of irrigation water, all types that made the affected area unsuitable for residence as well as farming.

About 86 percent of the surveyed households with agricultural land said that they cultivated their land in the season after the earthquake. The different reasons for not cultivating were damage of land (reported by 42.3%), loss of enthusiasm for work, off-season, bad weather, living in distant camps, and the drying up of the source of irrigation water. The main types of crops cultivated by the majority of households were paddy, maize, millet, and potato. In the post-earthquake season,

harvests declined in 42 percent of the surveyed households, were normal for 47 percent, and were good for only 11 percent. The reasons for bad harvests included bad weather, land damage, being late for cultivation, and not to being able to nurture the crops.

The damage to land resulted in declines in food production. Over 71 percent of the surveyed households did not have year-round food security at the time of the survey. The most food-insecure period was that from the month of Falgun (February-March) to the month of Ashwin (September-October). Food buying and borrowing were the major strategies households used to manage during deficit periods. Money to manage food deficits came from employment, wage work, and foreign labour. Food deficits are likely to increase substantially in the days to come due to the substantial reduction in local food production coupled with the withdrawal of relief packages (in kind and cash).

About three percent of the surveyed population aged 10 years and above had been forced to change their usual work or occupation and over 16 percent of the surveyed households experienced an impact on their family-based traditional occupation. Eighty percent of those individuals and households that had experienced a change in work or occupation are hopeful that they will return to it.

The major feasts and festivals celebrated were Dashain, Tihar, Lhosar, Christmas, and Mhapuja. This year, most earthquake-affected households celebrated these festivals just in name. They experienced no joy in celebrating them because of their poor living arrangement and the fact they did not have a separate, sacred place for performing family rituals and worship.

Chapter VII
Social Impacts: Education, Health and Elderly Care

This chapter presents findings on the impacts that the April 2015 earthquake had on education, health, and elderly people. This is indeed continuation of Chapet 6 "Social Impacts of the Earthquake."

Earthquakes often destroy educational buildings and make it difficult for students to continue their studies. Students in affected areas either have to forego attending school for many days or have to move to schools located in non-affected areas. The longer a disaster-affected student is unable to attend his or her own school or relocate to another school, the more likely he or she is to lose his or her ability to concentrate on assignments and to manifest symptoms of clinical depression (Picou & Marshall, 2007). A disaster resulting from natural hazards can obliterate hard-won educational achievements and slow the development of an education system. In addition, losses in the education sector result in losses in efforts to reduce disaster risk and build long-term resilience in the education system itself and beyond.

To understand the degree to which the right to education of Nepali children was impacted by the April earthquake, the study assessed how difficult it was for earthquake-affected children to attend school, rates of and reasons for dropping out, and the quality of temporary learning centers. Natural disasters, including earthquakes, pose direct and indirect harms to health, too, as Paul (2003) notes:

> Direct health impacts include deaths and injuries[15] and the indirect health impacts include potential for an increase in communicable, waterborne, and other diseases such as hepatitis and malaria as well as pneumonia, eye infections, and skin diseases. These health issues pose a significant threat to the lives and well-being of disaster survivors. Deaths often occur from communicable and other diseases after a disaster and for this reason these indirect health impacts are often referred to as the "second wave of death and destruction." The occurrence of communicable and other diseases are disaster- as well as country-specific (p. 144).

This study assessed the extent of earthquake-related injuries and disability, difficulties disabled persons faced in accessing rescue and relief services, the degree of irregularity in child immunization, and alterations in healthcare services for persons with chronic diseases.

Finally, the study assessed the health condition, living arrangements, and experience of trauma among elderly people, a group of people known to be particularly vulnerable in times of crisis.

7.1 Impact on education

The education sector was greatly affected by the earthquake and its aftershocks: approximately 16,475 classrooms in 6,902 schools in 45 districts were destroyed, and another 7,266 and 12,613 classrooms suffered major cracks and minor damage respectively. In the 14 most earthquake-affected districts alone, over 3,552 schools were damaged (Department of Education, 2015). Other infrastructures, including toilets and compound walls, were also impacted. Over 3 million students in 39 districts were affected (NPC, 2015) when schools were closed down immediately after the earthquake to reopen only on May 31, 2015, over a month later. Some of the estimated 2.8 million people displaced included teachers and students, especially in rural areas, who still have not been able to resume their normal lives. Displacement has also caused a potential shortage of labour for rebuilding educational infrastructures in affected areas.

Displacement and frequent aftershocks left many children severely traumatized. With Nepal just having made measureable advancements in the education sector, with achievements such as gender

[15] Issues related to death and injuries are discussed in another chapter of this report.

parity, increases in the rates of school retention of adolescents and graduation from lower secondary schools in rural areas, and a decrease in the average pupil-per-teacher ratio, the damage suffered by the sector during the quake threatens to undo years of hard work (DoE, 2015).

The impact of the earthquake on the education sector in Nepal was assessed by considering three variables: 1) difficulty in accessing schools, 2) high drop-out rates caused by earthquake, and 3) the alternative management of schooling in temporary learning centers (TLCs) in children's current places of residence.

This section assesses the extent to which children and adolescents were deprived of their right to education after the earthquake, the nature and adequacy of the alternative provisions established to give continuity of education to older children and of the child-friendly spaces and classes designed to provide younger children with socialization skills and psychosocial support.

7.1.1 Accessing schools

Disasters of all types are likely to hamper children's access to education, at least initially. In the case of a flood, for example, local communities may ask the school system to provide immediate shelter. In the case of an earthquake, it is damage to school buildings rather than repurposing that may threaten children's regular school attendance. In addition, affected communities may set up temporary shelters in open school compounds and thereby disturb access to those schools.

Table 7.1: Percent distribution of households according to school attendance among children and adolescents after the earthquake

Background variables	No longer attended	Attended	Did not attend even before	Total (%)	Total (n)
Domain					
Severely hit	5.1	88.6	6.3	100.0	1,071
Crisis-hit	2.6	92.4	5.0	100.0	538
Kathmandu Valley	15.2	80.1	4.7	100.0	391
Place of residence					
Rural	5.3	89.7	5.0	100.0	1,361
Urban	8.8	84.4	6.8	100.0	640
Type of family					
Nuclear	6.9	88.1	5.0	100.0	1,169
Joint or extended	5.8	87.7	6.5	100.0	831
Sex of HH Heads					
Male	6.6	87.9	5.5	100.0	1,602
Female	5.6	88.1	6.2	100.0	398
Median age of family					
< 20 years	6.5	6.5	3.4	100.0	577
20-30 years	6.6	87.6	5.7	100.0	813
30+ years	6.0	86.5	7.5	100.0	610
Highest edu. of 15+ member					
All Illiterate	6.0	87.4	6.6	100.0	407
All primary &NFE	5.7	87.5	6.8	100.0	654
At least one secondary+	7.0	88.6	4.4	100.0	939
Caste/ethnic groups					
Brahman	7.5	90.0	2.5	100.0	246
Chhetri/Thakuri	7.3	90.7	2.0	100.0	327
Tamang	7.3	86.0	6.7	100.0	529
Newar	7.5	88.8	3.6	100.0	332
Other Hill Janajati	4.8	86.1	9.1	100.0	334
Hill Dalits	1.5	89.1	9.4	100.0	174
Other	5.9	84.6	9.5	100.0	58
Total	6.4	88.0	5.6	100.0	2,001
Total (n)	128	1,761	112	2,001	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The 2015 earthquake disrupted access to education for schoolchildren for several reasons: school buildings were destroyed, community people took shelter in school compounds, and earthquake-devastated families moved out of their villages. Some children were afraid to attend school regularly and others dropped out after not attending for over a month. Table 7.1 shows the proportions of school-aged children who were not attending school at the time of the survey, both for those who did not attend school before the earthquake and those who did.

On average, only slightly more than six percent of households with school-aged children and adolescents reported that the school attendance of their children was completely affected by the earthquake and that they no longer went to school at all. Similarly, nearly six percent of households reported that their school-aged children did not go to school and had not done so even before the earthquake. The proportions of children not attending school were highest in Kathmandu Valley (15.2%) and urban areas (8.8%).

The main reasons children did not attend school were their or their parents' fear of a major aftershock occurring while they were in school (46.1%) and damage to school building (45.5%). Other reasons included economic problems in the family (5.6%) and falling sick or being injured due to the earthquake (2.8%).

Table 7.2: Percent distribution of households by reasons for children and adolescents not attending school after the earthquake

Background variables	Fear of big aftershock	Damaged school building	Economic crisis after EQ	Injury or sickness	Total (%)	Total (n)
Domain						
Severely hit	20.6	67.6	8.8	2.9	100.0	54
Crisis-hit	33.3	61.1	0.0	5.6	100.0	14
Kathmandu Valley	72.4	21.4	4.1	2.0	100.0	60
Place of residence						
Rural	22.5	67.5	6.7	3.3	100.0	72
Urban	76.4	17.1	4.3	2.2	100.0	56
Type of family						
Nuclear	37.8	52.2	5.5	4.5	100.0	80
Joint or extended	59.9	34.2	5.9	0.0	100.0	48
Sex of HH Heads						
Male	44.8	46.5	6.8	1.9	100.0	106
Female	52.0	40.8	0.0	7.1	100.0	22
Caste/ethnic groups						
Brahman	29.6	70.4	0.0	0.0	100.0	18
Chhetri/Thakuri	58.2	32.6	2.5	6.7	100.0	24
Tamang	47.7	46.6	5.7	0.0	100.0	39
Newar	31.6	52.3	11.3	4.9	100.0	25
Other Hill Janajati	55.2	39.9	0.0	5.0	100.0	16
Hill Dalits	100.0	0.0	0.0	0.0	100.0	3
Other	53.2	0.0	46.8	0.0	100.0	3
Total	46.1	45.5	5.6	2.8	100.0	128
Total (n)	59	58	7	4	128	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
EQ: Earthquake

The major educational impacts on children were damage to school and houses and lack of a separate place to study (45.7%), damage to the children's house only (20.4%), and damage to children's school only (12.1%). About 22 percent of the surveyed households reported not having any problems with their children's education or studying habits (Table 7.3).

Nearly two-thirds of the households surveyed in severely-hit areas (64.6%) said that damage to and destruction of their children's schools as well as their own houses was a major hindrance to their children's education. The comparable figures for rural dwellers (57.2%), families with an age structure below 20 years (56.8%), and for families in which all adults (15+) were illiterate (50.3%)

were also higher than average, as were those for other Hill Janajatis (65.5%) and Tamangs (52.6%) (Table 7.3).

Table 7.3: Percent distribution of households according to major impacts on education of children who were attending school at the time of survey

Background variables	School &house both damaged/cracked	House damaged	School building damaged	No problem	Total (%)	Total (n)
Domain						
Severely hit	64.6	17.9	10.7	6.9	100.0	1,004
Crisis-hit	35.0	10.5	20.3	34.2	100.0	511
Kathmandu Valley	9.8	40.6	4.6	45.1	100.0	373
Place of residence						
Rural	57.2	16.8	12.8	13.2	100.0	1,292
Urban	20.8	28.1	10.6	40.5	100.0	596
Type of family						
Nuclear	48.0	21.4	11.4	19.1	100.0	1,111
Joint or extended	42.5	18.8	13.0	25.7	100.0	777
Sex of HH Heads						
Male	45.7	20.7	11.5	22.1	100.0	1,515
Female	46.0	19.0	14.3	20.8	100.0	373
Median age of family						
< 20 years	56.8	16.0	16.6	10.5	100.0	558
20-30 years	46.6	19.5	11.5	22.4	100.0	766
30+ years	33.7	25.8	8.3	32.2	100.0	564
Highest edu. of 15+ member						
All Illiterate	50.3	20.0	11.5	18.2	100.0	380
All primary &NFE	48.4	19.1	15.5	17.0	100.0	610
At least one secondary+	42.0	21.3	10.0	26.6	100.0	898
Caste/ethnic groups						
Brahman	38.6	16.4	10.9	34.2	100.0	240
Chhetri/Thakuri	43.5	19.6	15.5	21.3	100.0	321
Tamang	52.6	17.7	9.2	20.5	100.0	494
Newar	25.8	36.5	9.3	28.4	100.0	320
Other Hill Janajati	65.5	9.1	11.2	14.2	100.0	304
Hill Dalits	41.8	26.2	20.0	12.0	100.0	158
Other	47.0	16.7	21.2	15.1	100.0	53
Total	45.7	20.4	12.1	21.8	100.0	1,888
Total (n)	863	385	228	412	1,888	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Higher than average proportions of Brahmin households (34.2%), households in Kathmandu Valley (45.1%), and households in crisis-hit districts (34.2%) reported that their children's education had not suffered any consequences due to the earthquake.

The qualitative survey also revealed several pertinent issues regarding the impact of the earthquake in children's education. They are discussed below.

Despite tremendous efforts, the regular delivery of education services is affected in almost all post-disaster periods due to the destruction of and damage to education facilities and houses, the loss of spaces for studying at home, and trauma and loss of support due to the deaths of guardians or relatives. Such effects were commonplace during the post-quake period in Nepal for three reasons. First, because of the destruction and damage of educational facilities, including school buildings and classrooms, schools remained closed for more than one month. Some children spent their time playing and roaming around their neighbourhoods and did not engage in studying or other forms of cognitive development. Second, the destruction of and damage to houses destroyed children's spaces for studying at home. Third, children living in tents or other temporary living arrangements found it difficult to concentrate, read, and do schoolwork.

A number of school children developed signs of depression and had difficulty paying attention in the classroom. Teachers interviewed during the study made the following observations:

- Children were scared to come to school in the early days of its re-opening as they were afraid that there would be a major aftershock while they were in school, but, gradually, the child-friendly initiatives adopted by schools attracted them. Even once they were at school, however, they were more inclined to play and do extracurricular activities than attend classes and study. - Principal, Prayageshwor High School; and school teachers of Pakarbas, Ramechhap, and Mahadevtar, Kavre.
- Most school classrooms are cracked and damaged and it has been difficult to manage temporary learning centers. School labs, drinking water supply systems, and toilets have been destroyed. The learning environment in school was affected further due to the shortage of water and problems with toilet facilities. - Ramechhap
- Children living in temporary shelters, including tents and sheds, do not have a separate space for studying and sleeping. They complain of problems sleeping, the inability to concentrate on their studies, and signs of depression.
- School children living in rented rooms in district headquarters were forced to leave their rooms after the earthquake and were finding it difficult to locate another room to rent. Most children from remote villages studying at the +2 level attend school irregularly.
- In almost all instances, children paid virtually no attention to their homework after the earthquake. They tended to find excuses in order not to do their schoolwork.
- School teachers said that boys tended to leave school after grade VII or VIII to join different labour sectors, whereas girls tended to leave to marry at an early age and that, for this reason, a child enrolled in grade 1 was unlikely to survive up to grade 10 in rural areas. The survival rates of children were lowest among Janajatis (Tamang, Magar, Majhi) and Dalits. - School teachers of Bhautali, Pakarbas; Manthali, Ramechhap; Mahadevtar, Kavre.

7.1.2 Alternate management of schooling

Over 77 percent of the households surveyed reported that their children attended school in TLCs, while nearly 14 percent reported that their children studied in damaged and cracked classrooms (Table 7.4).

Table 7.4: Percent distribution of households according to alternative schooling arrangements of children whose schools were damaged/cracked

Background variables	In newly made TLC	In damaged/ cracked classrooms	School changed	In open field	In repaired school	Dropped out of school	Total (%)	Total (n)
Domain								
Severely hit	84.1	9.1	4.7	0.6	0.6	0.8	100.0	756
Crisis-hit	63.6	24.6	1.1	3.4	5.6	1.7	100.0	283
Kathmandu Valley	54.5	20.5	2.3	14.8	1.1	6.8	100.0	53
Place of residence								
Rural	78.9	13.4	4.1	1.2	1.0	1.3	100.0	905
Urban	69.9	14.9	1.5	5.9	6.4	1.4	100.0	187
Type of family								
Nuclear	77.2	12.4	5.4	1.8	2.0	1.2	100.0	660
Joint or extended	77.6	15.7	0.9	2.4	1.8	1.7	100.0	431
Sex of HH Heads								
Male	77.0	14.6	3.4	2.1	1.7	1.2	100.0	867
Female	78.7	10.3	4.6	1.8	2.8	1.8	100.0	225
Caste/ethnic groups								
Brahman	73.3	18.0	0.0	4.7	3.3	0.7	100.0	119
Chhetri/Thakuri	79.1	17.1	0.3	1.0	2.5	0.0	100.0	190
Tamang	73.8	8.2	10.5	3.6	2.0	1.9	100.0	305
Newar	70.0	24.9	1.2	1.4	0.0	2.5	100.0	112
Other Hill Janajati	87.8	8.2	0.7	0.3	1.4	1.6	100.0	233
Hill Dalits	73.4	21.0	2.5	1.4	1.6	0.0	100.0	97
Other	77.9	8.9	4.5	0.0	4.4	4.4	100.0	36
Total	77.3	13.7	3.6	2.0	1.9	1.4	100.0	1,092
Total (n)	844	150	39	22	21	15	1,092	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Another four and two percent respectively reported that they had changed their children's schools or that that their children were being taught in open fields and/or in renovated classrooms. Nearly one and half percent said that their children had dropped out school. Attendance at TLCs was most common in severely hit (84.6%) and rural (78.9%) areas and among other Hill Janajatis (87.8%).

The proportion of children who had dropped out of school due to the earthquake was highest in Kathmandu Valley (6.8%) and Tamang families had the highest rate of changing schools (10.5%).

According to participants in FGDs, children's education was disturbed for at least two months after the earthquake. In fact, even though schools have re-opened, the situation has not normalized. As FGD participants from Nuwakot explained: "We are still afraid of sending our children to their almost collapsed school buildings. Both teachers and students are scared."

The households surveyed reported a number of problems associated with studying. For example, since the TLCs were either open classrooms or separated from each other with temporary, non-soundproof materials, noise was a major problem. In fact, over 81 percent of the people interviewed said that noise from other classes was a major impediment to their children's learning. Over 37 percent of households said that the leaks in the roofs of schools were the second most common problem. Other problems commonly mentioned included the lack of a proper playground (35.3%), the lack of drinking water (33.6%), and the lack of toilet facilities (30.8%) (Table 7.5).

Table 7.5: Percent distribution of households by problems with schooling arrangements of children currently attending school

Background variables	Noise from outside	Roof leakage	No play ground	No drinking water	No toilets	No problems	Fear of after shocks	Total (n)
Domain								
Severely hit	81.6	40.3	38.6	39.6	35.2	0.6	1.1	756
Crisis-hit	81.8	30.3	22.4	17.1	19.3	5.3	0.8	283
Kathmandu Valley	73.9	35.2	56.8	35.2	30.7	0.0	0.0	53
Place of residence								
Rural	81.6	37.5	36.6	35.7	33.6	1.0	0.4	905
Urban	79.6	37.2	28.8	23.5	17.4	5.9	3.8	187
Type of family								
Nuclear	79.2	37.4	36.8	33.5	27.9	1.7	0.7	660
Joint or extended	84.4	37.4	32.9	33.7	35.4	2.0	1.3	431
Sex of HH Heads								
Male	81.2	38.0	36.4	35.1	32.1	1.5	1.1	867
Female	81.4	35.0	30.9	27.6	25.9	3.2	0.4	225
Caste/ethnic groups								
Brahman	80.7	38.4	48.0	40.1	24.1	1.3	1.3	119
Chhetri/Thakuri	83.8	47.6	30.7	29.0	27.3	3.8	0.4	190
Tamang	75.9	36.0	39.9	37.3	32.9	0.8	0.5	305
Newar	80.5	78.2	62.7	81.9	85.5	0.7	1.4	112
Other Hill Janajati	37.2	15.9	15.0	13.1	13.0	1.7	0.7	233
Hill Dalits	82.4	27.9	23.8	21.8	25.0	4.1	3.3	97
Other	86.7	31.2	55.6	17.8	15.6	0.0	0.0	36
Total	81.2	37.4	35.3	33.6	30.8	1.8	1.0	1,092
Total (n)	887	408	385	367	336	20	11	

Note: Sum of percentage may exceed 100 because of multiple responses.
Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Nearly two-thirds of children who changed school were transferred to schools in the district headquarters (65.0%) and 35 percent transferred to schools in nearby cities with safe accommodations. In terms of the gender composition of children who had changed school, 45 percent of households changed the schools of only boys, about 18 percent only of girls and 38 percent of both girls and boys (Table 7.6).

Table 7.6: Percent distribution of households by location of school, sex of school going children and accommodation of children who changed school after the earthquake

Characteristics	Severely hit	Crisis-hit	Kathmandu Valley	Total
Location of school				
Nearby city with safe accommodation	27.8	100.0	100.0	35.0
District headquarters	72.2	0.0	0.0	65.0
Sex of children				
Son only	45.7	50.0	0.0	45.0
Daughter only	14.3	50.0	0.0	17.5
Both son and daughter	40.0	0.0	100.0	37.5
Accommodation				
Relatives	0.0	50.0	50.0	7.3
Rented room	17.1	50.0	50.0	22.0
Staying together in a camp	82.9	0.0	0.0	70.7
Total (n)	35	4	2	41

7.1.3 Child-friendly schooling initiatives

Child-friendly school initiatives are believed to bring impressive gains in both enrolment and closing the gender gap in education. During a natural disaster-induced period of crisis, the major challenge in education is not simply to get children to attend school but also to improve the overall quality of education and address threats to participation. If both quality and access are tackled, children who are enrolled in primary school are likely to complete the full primary cycle, achieve expected learning outcomes, and successfully transition to secondary schools (UNICEF, 2009).

About 30 percent of the surveyed households with children of school-going age knew that child-friendly classes were running in their villages. Of those who knew, 16 percent became aware before the earthquake and 14 percent only after the earthquake. Nearly one-third of the households sent their children to child-friendly classes, with higher than average rates among households in crisis-hit districts (45.7%), female-headed households (40.2%), and families with a young age structure (39.4%) (Table 7.7). Encouragingly, 86 percent of the households which sent children to child-friendly classes said that they had noticed positive changes in their children's learning aptitudes, social interactions, and degree of extroversion.

Observations of communities and FGDs confirmed that the child-friendly classes and spaces created after the earthquake were crucial to enhancing children's social interactions, removing hesitations, and teaching communities the value of children. Child-friendly spaces also served as a gathering space for community people to discuss community matters and provided adolescent girls with a School Leaving Certificate (grade 10) or +2 (grade 12) education the opportunity to serve as facilitators of child-friendly spaces.

According to the Majhi community in Ramechhap, UNICEF helped create a suitable environment for the children to continue their education by establishing TLCs. Some communities from Makawanpur said that during the period of psychological stress and fear following the earthquake, counseling-type activities were introduced into classrooms to provide children a sense of relief and not expose them to the stress of formal classes. Not everyone was completely satisfied with the TLCs, however. The Chhetri community from Sindhuli complained that TLCs did not have adequate toilet facilities and the Sanyasi community of Nuwakot complained that there was not enough light in TLCs and that the extreme cold made children so sick they stopped attending classes.

School teachers, parents, and community people claimed that children's attitudes toward learning and cognitive development as well as their mental states are still not conducive to their achieving academically at their potential. Most participants in FGDs said that children's education was still seriously disturbed even two months after the earthquake. They also mentioned that when schools re-opened, children resumed their education in ruined buildings despite the fact that are still afraid of going into them. The Gurung community in Gorkha said that were able to convince their children to

go to school only by promising them-falsely-that nothing would ever happen to them. The Brahman community in Nuwakot claimed that both teachers and students felt scared every time a vehicle passed by their schools.

Table 7.7: Percent distributions of households that are aware of child-friendly classes in the community, whose children attend in such classes and that have witnessed positive changes in the learning and social interactions of attending children

Background variables	Knowledge of CFCs			Total (n)	HHs with children attending CFCs	Total (n)	Positive changes in attending children
	Yes, before earthquake	Yes, after earthquake	No				
Domain							
Severely hit	19.5	7.5	73.0	1,004	21.3	271	75.0
Crisis-hit	17.8	21.5	60.7	511	45.7	201	94.0
Kathmandu Valley	3.3	20.7	76.1	373	36.1	89	83.0
Place of residence							
Rural	18.3	11.4	70.3	1,292	31.0	384	84.0
Urban	10.5	19.2	70.3	596	35.5	177	89.7
Type of family							
Nuclear	18.4	12.7	69.0	1,111	31.8	345	85.0
Joint or extended	12.1	15.7	72.2	777	33.3	216	87.5
Sex of HH Heads							
Male	15.0	14.8	70.2	1,515	30.5	451	88.4
Female	19.0	10.4	70.6	373	40.2	110	78.7
Median age of family							
< 20 years	18.6	11.7	69.6	558	39.4	169	74.8
20-30 years	16.4	13.2	70.4	766	31.3	227	91.5
30+ years	12.2	17.0	70.8	564	26.6	165	94.0
Highest edu. of 15+ member							
All Illiterate	16.4	13.2	70.4	380	33.4	113	76.1
All primary &NFE	17.1	13.4	69.5	610	31.7	186	78.2
At least one secondary+	14.7	14.5	70.8	898	32.5	262	95.8
Caste/ethnic groups							
Brahman	13.9	19.5	66.6	240	36.5	80	92.5
Chhetri/Thakuri	16.8	15.4	67.8	321	36.6	103	82.0
Tamang	11.5	13.8	74.7	494	36.6	125	83.4
Newar	10.0	16.7	73.4	320	29.6	85	86.5
Other Hill Janajati	23.4	8.5	68.1	304	27.0	97	93.9
Hill Dalits	21.3	8.9	69.8	158	23.5	48	94.6
Other	34.9	9.1	56.0	53	27.6	23	50.0
Total	15.8	13.9	70.3	1,888	32.4	561	86.0
Total (n)	298	262	1,327		182		

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
CFC: Child-friendly classes

The earthquake forced poor people to educate their children in their villages in whatever way they could. The Danuwar community in Kavre explained that after the primary school in their ward collapsed, they sent primary school children to the nearby high school. The Magar community in Gorkha said that they had to send their children to schools in nearby urban areas after the schools in their locality were destroyed. The Bhujel and Chhetri communities in Sindhuliand the Newar communities in Kathmandu said that all the schools in their localities had been damaged and that children were unable to continue their studies.

Participants in FGDs and KIIs said that rebuilding schools was one of the most important but also one of the most challenging tasks facing the government. They said that the government would have to invest not just in infrastructure but also in psychosocial counseling to ensure that children would be able to cope with the trauma and resume their normal lives. The process of rebuilding schools should keep in mind the need to strengthen structures as well as to have adequate water storage, a

solar-powered back-up system for electricity, and open area to accommodate people when another natural or human-induced disaster occurs.

7.2 Impact on health

If health facilities are damaged or destroyed, women's access to sexual and reproductive health services can be compromised, thereby resulting in increases in unsafe abortions, maternal mortality, and unwanted pregnancies. Any increase in violence, including sexual violence, due to a crisis situation can also lead to increases in unwanted pregnancies, the incidence of HIV infections, and trauma and other psycho-social problems. To prevent such undesirable consequences, protecting and preserving the dignity of women and girls and providing them with alternative services from the onset of a natural disaster is key.

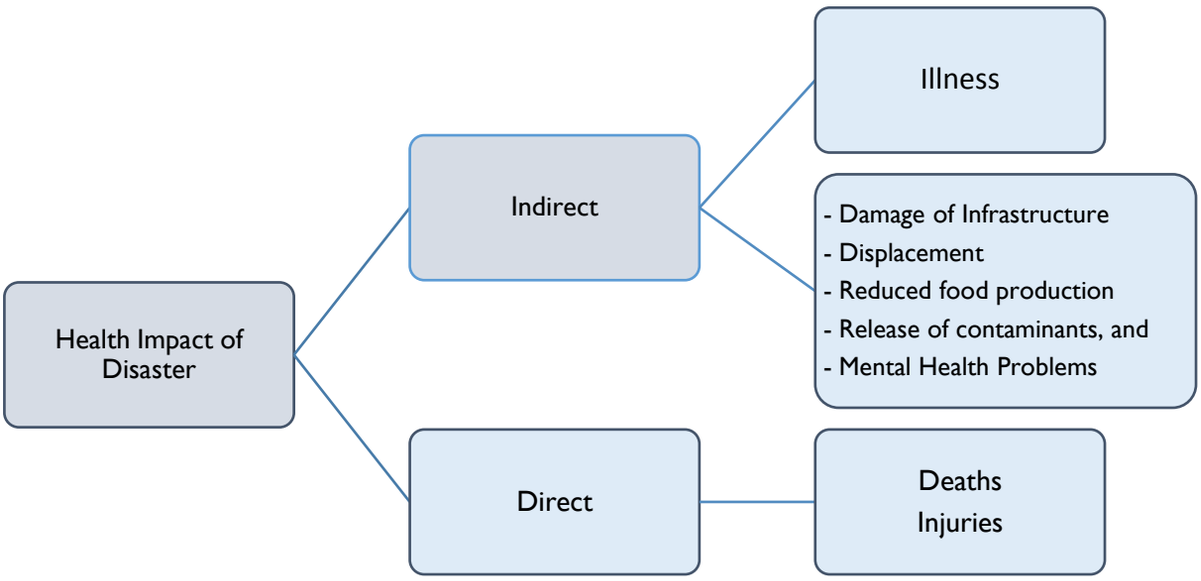
Healthcare was one of the sectors affected by the April earthquake. In total, 1,085 health care facilities were damaged, 402 completely and 683 partially damaged, and the consequences for health infrastructure and public health have been significant. The majority of the damaged facilities were primary health care centers, village health posts, and birthing centers. According to the PDNA, 19 percent and 23 percent of the total public health facilities in Nepal are located in highly and moderately affected districts respectively. Of them, 446 public health facilities sustained damage, putting vital health care services out of reach of many earthquake survivors.

Of the 351 health facilities providing emergency obstetric maternal and neonatal care services in the 14 most earthquake-affected districts prior to the earthquake, 112 (31.9%) were seriously damaged and 144 (41.0%) were partially damaged. With 1.4 million women of reproductive age in the country, including 92,900 pregnant women, on 18 May, 2015, this widespread damage to health centers providing safe delivery facilities and care to newborns will not only affect maternal and child health but also jeopardize the health achievements made by the country so far (NPC, 2015). The United Nations Population Fund estimated that of the 2 million women of reproductive age affected by the earthquake, 126,000 pregnant women were in urgent need of health services. Since medical supplies were severely depleted, the proportion of deliveries that were safe declined (UNFPA, 2015).

Natural disasters can have direct and indirect consequences for human health but these are difficult to measure. Direct health impacts include deaths and injuries while indirect ones include the potential for an increase in communicable, waterborne, and other diseases, including hepatitis, pneumonia, eye infections, and skin diseases. These health issues pose a significant threat to the lives and wellbeing of disaster survivors; in fact, after a disaster, deaths often occur from communicable and other diseases. For this reason, the indirect health impact in the form of disease is often referred to as the "second wave of death and destruction." The occurrence of communicable and other diseases is disaster- as well as country-specific (Paul, 2011).

Another indirect long-term health impact of natural disasters is associated with mental health (Figure 7.1). In those areas affected by extreme events, the related trauma tends to have a rather lengthy impact on the population's wellbeing, both directly and indirectly. Direct consequences may be observed in the form of lifetime disabilities. Indirect outcomes manifest in society through individual breakdowns that lead to stress-related illness such as depression, sleep disorders, and substance abuse. In addition, disasters may exacerbate existing stress or contribute to acute stress, a condition that can lead to chronic illness and mortality if not properly addressed (Curtis & Mills, 2009). Stress also exacerbates many chronic diseases such as diabetes, heart conditions, and even obesity.

Figure 7.1: Health impacts of disasters



The survey assessed the health on the family members of the surveyed households. It considered injuries and psychosocial problems; immediate and chronic health problems and the level of their treatment; the extent of earthquake-induced disability and discriminatory behaviours against the disabled; the health and living conditions of senior citizens; and the degree of irregularity in the immunization of children.

According to the participants in FGDs and KIIs, survivors of the earthquake faced the threat of disease outbreaks due to severe shortages of clean drinking water and toilets. With many people living out in open spaces, there was an increased risk of an outbreak of diseases like diarrhea, respiratory diseases and measles. FGD and KII participants claimed that local health service organizations provided no immediate support. Everywhere there was panic and chaos and acute local shortages of medicines.

Many FGD and KII participants wholeheartedly appreciated the good work of youth volunteers during the rescue, relief, and recovery period. The Gurung community in Gorkha said that they saw youth exhibit a spirit of cooperation in the difficult time following the earthquake. Youth repaired a road on the steep mountain, thereby making it possible for vehicles with relief to pass.

The Brahman community in Nuwakot said that they worked collaboratively to manage the dead bodies in their localities. They explained that they had been worried that the profusion of decomposing bodies would result in their being badly affected by diseases, so they collected human and livestock corpses, cremated them, and threw their ashes in the nearby Indrawati River.

According to a Thami FDG participant in Dolakha, after toilets were destroyed by the earthquake, open defecation became a problem in their community and, as a result, people suffered from the dysentery. They were unable to get treatment at the nearby health centre because it had been ruined during the earthquake. For this reasons, they had to use their own home treatment methods.

The psychological impact of the earthquake has been far-reaching, with survivors reporting a constant feeling of anxiety, depression, sleeplessness, and flashbacks. At various times after the earthquake, they said, different health-related NGOs, INGOs, civil service organizations, individual counselors, and youths have helped survivors, particularly women, children, and elderly people by conducting health check-ups, including those for psychological trauma. It was the view of FDG

participants that, given how much health and medical infrastructure had been damaged, tremendous investment would be required to repair it. They opined that the task should be undertaken without any further delay.

7.2.1 Earthquake-induced health problems and treatment

Among the 3,000 households surveyed, 276 persons from 95 households had developed health problems due to the earthquake. The percentages were highest among Newar and Dalits (4.7% and 4.4% respectively) as well as among households in Kathmandu Valley, joint and female-headed families, and families with an old age structure (Table 7.8). The direct health problems considered in the study included injuries and physical disabilities, while the indirect problems included mental disorders. Other health problems included two cases of comatose individuals (one male and one female from crisis-hit urban areas, one from a joint Newar family and one from a Brahman family); four cases of head injuries (three from severely hit districts and one from Kathmandu Valley, three from rural families and three from nuclear families); and two cases of individuals with pain in their chests, hands, and legs.

Table 7.8: Percent distributions of households with at least one member with earthquake-induced health problems and population by types of health problems

Background variables	HHs with EQ related health problems	Total (n)	Population by types of health problems			Total (%)	Total (n)
			Physical disability	Mental disorder	Other *		
Domain							
Severely hit	3.0	1,601	78.8	12.1	9.1	100.0	53
Crisis-hit	1.9	792	75.0	15.0	10.0	100.0	16
Kathmandu Valley	3.8	607	90.9	4.5	4.5	100.0	27
Place of residence							
Rural	2.8	2,004	80.9	13.9	5.2	100.0	62
Urban	3.0	996	82.7	4.2	13.1	100.0	33
Type of family							
Nuclear	2.5	1,830	77.4	13.2	9.4	100.0	47
Joint or extended	3.4	1,170	85.6	7.8	6.6	100.0	48
Sex of HH Heads							
Male	2.7	2,381	80.6	12.0	7.4	100.0	70
Female	3.6	619	84.3	6.3	9.4	100.0	25
Median age of family							
< 20 years	1.9	605	90.8	0.0	9.2	100.0	17
20-30 years	2.9	1,111	77.4	14.2	8.4	100.0	34
30+ years	3.3	1,284	81.1	11.8	7.2	100.0	44
Highest edu. of 15+ member							
All Illiterate	3.3	730	82.0	12.7	5.3	100.0	30
All primary & NFE	2.1	891	78.0	7.9	14.1	100.0	20
At least one secondary+	3.1	1,379	82.8	10.2	7.0	100.0	45
Caste/ethnic groups							
Brahman	0.8	396	75.1		24.9	100.0	3
Chhetri/Thakuri	2.8	567	61.3	18.7	20.0	100.0	16
Tamang	2.4	781	81.7	18.3	0.0	100.0	22
Newar	4.7	488	90.1	2.3	7.6	100.0	26
Other Hill Janajati	2.7	445	94.5	5.5	0.0	100.0	14
Hill Dalits	4.4	235	84.6	0.0	15.4	100.0	10
Other	3.7	87	50.0	50.0	0.0	100.0	3
Total	2.9	3,000	81.6	10.5	8.0	100.0	95
Total (n)	87		78	10	8	95	

* Other includes 2 cases of coma (one male and a female from crisis-hit urban areas, one each from joint family of Newar and Brahman respectively); four cases of injury in head (three in severely hit and one in Kathmandu Valley, three each in rural and from nuclear family respectively) and two with chest, hand and limb pain.

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Of the persons with earthquake-induced health problems, 82 percent have physical disabilities, 11 percent suffer from mental disorders, and 8 percent have other health problems (Table 7.8). Mental disorders are highest in rural areas, nuclear families, male-headed households, and families with an intermediate age structure.

Of the persons with earthquake-induced health problems, 94 percent were taken outside the earthquake-affected area for medical treatment. The majority (73.5%) were taken to the district headquarters of the same district and about one-quarter (24.9%) to hospitals in Kathmandu.

Table 7.9: Percent distribution of population with earthquake-induced health problems by status of the medical treatment

Status of medical treatment	Severely hit	Crisis-hit	Kathmandu Valley	Total
Received medical treatment				
Yes	90.9	95.0	97.7	93.5
No	9.1	5.0	2.3	6.5
Total (n)	53	16	27	95
Place of medical treatment				
Same district	70.0	63.2	86.0	73.5
Kathmandu	30.0	31.6	11.6	24.9
Dhulikhel	0.0	5.3	2.3	1.6
Total (n)	48	15	26	89
Person/agent bearing expenses of treatment				
Oneself or relatives	60.4	73.7	62.8	62.8
Government	36.7	15.8	32.6	31.9
Organizations	3.3	10.5	4.7	4.9
Total (n)	48	15	26	89
Reason for not receiving treatment				
Could not access health services	33.3	0.0	0.0	25.8
Economic problems	66.7	100.0	100.0	74.2
Total (n)	5	1	1	6

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The expenses incurred during the treatment of earthquake-induced medical conditions were, for the most part (62.8%), borne by the injured person him or herself or by relatives. The government covered costs in 32 percent of cases and in five percent of cases humanitarian organizations stepped in (Table 7.9).

Years of research have shown that disasters can cause a wide range of negative psychosocial responses. These include psycho-physiological effects such as fatigue and gastrointestinal upset as well as cognitive effects such as confusion, impaired concentration, and attention deficits. Psychosocial impacts include emotional effects such as anxiety, depression, and grief, as well as behavioural effects such as sleep and appetite changes, ritualistic behaviour, and substance abuse (Lindell & Prater, 2003). In most cases, the effects that are observed are mild and transitory, the result of "normal people, responding normally, to a very abnormal situation." Few disaster victims require psychiatric diagnosis and most benefit more from a "crisis counseling" orientation than from a "mental health treatment" orientation, especially if their normal social support networks of friends, relatives, neighbours, and coworkers remain largely intact. However, there are population segments that require special attention and active outreach. These include children, frail elderly people, people with pre-existing mental illnesses, racial and ethnic minorities, and the families of those who died in the disaster.

This theoretical and empirical description typically holds true in the case of the psycho-physiological impact of the April 2015 earthquake. For instance, the majority of members of the surveyed households did, in fact, respond normally to the very abnormal situation created by the mega quake. That said, family members of 16 percent of households still felt stressed and tense even though they suffered no physical problems. The family members of some 12 percent households developed symptoms of pain in their limbs and painful involuntary spasmodic contractions of their muscles after

the earthquake, and another seven percent of households each reported that some family members either had begun to cry frequently and faint while crying or had irregular blood pressure. Some six and three percent respectively reported that a family member had started to vomit repeatedly whenever they remembered the tremors or to faint time and time again (Table 7.10).

Table 7.10: Percent distribution of households with various health problems to its members caused by the earthquake damage

Background variables	Tense	Aches and pains in limb	Frequent crying & fainting while crying	Irregularity in blood pressure	Vomiting	Faint	Total (n)
Domain							
Severely hit	9.1	14.6	9.2	6.3	6.1	3.9	1,601
Crisis-hit	31.2	16.2	8.8	6.8	9.3	3.5	792
Kathmandu Valley	7.7	4.7	3.4	8.1	1.5	1.7	607
Place of residence							
Rural	17.3	14.0	8.9	6.8	6.9	4.0	2,004
Urban	14.4	9.1	4.9	7.4	4.0	1.7	996
Type of family							
Nuclear	14.7	12.4	7.3	6.4	5.5	3.4	1,830
Joint or extended	17.9	11.0	6.8	8.1	5.9	2.6	1,170
Sex of HH Heads							
Male	15.8	11.9	7.6	6.7	5.4	3.1	2,381
Female	16.9	11.7	5.2	8.6	6.5	2.6	619
Median age of family							
< 20 years	15.4	12.8	7.5	3.8	6.1	2.8	605
20-30 years	18.0	9.9	8.2	6.9	6.9	3.2	1,111
30+ years	14.7	13.0	6.2	8.3	4.5	3.0	1,284
Highest edu. of 15+ member							
All Illiterate	15.0	13.1	6.5	5.7	5.0	3.5	730
All primary & NFE	20.9	12.0	9.4	5.8	7.1	2.8	891
At least one secondary+	13.7	11.2	6.2	8.4	5.1	3.0	1,379
Caste/ethnic groups							
Brahman	18.0	14.1	8.5	8.8	4.4	3.4	396
Chhetri/Thakuri	14.3	14.8	5.9	9.8	5.5	2.7	567
Tamang	20.5	9.5	7.5	6.1	6.7	4.1	781
Newar	12.1	8.4	4.9	8.6	3.2	2.0	488
Other Hill Janajati	14.9	12.7	11.0	1.9	7.4	3.3	445
Hill Dalits	14.6	15.6	6.8	5.9	9.3	2.9	235
Other	16.7	14.1	6.4	1.3	5.1	1.3	87
Total	16.0	11.8	7.1	7.1	5.6	3.0	3,000
Total (n)	480	354	213	213	168	90	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data and multiple responses are possible.

The trauma experienced by survivors in areas hard hit by an extreme event tends to have a rather lengthy impact on the wellbeing of all populations, both directly and indirectly. Direct consequences may be observed in the form of lifetime disabilities. Indirect outcomes manifest in society through individual breakdowns that lead to stress-related illness, such as depression, sleep disorders, and substance abuse. In addition, disasters may exacerbate existing stress or contribute to acute stress, a condition that can lead to chronic illness and mortality if not properly addressed (Curtis and Mills, 2009). Stress also exacerbates many chronic diseases such as diabetes, pregnancy, heart conditions, and even obesity.

Pregnant women and new mothers were particularly badly affected. According to participants in FGDs and KIIs, during the period of near-continuous aftershocks, pregnant women were unable to have antenatal check-ups in nearby health facilities. Almost all communities said that pregnant women delivered on hay in cattle sheds and that they had been unable to feed nutritious and hygienic foods to pregnant women and new mothers despite their dire need for them. Instead, pregnant women and new mothers had to make do with biscuits, instant noodles, and water –

nothing more. The Jirel community of Dolakha, in particular, said that pregnant women were unable to eat the nutritious food stuffs they needed because of the earthquake.

In addition to diet, accommodations were a problem. The Gurung community in Gorkha said that health posts in their locality were severely damaged and thus that babies were delivered in tents. They also said that the four-month-old fetus of one woman died inside her and that a doctor suggested that she have an abortion. Participants from the Danuwar community in Kavre said that some pregnant women had delivered prematurely and the Hayu community in Ramechhap added that new mothers had had to live in tents and that they had suffered greatly from the winter cold. The Pahari community in Lalitpur agreed about the challenges the earthquake posed to new mothers, especially due to the cold and living in tents or in other accommodations outside their own homes. They said that their bodies swelled and that it was difficult to care for both mothers and newborns, especially when it came to providing timely treatment, and care and support during delivery. The Newar community in Kathmandu averred that life for childbearing women, children, and elderly people was very difficult during the time of the earthquake.

The main problems women experienced after the earthquake included pain in their arms and legs due to running away during aftershocks. The Hayu community in Ramecchap said that women found it difficult to live with males in one congested place. Changing sanitary protection during their periods and changing their clothes were especially challenging.

Many communities, including the Damai community in Dhading and the Gurung and Kumal communities in Gorkha stated that children cried and were uncomfortable, especially about entering their houses. According to the participants from the Kami community in Dhading, even older children feared entering their houses after the earthquake.

Some FGD participants from mixed communities said that people who lost family members were badly affected. According to them, two persons in their villages became mentally ill, both of whom had lost family members. One Tamang man of Sindhupalchowk said that his son-in-law, who was mentally weak before the earthquake, lost his memory afterwards.

The participants in the mixed community FGD also said that a heart patient had had a heart attack during the earthquake was now seriously ill. Some female participants said that because they had not been able to sleep after the earthquake, they had started to take sleeping tablets. Some of the FGD participants in Kathmandu said that they could no longer remember things because of the earthquake.

7.2.2 Disability

Research demonstrates that disasters have a two-pronged impact on disability. First, they disproportionately affect persons with existing disabilities and, second, they create new persons with disabilities who will need rehabilitation services. In resource-constrained settings, the impact of a disaster on both those with existing and those with new disabilities can be long-term and far-reaching. There is much evidence regarding the pathways that increase the vulnerability of the disabled and on the impact of various approaches designed to reduce disaster-related risks to this group.

About two percent of the surveyed households have members with some form of disability. Of those who were disabled, 89 percent were disabled before the earthquake and 11 percent were rendered disabled by the earthquake. Physical disabilities were in the majority (52.8%), followed by sight and hearing disabilities (23.2%), mental and cognitive disabilities (8.7%), and multiple disabilities (8.6%) (Table 7.11).

Table 7.11: Percent distributions of population with a disability, time of incidence and types of disabilities

Background variables	Disabled	Total (n)	Time of incidence		Type of disability					Total (n)
			Before EQ	After EQ	Physical	Eyesight & hearing	Mental or cognitive	Multiple	Vocal or speaking	
Domain										
Severely hit	1.6	7,829	93.6	6.4	55.1	24.4	6.4	6.4	7.7	125
Crisis-hit	2.2	4,346	92.6	7.4	44.6	28.9	9.9	10.7	5.8	96
Kathmandu Valley	1.5	2,812	70.0	30.0	64.3	7.1	12.9	10.0	5.7	43
Place of residence										
Rural	1.7	10,057	92.4	7.6	52.3	25.4	8.4	7.7	6.0	172
Urban	1.9	4,930	83.8	16.2	53.6	19.1	9.3	10.1	7.9	91
Type of family										
Nuclear	1.7	7,402	92.5	7.5	50.7	22.1	9.0	11.2	7.0	122
Joint or extended	1.9	7,585	86.8	13.2	54.6	24.2	8.5	6.3	6.4	141
Sex of HH Heads										
Male	1.7	12,267	89.4	10.6	54.3	22.4	9.0	6.7	7.5	212
Female	1.9	2,720	89.4	10.6	46.3	26.6	7.5	16.5	3.1	51
Median age of family										
< 20 years	1.4	3,446	92.2	7.8	66.3	16.9	10.0	6.9	0.0	46
20-30 years	1.5	6,257	88.9	11.1	53.0	27.6	5.6	3.9	9.8	92
30+ years	2.4	5,284	88.8	11.2	47.6	22.4	10.5	12.6	6.8	125
Highest edu. of 15+ member										
All Illiterate	2.7	2,874	91.3	8.7	44.6	27.5	9.2	10.4	8.4	76
All primary & NFE	1.7	4,660	90.5	9.5	49.6	26.7	6.2	11.3	6.2	78
At least one secondary+	1.5	7,453	87.3	12.7	60.8	17.9	10.2	5.3	5.9	109
Caste/ethnic groups										
Brahman	1.9	1,956	96.0	4.0	43.0	22.0	6.2	26.6	2.2	35
Chhetri/Thakuri	1.6	2,704	88.3	11.7	61.7	19.6	4.7	8.4	5.6	43
Tamang	1.5	3,955	93.7	6.3	47.9	34.3	4.9	6.2	6.6	57
Newar	1.8	2,450	78.2	21.8	51.5	17.1	14.1	7.9	9.3	45
Other Hill Janajati	1.9	2,436	91.5	8.5	50.4	25.6	12.0	3.4	8.6	47
Hill Dalits	1.7	1,119	95.8	4.2	62.3	16.7	4.2	4.2	12.6	19
Other	4.5	368	80.8	19.2	66.7	14.2	19.1	0.0	0.0	17
Total	1.8	14,987	89.4	10.6	52.8	23.2	8.7	8.6	6.7	263
Total (n)	263		235	28	139	61	23	23	18	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Some seven percent of the disabled said that they had faced discrimination in availing rescue and rehabilitation-related services during the post-earthquake period. The majority of the perpetrators of discriminatory acts (63.8%) were community people and neighbours (Table 7.12).

Table 7.12: Percent distribution of disabled population who faced difficulty in and discrimination while availing rescue and relief services by the type of people engaging in discrimination

Status of discrimination	Severely hit	Crisis-hit	Kathmandu Valley	Total
Faced difficulty/discrimination				
Yes	1.3	6.6	25.7	7.2
No	98.7	93.4	74.3	92.8
Total (n)	125	96	43	263
Person discriminating				
Family member	0.0	0.0	33.3	19.3
Community people/neighbour	0.0	75.0	66.7	63.8
National security force	100.0	0.0	0.0	8.5
Member of local political party	0.0	12.5	0.0	4.2
From government	0.0	12.5	0.0	4.2
Total (n)	2	6	11	19

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

FDG participants from the Kami community in Dhading said that it was mainly females with disabilities that had problems. One of the participant's daughters was dumb and had problems moving around in response to the earthquake and the aftershocks. Participants from Makawanpur

said that many people became disabled due to the earthquake but that they had still not received disability identification cards from government authorities.

FGD participants from the Majhi community in Ramechhap said that differently-abled persons did not get a proper place in which to reside after the earthquake and that they really had a hard time. The Rai community in Okhaldhunga complained that differently-abled persons had not been provided with disability identification cards and that, as a result, they had been unable to access the facilities provided by the government. Besides not receiving help form the government, the differently-abled had to endure a lot of insults by so-called good people in society

7.2.3 Irregularity in child immunization

There was a decline in child's regular immunization services by 58 percent after the earthquake (Table 7.13).

Table 7.13: Percent distribution of children with status of receiving regular immunization before and after the earthquake

Background variables	Before earthquake		Total (%)	After earthquake		Total (%)	Total (n)	% declined in vaccination
	Yes	No		Yes	No			
Domain								
Severely hit	83.6	16.4	100.0	36.1	63.9	100.0	528	56.8
Crisis-hit	85.6	14.4	100.0	33.8	66.2	100.0	237	60.5
Kathmandu Valley	83.4	16.6	100.0	35.4	64.6	100.0	135	57.6
Place of residence								
Rural	83.1	16.9	100.0	35.9	64.1	100.0	640	56.8
Urban	86.6	13.4	100.0	34.1	65.9	100.0	261	60.6
Type of family								
Nuclear	83.4	16.6	100.0	34.9	65.1	100.0	336	58.2
Joint or extended	84.6	15.4	100.0	35.6	64.4	100.0	565	57.9
Sex of HH Heads								
Male	83.6	16.4	100.0	34.1	65.9	100.0	707	59.2
Female	86.1	13.9	100.0	40.1	59.9	100.0	194	53.4
Median age of family								
< 20 years	85.8	14.2	100.0	35.0	65.0	100.0	311	59.2
20-30 years	81.6	18.4	100.0	37.3	62.7	100.0	471	54.3
30+ years	89.6	10.4	100.0	28.7	71.3	100.0	118	68.0
Highest edu. of 15+ member								
All Illiterate	83.8	16.2	100.0	30.6	69.4	100.0	154	63.5
All primary & NFE	86.6	13.4	100.0	34.6	65.4	100.0	353	60.0
At least one secondary+	82.0	18.0	100.0	37.9	62.1	100.0	393	53.8
Caste/ethnic groups								
Brahman	86.2	13.8	100.0	30.0	70.0	100.0	85	65.2
Chhetri/Thakuri	83.3	16.7	100.0	40.4	59.6	100.0	143	51.5
Tamang	84.7	15.3	100.0	33.6	66.4	100.0	267	60.3
Newar	86.0	14.0	100.0	29.0	71.0	100.0	123	66.3
Other Hill Janajati	79.3	20.7	100.0	38.1	61.9	100.0	189	52.0
Hill Dalits	92.8	7.2	100.0	35.6	64.4	100.0	72	61.6
Other	76.7	23.3	100.0	57.4	42.6	100.0	21	25.2
Total	84.1	15.9	100.0	35.4	64.6	100.0	900	57.9
Total (n)	757	143	900	319	581	900		

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

7.2.4 Chronic illnesses and their treatment

The survey found persons with HIV infections in three households, kidney patients in 38 households, cancer patients in 31 households, persons with chronic mental health problems in 77 households, chronic asthmatic patients in 284 households, and persons with other chronic health problems in 134 households (Table 7.14). Treatment increased among kidney patients and patients with mental

health problems, declined among cancer patients, and remained more or less the same for the other conditions.

Table 7.14: Percent distributions of households by prevalence of chronic diseases among members and by treatment status before and after the earthquake

Treatment status	Infected with HIV	Kidney patient	Cancer patient	Mental health problem	Respiratory problem	Other problem
Number HHs with patients	3	38	31	77	284	134
Treatment status						
Before earthquake	100.0	79.7	84.8	62.0	74.0	83.4
After earthquake	100.0	82.4	74.6	72.7	73.5	84.4
Management of treatment cost before EQ						
Government provided	79.8	16.6	17.2	10.1	6.0	8.2
Managed on own	20.2	61.1	67.6	51.8	66.6	74.0
Support of NGO/INGO	0.0	2.1	0.0	0.0	1.4	1.2
Management of treatment cost after EQ						
Government provided	66.7	14.5	9.5	8.8	5.4	11.2
Managed on own	33.3	65.8	65.1	59.7	65.9	70.8
Support of NGO/INGO	0.0	2.1	0.0	4.2	2.2	2.4

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

In the majority of cases of almost all types of chronic illness, either a patient him or herself or his or her family bore the cost of treatment both before and after the earthquake. HIV patients were the only exception, as the government was the main provider of their care.

7.3 Impact on elderly citizens

Elderly people are particularly vulnerable and face specific threats from man-made and natural disasters. Their needs are very different from those of other groups, such as children. Help Age International describes different five ways that disaster increased the vulnerability of elderly citizens:

> *First* of all their vulnerability is increased by *restricted mobility* cause by the loss of muscle strength, impaired sight and hearing, and greater vulnerability to heat and cold. Many frail or housebound elderly people are less able or willing to flee quickly or protect themselves from harm. Elderly people can struggle to obtain food, travel long distances or endure even short periods without shelter. *Secondly* disaster disturbs elderly people's taking proper food in routine basis and leads them to take inappropriate food. The emergency food distribution programs rarely think to adjust the particular needs of elderly people and their specific dietary requirements. *Thirdly* vulnerability of elderly people increases due to breakdown of healthcare system-inadequate healthcare. Walking sticks and frames, hearing aids and eye glasses can make all the difference in reaching distribution points, accessing assistance, preparing food or collecting firewood. Elderly people also need healthcare for chronic conditions, such as coronary heart disease, diabetes, strokes, respiratory illnesses, rheumatism and dementia. *Fourthly*, increased trauma and isolation related impact such as loss of family members, caregivers and community ties. The *fifth* and lastly loss of livelihoods because of loss of assets on the one hand and loss of care givers on the other. Elderly are mostly excluded from labour markets such as food-for- work and cash-for-work as well as from credit markets such as micro credits and access to finance all these targets younger adults (http://www.helpage.org/ what-we-do/emergencies/older-people-in-emergencies/).

With mobility-related vulnerability in mind and assuming that some elderly people would be housebound or resting, the survey asked whether elderly people in the surveyed households were inside or outside of their homes when the earthquake struck. It found that two-thirds of the elderly were outside of their homes and slightly more than one-third were inside their homes (Table 7.15). Some six percent of 1,565 elderly reported that they sustained an injury because they had fallen.

Table 7.15: Percent distributions of elderly population by whereabouts at the time of the earthquake and status of injury in the earthquake

Background variables	Whereabouts during earthquake		Injury caused by earthquake		Total (n)
	Inside house	Outside house	No injury	Injured of any degree**	
Domain					
Severely hit	28.6	71.4	93.8	6.2	796
Crisis-hit	39.3	60.7	95.2	4.8	459
Kathmandu Valley	41.6	58.4	91.8	8.2	310
Place of residence					
Rural	32.9	67.1	93.8	6.2	1,028
Urban	36.9	63.1	93.7	6.3	537
Type of family					
Nuclear	29.4	70.6	93.1	6.9	554
Joint or extended	37.0	63.0	94.2	5.8	1,011
Sex of HH Heads					
Male	33.9	66.1	93.7	6.3	1,302
Female	36.3	63.7	94.0	6.0	263
Median age of family					
< 20 years	29.7	70.3	94.8	5.2	92
20-30 years	35.1	64.9	94.7	5.3	389
30+ years	34.4	65.6	93.3	6.7	1,083
Highest edu. of 15+ member					
All Illiterate	30.9	69.1	91.8	8.2	451
All primary & NFE	36.5	63.5	95.2	4.8	421
At least one secondary+	35.2	64.8	94.2	5.8	693
Caste/ethnic groups					
Brahman	35.7	64.3	95.4	4.6	253
Chhetri/Thakuri	32.7	67.3	93.7	6.3	291
Tamang	36.3	63.7	94.4	5.6	397
Newar	36.8	63.2	92.4	7.6	267
Other Hill Janajati	29.6	70.4	93.1	6.9	243
Hill Dalits	32.4	67.6	93.2	6.8	91
Other	33.1	66.9	90.8	9.2	24
Total	34.3	65.7	93.8	6.2	1,565
Total (n)	537	1,028	1,468	97	

** Of the injured, 4 percent fractured their arms or legs and one percent each suffered from injuries in head and other body parts respectively.

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Of the injured elderly people, 42 percent received treatment with the support of their family, 26 percent did not require treatment, and 17 percent received free treatment from the government (Table 7.16).

Over 35 percent of elderly people are still scared of tremors, and more than one-thirds were very scared at the time of the event but gradually recovered now. Elderly people were worried about whether or not their children and grandchildren had survived, suggesting that they feared they would be vulnerable if their caregiver died.

Almost none of FGD of KII participant said that he or she was aware of a case of child or women trafficking in their locality. The participants from the Danuwar community in Kavre said that women whose husbands had gone abroad to work had many problems collecting relief materials to feed their families.

Social security allowances (42.9%) followed by agriculture and livestock income (26.9%) and family support (20.7%) were the major sources of income of elderly people.

Table 7.16: Percent distributions of senior citizens with respect to the treatment of earthquake-related injury, their experience of earthquake, greatest worry during the quake, source of personal income and receipt of old age allowance

Characteristics	Severely hit	Crisis-hit	Kathmandu Valley	Total
Treatment of the injured				
Treatment done by oneself	35.5	50.0	47.6	42.0
Treatment not required	25.8	42.9	11.9	26.0
From government at free of cost	22.6	3.6	16.7	16.7
From family members	12.9	3.6	16.7	11.8
From organizations	3.2		7.1	3.5
Total injured seniors (n)	50	22	26	97
Experience of earthquake				
Scared even now	28.8	39.3	45.7	35.2
Scared before but not now	38.2	29.7	26.9	33.5
Not scared before or now	25.2	17.9	14.7	21.0
Not scared before but scared now	7.8	13.1	12.7	10.4
Most worried about during earthquake				
Son/daughter	38.8	35.0	50.0	39.9
Grandson/granddaughter	27.0	35.3	24.5	28.9
Family/all members	10.5	8.1	5.5	8.8
Oneself	8.7	11.0	5.1	8.6
Spouse	8.7	2.4	4.9	6.1
Property/cereals	2.8	4.1	5.1	3.7
Livestock	3.0	1.7	1.0	2.2
Don't know	0.6	2.2	3.9	1.7
Source of personal income				
Social security allowance	42.3	45.0	41.6	42.9
Agricultural products/livestock	31.6	25.0	17.6	26.9
Support of family members	18.9	21.9	23.7	20.7
Pension, job/service, wage labour	5.8	4.8	12.5	6.9
Business, share/investment	1.4	3.3	4.5	2.6
Receipt of old-age allowances				
Yes	99.5	98.9	94.8	98.4
No	0.5	1.1	5.2	1.6
Total (n)	796	459	310	1,565

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Conclusions

Slightly over six percent children stopped attending school, primarily because of their own or their parents' fear of a big aftershock (46.1%) and damage to their school (45.5%). On average, fewer than two percent of children (1.4%) dropped out of school after the earthquake, but the rate in Kathmandu Valley (6.8%) was much higher. Of those who dropped out, six percent stopped going to school due to the increase in economic hardship in their households after the earthquake. Nearly 11 percent of Tamang households sent their children to different schools after the earthquake; most were admitted to schools in the headquarters of the same district. The major educational impact on children was damage to both their houses and schools (45.7%), followed by damage to their schools alone, and damage to their houses alone. Damage to houses and schools caused a decline in student's motivation to learn and study for various reasons: schools were closed for more than one month, children did not have a space in which to study at home, and children's workload increased as they had to help re-construct their own and neighbours' houses.

With the support of the government, communities and external agents, safe spaces were arranged for running classes. Over 77 percent of parents reported that their children studied in newly constructed TLCs. Current classroom arrangements at schools are problematic for children because classrooms are noisy, roofs leak, and because playground, drinking water, and toilet facilities are inadequate.

The child-friendly school initiative was instrumental in mitigating children's trauma and increasing their participation in the learning process, their social behaviour, and their cognitive achievement. Nearly 30 percent of the households surveyed knew about the child-friendly initiatives in the schools that their children studied at and that child-friendly spaces had been created at the community level. Children of 32 percent of the households surveyed attended either child-friendly classes or extra-curricular activities run in child-friendly spaces. Over four-fifths (86.0%) of parents of children attending child-friendly classes and activities in child-friendly spaces expressed satisfaction that their children were more sociable and demonstrated more aptitude for learning than they used to. They were also pleased that their personal hygiene had improved, that they were less shy, and that they did not hesitate to speak to outsiders. The child-friendly initiative also provided educated local girls (those who had at least passed the School Leaving Certificate exam) with the opportunity to work as volunteers.

The quantitative results of the study found few indirect health implications of the earthquake on the affected population, but, the qualitative results revealed a different picture: participants in FGDs and KIIs expressed a range of worries, including the potential outbreak of diseases. The reasons for those worries include the destruction of water supply systems, the lack of an adequate water supply in temporary residences, open defecation, and a potential outbreak of diarrhea or dysentery. They were equally worried that children would suffer from pneumonia because they lived in the open. These worries were compounded due to the damage to and destruction of local health service facilities, the flight of health service providers, and disruptions in the supply of essential drugs and other necessary goods. However, community people were satisfied with the efforts and enthusiasm of local youth volunteers.

The study found that in some three percent of households, there was at least one member with earthquake- induced health problems. Of them, 82 percent developed physical disabilities due to their injuries, 11 percent had mental disorders, and eight percent had other health problems. Of the persons who developed earthquake-induced health problems, 94 percent were taken to health facilities for treatment and 63 percent bore the expenses of treatment themselves or relied on their families.

The psycho-physiological impacts of the disaster on the members of the surveyed households were several. They included always feeling tense (16.0%), aches and pains in the limbs (11.8%), frequent crying, fainting while crying, fainting, irregularity in blood pressure, and vomiting. Pain in hands, arms, and legs was most common among females, while crying and fainting while crying were common among children. Some children also found it hard to enter their houses.

Health problems raised during FGDs included irregularity in antenatal check-ups, problems in supplying nutritious foods to pregnant women and children, and premature delivery.

The study found that nearly two percent of the members of the surveyed households were disabled. Of the disabled, 11 percent developed disabilities due to the earthquake. Physical disability accounts for 53 percent of the total disabilities, eyesight and hearing disabilities for 23 percent, and mental and or cognitive dysfunctions for nine percent. Some seven percent of disabled persons said that they had been discriminated against during the distribution of rescue and relief and rehabilitation services, mostly by community people. Participants in FGDs and informal talks were of the opinion that although a number of persons developed a disability after the earthquake, they had difficulty in accessing the identity cards they needed to claim rehabilitation support.

The implementation of child immunizations appeared to be very irregular after the earthquake, though results need to be verified by children's ages. Among the reasons may be the destruction of health facilities and flight of health personnel.

There was little variation in or problems with accessing health services for persons with chronic illness either before or after the earthquake.

Just under two-thirds of elderly people (age 60 years or more) were outside their homes and a bit over one-third were inside their homes at the time of earthquake. Some six percent of the 1,565 elderly people were injured in the earthquake. Forty-two percent of the injured elderly people got treatment at their own expense and 26 percent did not need treatment.

About 35 percent of elderly people are still scared of tremors. Immediately after the earthquake, over two-thirds of the elderly (68.8%) were more worried about their children and grandchildren than themselves. Social security allowances are the main source of income for 43 percent of elderly people, followed by agriculture and support from family members. Almost 98 percent received old-age allowances, as they did before the earthquake.

CHAPTER VIII
Impact on Vulnerable Populations

8.1 Introduction

Earthquakes are one of the least predictable and most devastating of natural disasters (Marinos, 2001). Their impacts are inerasable. The 25 April, 2015, earthquake and its many major aftershocks have had a substantial impact on the lives and properties of the Nepali people. Literature on disasters shows that people who are marginalized or oppressed on the basis of their social origin, class, culture, ethnicity, gender, or age are even more vulnerable to disasters than advantaged groups (Singh, 2014). Broadly, vulnerable populations are defined as any individual, group, or community whose circumstances create barriers to their ability to obtain or understand information or to react as the general population does (Nick et al., 2009). Persons with disabilities, pregnant women, children, elderly people, prisoners, ethnic minorities, people with language barriers, and the impoverished are more likely to become vulnerable during and after a disaster (Shivayogi, 2013). In this study, "vulnerable populations" included women, girls, children, and socially disadvantaged population groups (so-called "low castes").

8.2 Women and the earthquake

The needs of women and girls during a disaster are acute (UNFPA, 2015), as was seen after the April earthquake in Nepal. UNFPA responded by providing both dignity kits, which contain hygienic supplies for women and girls of reproductive age, and reproductive health kits to support safe birth. UNFPA also set up female-friendly spaces to provide information, services, and safety to women at risk of gender-based violence. At all times, confidentiality was preserved and respect shown. Furthermore, UNFPA facilitated different awareness and outreach programs on gender-based violence (GBV), women's rights, first aid, and psychosocial counseling at the VDC and district levels. For example, healthcare providers (nurse, midwives, and physicians), and other government and non-government stakeholders were trained in the minimum initial service package (MISP) for sexual and reproductive health (SRH) in crisis situations immediately after the earthquake. UNFPA also conducted training in the clinical management of rape (CMR), an activity which provided for healthcare providers the opportunity to learn how to provide an appropriate and integrated package of care to rape survivors in a humanitarian setting.

8.2.1 Insecurity in female-headed households

Disasters disproportionately affect women due to the unequal roles they play in society and in the family. Various studies (Rashid, 2000; Ariyanbandu et al., 2005; Elaine, 1998) show that women, because of their biological and socio-cultural differences, are often more vulnerable during disasters. For instance, women are disproportionately exposed to security threats during and in the aftermath of a disaster. In Nepal, the earthquake had a more devastating impact on women than on men. Taking into account women's special needs, this study collected information about women's post-disaster experiences with security issues.

The survey assessed women's feelings of insecurity before and after the earthquake by various background attributes (Table 8.1). Overall, almost nine in ten female respondents (89.4%) had felt no insecurity before the earthquake. After the earthquake, however, that proportion dropped drastically, to just 17 percent. In female-headed households, the feeling of some insecurity and fear increased almost ten-fold, from 6 percent to 56 percent, and more than half of the female household heads from all domains reported feeling some insecurity and fear after the earthquake. The feeling of high insecurity among women increased five-fold, from 5 percent to 27 percent after the earthquake. The feeling of high insecurity was highest in severely hit districts (29.0%), followed by Kathmandu

Valley (26.9%). Urban and rural female respondents shared similar feelings regarding insecurity after the earthquake, but the feeling of high insecurity was slightly higher in rural than urban areas.

Table 8.1: Percent distribution of female household heads who felt high, some or no insecurity before and after the earthquake

Background variable	Feeling before earthquake			Feeling after earthquake			Total (n)*
	No insecurity	Some insecurity and fear	High insecurity	No insecurity	Some insecurity and fear	High insecurity	
Domain							
Severely hit	88.5	3.8	7.7	15.7	55.3	29.0	338
Crisis-hit	88.0	9.2	2.8	17.6	58.5	23.9	142
Kathmandu Valley	92.5	6.7	0.7	17.9	55.2	26.9	134
Residence							
Rural	87.6	5.7	6.7	16.8	53.4	29.8	386
Urban	91.7	6.1	2.2	16.2	60.7	23.1	229
Type of family							
Nuclear	88.5	5.7	5.7	17.1	54.8	28.1	384
Joint or extended	90.8	5.7	3.5	15.7	58.3	26.1	229
Occupation of HH head							
Agriculture	88.4	5.4	6.2	18.9	55.8	25.3	371
Self-employed in non-agri.	87.5	6.3	6.3	16.1	67.7	16.1	32
Wage worker	100.0	0.0	0.0	6.3	56.3	37.5	17
Salaried worker	82.4	5.9	11.8	23.5	47.1	29.4	17
Other	90.5	7.3	2.2	12.8	55.3	31.8	179
Highest education of HH member							
No education	81.0	9.5	9.5	19.0	50.8	30.2	63
Primary & NFE	86.4	4.9	8.6	10.0	71.3	18.8	81
Secondary	90.8	4.6	4.6	20.0	52.8	27.2	195
Higher secondary	90.6	5.6	3.8	13.1	57.3	29.6	213
Higher	93.4	6.6	0.0	22.6	48.4	29.0	61
Religion							
Hindu	90.0	5.2	4.7	15.6	56.2	28.2	422
Bouddha	90.3	5.5	4.1	21.2	52.7	26.0	145
Kirant	38.5	30.8	30.8	23.1	61.5	15.4	13
Christian	97.1	2.9	0.0	6.1	66.7	27.3	34
Caste/ethnicity							
Brahman (Hill)	94.6	3.6	1.8	12.5	55.4	32.1	56
Chhetri/Thakuri	85.3	7.8	7.0	17.1	53.5	29.5	129
Tamang	89.6	5.9	4.4	20.7	53.3	25.9	135
Newar	92.9	5.1	2.0	12.2	60.2	27.6	98
Other Hill Janajatis	95.1	2.9	2.0	15.8	56.4	27.7	102
Dalit (Hill)	93.0	2.8	4.2	19.7	62.0	18.3	71
Other	45.5	22.7	31.8	13.6	54.5	31.8	22
Total	89.4	5.7	5.0	16.6	56.0	27.4	614
Total (n)	548	35	31	102	344	168	

* 1 case missing.

Note: Sums may differ slightly from summation of individual figures due to rounding effects using weighted data.

Table 8.1 also shows that women wage workers were more likely than women in other occupations to feel high insecurity. In addition, more than half of women in all educational levels reported that they felt some insecurity and fear. Nearly three-quarters (71.3%) of those households whose highest education attainment for a female was primary or non-formal education said that they felt some insecurity and fear after the earthquake, followed by higher secondary (57.3%), and secondary (52.8%). About one-third of those households reporting no education, higher secondary and higher educated as the highest education achievement of any member stated that they felt highly insecure after the earthquake.

By religion, there were no significant differences in feelings of insecurity. However, respondents observing the Kirant religion felt more secure than the practitioners of other religions, followed by Buddhists and Hindus. More than half of the religious groups revealed that they felt insecurity and fear after the earthquake.

Three-fifths of Dalits (62.0%) felt some insecurity and fear, followed by Newars (60.2%). About one-third (32.1%) of Hill Brahmins revealed that they felt high insecurity, followed by Hill Dalits, and Chhetris.

In short, analysis by background attributes revealed that the feeling of insecurity increased significantly after the disaster.

8.2.2 Problems in temporary settlements

In Nepalese shared socio-cultural practice, women need more privacy than men do and therefore find living in public places more difficult. Female respondents were asked about the problems they faced while living in shelters, camps, or a damaged house. Most pointed out that their situation had been or continued to be uncomfortable. In fact, three out of five female respondents (62.5%) stated that they had experienced discomfort while eating, sleeping and living in a temporary place, a shelter or camp, or their own damaged house.

By domain, over two-thirds of the women in severely hit district (66.8%) spoke of their discomfort, followed by 60 percent in crisis-hit districts and 55 percent in Kathmandu Valley (Table 8.2). Rural women (65.5%) experienced more discomfort than urban women (56.3%), but feelings of discomfort were just above and below 62 percent for both women in nuclear families and those in joint or extended families. More women belonging to female-headed (68.1%) than male-headed (61.0%) households felt uncomfortable.

By occupation, a higher percentage (64.4%) of women involved in agriculture felt uncomfortable than did wage workers (63.1%) and salary earners (57.1%). Among the various occupational groups, the lowest percentage of discomfort was reported by self-employed women (48.8%) not involved in the non-agricultural sector. By level of educational attainment, a higher percentage (70.1%) of primary level-educated women reported discomfort, followed by women who had a secondary-level education (64.7%) and those who had no education (64.1%). Discomfort was also highest among other Hill Janajatis (71.9%) and Hill Dalits (70.9%).

Table 8.2: Percent distribution of women respondents who felt uncomfortable during taking meals, sleeping and living in a temporary place, shelter, camp or their own crack house after earthquake

Background variable	%	Total (n)*
Domain		
Severely hit	66.8	1,579
Crisis-hit	59.6	783
Kathmandu Valley	54.6	601
Residence		
Rural	65.5	1,978
Urban	56.3	985
Type of family		
Nuclear	61.9	1,793
Joint or extended	63.4	1,169
Sex of HH head		
Male	61.0	2,344
Female	68.1	618
Occupation of HH head		
Agriculture	64.4	1,765
Self-employed in non-agri.	48.8	297
Wage worker	63.1	287
Salaried worker	57.1	203
Other	66.1	410
Highest education of HH member		
No education	64.1	156
Primary & NFE	70.1	318
Secondary	64.7	969
Higher secondary	62.0	1,102
Higher	52.0	417
Religion		
Hindu	60.4	1,952
Bouddha	63.3	810
Kirant	70.8	48
Christian	81.7	153
Caste/ethnicity		
Brahman (Hill)	56.9	394
Chhetri/Thakuri	58.4	562
Tamang	62.1	765
Newar	58.8	485
Other Hill Janajatis	71.9	438
Dalit (Hill)	70.9	230
Other	67.8	87
Total	62.5	2,962
Total (n)	1,850	

* 1 case missing.

Note: Sums may differ slightly from summation of individual figures due to rounding effects using weighted data.

After the earthquake, women respondents' problems carrying out daily activities increased. It is important to identify those problems in order to prioritize women's needs. Roughly one-third of respondents from all domains had problems of sleeping, during menstruation, changing clothes, and

going to the toilet (Table 8.3). More than one-third (34.6%) of women reported that they had problems changing their clothes, followed by problems during menstruation (32.3%) and going to the toilet (23.2%). Over one-fourth (27.4%) of unmarried females reported that they had encountered problems in living and sleeping.

A higher percentage of rural than urban women reported having had problems, as did more women in female-headed than male-headed households. Regarding occupational status, women whose household head was wage worker reported having the highest rate of problems after the earthquake.

Table 8.3: Percent distribution of women respondents facing different problems before and after the earthquake

Background variable	Problems before the earthquake						Problems after the earthquake						Total (n)
	Living & sleeping for un-married females	During mens-truation	Chang-ing clothes	Going to the toilet	Talking on the phone with peers	For pregnant women sleeping, living & resting	Living & sleeping for un-married females	During mens-truation	Chang-ing clothes	Going to the toilet	Talking on the phone with peers	For pregnant women sleeping, living & resting	
Sample domain districts													
Severely hit	0.8	0.6	0.5	2.2	0.0	0.2	28.4	32.9	37.6	28.3	7.2	3.9	1,579
Crisis hit	0.4	1.5	0.6	1.7	0.1	0.1	24.4	31.8	29.2	12.9	3.2	2.0	783
Kathmandu Valley	0.5	0.5	0.3	0.7	0.3	0.3	29.0	31.8	33.6	24.7	16.1	8.3	600
Residence													
Rural	0.7	1.0	0.6	2.3	0.1	0.2	28.0	33.1	35.9	26.1	7.0	3.5	1,977
Urban	0.5	0.5	0.3	0.8	0.2	0.3	26.4	30.9	31.9	18.2	9.9	5.7	985
Type of family													
Nuclear	0.7	0.8	0.4	2.1	0.1	0.2	27.6	29.9	33.4	24.8	7.6	3.6	1,792
Joint & extended	0.6	0.9	0.7	1.3	0.1	0.2	27.3	36.0	36.5	21.5	8.5	5.3	1,169
Sex of HH head													
Male	0.6	0.9	0.6	1.6	0.1	0.3	26.9	32.2	35.1	23.0	7.9	4.4	2,344
Female	0.6	0.5	0.0	2.3	0.0	0.0	29.4	32.8	32.8	25.5	8.4	3.9	618
Occupation of HH head													
Agriculture	0.5	0.7	0.5	2.2	0.1	0.2	28.2	34.6	36.8	23.8	7.9	4.9	1,764
Self-employed in non-agri.	1.0	2.3	0.7	0.3	0.3	0.7	21.5	23.8	22.9	17.4	8.7	2.7	297
Wage worker	1.7	1.0	1.7	1.4	0.3	0.0	34.6	39.9	41.1	25.4	8.7	3.1	287
Salaried wage worker	1.0	1.0	0.0	0.5	0.0	0.0	21.3	26.6	32.2	17.7	9.4	2.0	202
Other	0.2	0.2	0.0	1.9	0.0	0.0	26.6	26.3	30.0	28.0	6.3	5.1	411
Highest edu. of HH member													
No education	0.0	0.0	0.0	3.8	0.0	0.0	0.6	5.2	14.7	29.0	1.9	1.3	155
Primary & NFE	0.3	0.6	0.6	4.1	0.3	0.6	24.5	26.3	35.4	28.0	5.3	3.8	318
Secondary	1.0	1.2	0.4	1.4	0.1	0.1	31.3	35.1	37.1	25.1	7.2	4.9	970
Higher secondary	0.4	0.7	0.6	1.5	0.1	0.3	29.8	35.3	36.4	21.9	8.8	4.2	1,101
Higher	0.7	0.7	0.5	0.7	0.0	0.0	24.3	32.9	30.5	18.7	11.5	4.3	416
Religion													
Hindu	0.4	0.7	0.4	1.2	0.1	0.2	27.2	34.4	33.6	21.0	8.1	4.1	1,952
Bouddha	1.0	1.0	0.9	1.9	0.1	0.2	26.5	29.9	36.0	23.6	7.9	4.2	810
Kirant	4.2	0.0	0.0	0.0	0.0	0.0	25.0	40.4	41.7	18.8	4.2	4.1	48
Christian	1.3	2.0	0.0	9.2	0.0	0.0	35.9	17.0	36.6	57.2	7.8	7.2	153
Caste/ethnicity													
Brahman (Hill)	0.3	0.5	0.3	0.3	0.0	0.0	18.8	32.2	28.4	17.5	5.1	1.0	394
Chhetri/Thakuri	0.2	0.4	0.5	1.8	0.0	0.0	25.2	36.7	34.7	19.6	7.3	3.6	563
Tamang	0.8	1.0	0.5	2.9	0.1	0.3	26.1	23.5	32.1	26.0	5.4	3.9	765
Newar	0.4	0.4	0.4	0.6	0.4	0.4	33.4	34.8	35.7	23.8	14.0	6.2	484
Other Hill Janajatis	1.4	0.2	0.9	2.7	0.0	0.5	31.7	36.8	42.0	27.8	10.7	7.5	438
Dalit (Hill)	0.9	3.9	0.4	1.7	0.0	0.4	32.9	35.2	33.8	25.7	7.0	3.0	231
Other	2.3	0.0	0.0	2.3	0.0	0.0	24.1	37.9	41.4	25.6	3.5	3.5	87
Total	0.6	0.8	0.5	1.8	0.1	0.2	27.4	32.3	34.6	23.5	8.0	4.3	2,962
Total (n)	19	25	14	52	3	6	813	958	1,025	696	236	127	

Note: Sums may differ slightly from summation of individual figures due to rounding effects using weighted data.

The resilience level of uneducated women seems to have been higher than that of more educated women as they were less likely to report having had problems. By religion, responses varied. In terms of caste and ethnic groups, slightly larger percentages of Newars, other Hill Janajatis, and Hill Dalits reported that they had had problems than did other groups.

8.2.3 Coping mechanisms for security-related problems

Living and sleeping arrangements

When asked how they coped with problems with their living and sleeping arrangements, over three-fourths (78.3%) of unmarried female respondents reported that they had not adopted any solutions. Among those who had, the solutions varied. About 8 percent reported that they slept with other women in the same room, followed by 5 percent who slept in a separate bed within the same room, and 4 percent who joined two beds together. In terms of domain, women from severely hit districts were less likely to have not taken any measures (77.9%), followed by crisis-hit districts (78.4%), and Kathmandu Valley (79.1%). Overall, as Table 8.4 shows, only a nominal percent of unmarried females adopted problem-solving measures to improve living and sleeping arrangements after the earthquake.

Table 8.4: Percent distribution of women respondents who adopted different solutions to the problems of unmarried females regarding living and sleeping arrangements

Background variables	Mother, daughter & relatives sleeping together	Separate bed in the same room	Making temporary shelter with partition	Joining beds together	Sleeping separately with partition or in another room	Other	No solution adopted	Total (n)
Domain								
Severely hit	6.4	5.7	1.4	6.8	0.7	1.1	77.9	448
Crisis-hit	8.3	4.6	4.6	0.0	0.8	3.3	78.4	191
Kathmandu Valley	11.8	2.8	0.0	1.0	2.8	2.4	79.1	174
Residence								
Rural	7.3	6.0	1.9	4.9	0.8	1.1	77.9	554
Urban	9.6	2.3	1.8	1.9	1.9	3.5	78.9	260
Type of family								
Nuclear	7.2	5.0	2.1	3.9	1.1	2.1	78.6	494
Joint or extended	9.3	4.5	1.5	4.0	1.4	1.6	77.7	319
Sex of HH head								
Male	7.9	5.7	2.0	3.8	1.2	2.0	77.4	631
Female	8.5	1.8	1.3	4.4	1.0	1.6	81.4	182
Occupation of HH head								
Agriculture	7.7	5.5	1.8	4.6	1.2	1.0	78.2	497
Self-employed in non-agri.	3.1	5.9	0.0	8.4	0.0	1.9	80.7	64
Wage worker	12.8	2.4	0.8	0.0	0.6	4.6	78.8	99
Salaried worker	2.8	5.1	5.6	3.7	0.0	5.1	77.6	43
Other	9.9	3.3	2.9	2.0	2.9	2.0	76.9	109
Highest education of HH member								
No education	0.0	56.6	0.0	0.0	0.0	0.0	43.4	2
Primary & NFE	7.1	1.0	0.0	2.0	0.8	3.8	85.2	78
Secondary	6.9	7.2	1.8	4.4	1.5	1.3	76.8	304
Higher secondary	10.4	3.4	2.9	3.1	0.7	1.3	78.2	329
Higher	4.6	4.3	0.0	6.9	2.0	4.1	78.1	101
Religion								
Hindu	8.8	3.9	1.9	3.5	1.3	2.6	78.0	531
Bouddha	8.0	7.2	2.2	4.8	1.3	0.3	76.3	215
Kirant	6.6	26.7	0.0	0.0	0.0	0.0	66.7	12
Christian	1.4	0.0	0.0	5.8	0.0	1.4	91.3	55
Caste/ethnicity								
Brahman (Hill)	0.8	3.2	5.3	0.0	2.5	1.1	87.1	74
Chhetri/Thakuri	14.9	5.8	2.8	3.8	2.3	3.4	67.1	142
Tamang	7.7	6.3	2.4	4.8	1.4	0.3	77.1	200
Newar	11.4	1.1	0.0	3.7	0.8	2.3	80.7	162
Other Hill Janajatis	4.0	5.6	0.6	5.7	0.0	0.0	84.1	139
Dalit (Hill)	3.4	4.2	2.1	4.2	0.8	7.3	78.0	76
Other	7.6	15.4	0.0	0.0	0.0	0.0	77.0	21
Total	8.0	4.8	1.9	4.0	1.2	1.9	78.3	813
Total (n)	65	39	15	32	10	15	637	

Note: Other ways include living in a tent, living in a cracked or slightly damaged house, sleeping together with friends, sleeping in a neighbour's house, and living separately and keeping vigil at night.
Note: Sums may differ slightly from summation of individual figures due to rounding effects using weighted data.

Menstruation

Menstruation is a biological phenomenon, but culture-bound values shape its meaning and management. In some cultural groups, it is already challenging for girls and women to manage

menstruation problems; emergencies simply make it harder. Girls and women generally face the most problems when menstruation is a cultural taboo. After an earthquake, when privacy is minimal and water is short, addressing menstrual hygiene can be very difficult indeed. This study explored the problems women and girls faced during menstruation after the earthquake.

Altogether, 71 percent of respondents reported that they had not taken any specific measures during menstruation, but small proportions adopted various measures. For example, 6 percent dealt with menstruation in a toilet, 5 percent by sleeping in a separate bed, and 4 percent by taking a bath. The measures adopted for solving menstruation-related problems were similar across all domains and other background attributes (Table 8.5).

Table 8.5: Percent distribution of women respondents adopting various solutions to menstruation-related problems

Background variables	Took a bath in other's house	Went inside toilet	Changed clothes when there was no one	Cleaned/ washed in a stream	Slept in a separate bed	Made a temporary shelter	Other	Did not do anything	Total (n)
Domain									
Severely hit	5.0	6.8	4.3	6.2	4.0	2.5	5.0	66.1	516
Crisis-hit	3.5	7.3	3.5	0.9	7.6	4.7	3.2	69.6	250
Kathmandu Valley	2.5	3.2	1.9	0.6	4.8	0.6	2.5	83.8	191
Residence									
Rural	5.2	6.7	4.2	5.0	4.1	2.1	3.3	69.3	652
Urban	1.7	5.2	2.4	0.9	7.2	4.1	5.6	73.2	304
Type of family									
Nuclear	4.5	6.6	3.3	4.4	4.2	2.8	3.5	70.7	538
Joint or extended	3.5	5.8	4.0	2.8	6.4	2.6	4.7	70.4	418
Sex of HH head									
Male	4.7	6.4	4.2	4.5	4.0	2.6	4.4	69.2	753
Female	1.9	5.4	1.5	0.8	9.1	3.0	2.8	75.6	203
Occupation of HH head									
Agriculture	5.1	4.9	3.5	4.3	5.5	2.7	3.6	70.4	610
Self-employed in non-agri.	0.8	8.1	5.0	0.0	2.8	2.2	4.2	76.9	72
Wage worker	5.8	9.1	4.6	6.0	2.8	2.1	7.2	62.5	114
Salaried worker	0.0	6.0	4.5	3.0	7.1	4.5	5.6	69.4	54
Other	0.6	9.6	2.1	0.7	5.8	2.8	1.9	76.6	107
Highest edu. of HH member									
No education	0.0	19.5	0.0	0.0	0.0	0.0	19.5	61.1	8
Primary & NFE	5.7	3.8	3.8	9.6	1.7	4.8	2.9	68.7	84
Secondary	3.9	8.7	4.2	5.4	5.2	3.3	4.0	65.3	339
Higher secondary	4.2	4.0	4.1	2.2	5.4	1.3	3.4	75.5	388
Higher	3.3	7.1	1.2	0.6	6.7	4.0	5.5	71.6	138
Religion									
Hindu	4.5	6.2	3.6	2.6	6.2	3.5	3.5	70.0	668
Bouddha	2.5	5.9	3.2	4.9	2.3	1.0	6.1	74.4	244
Kirant	16.7	12.5	16.7	33.4	8.3	0.0	0.0	12.4	19
Christian	0.0	4.7	0.0	0.0	2.4	0.0	0.0	92.9	26
Caste/ethnicity									
Brahman (Hill)	5.5	5.6	1.3	0.0	7.3	3.7	3.0	73.6	127
Chhetri/Thakuri	5.2	11.9	4.6	4.3	8.1	5.4	3.2	57.4	206
Tamang	3.4	7.8	3.3	6.9	3.0	1.3	6.1	68.6	182
Newar	3.0	2.8	2.0	0.4	2.4	2.7	3.8	82.9	169
Other Hill Janajatis	1.0	2.9	3.5	1.0	1.4	0.9	4.1	85.2	158
Dalit (Hill)	5.9	2.5	4.9	6.9	9.4	2.0	4.9	63.6	81
Other	12.0	7.2	14.4	19.2	11.4	0.0	0.0	35.8	33
Total	4.1	6.2	3.6	3.7	5.1	2.7	4.0	70.6	956
Total (n)	39	60	35	36	49	26	38	675	

Note: Other ways include staying in cattle shed; changing clothes when everybody was asleep; using the pads or cloth received in a relief package; changing clothes hiding in a bamboo grove; visiting a health post; sleeping on the ground floor; and changing clothes after making a partition with a curtain and asking someone to keep watch and not let anyone near.

Note: Sums may differ slightly from summation of individual figures due to rounding effects using weighted data.

Talking with peers

Female respondents were asked about the problems they had maintaining privacy while talking with peers on the phone after the earthquake. The large majority (85.7%) reported that they had not taken any measures, but 13 percent reported that they either stood at a distance or left their houses.

Pregnancy

A pregnant woman requires special care during an emergency. A total of 126 pregnant women respondents were asked how they solved the problems they had sleeping, living, and resting. About 7 percent (eight women) stated that they had arranged for a separate place and warm clothes. Of the three domains, more pregnant women from severely hit districts (10.5%) adopted measures than did those in either crisis-hit districts (5.0%) or Kathmandu Valley (2.4%) (Table 8.6). About one in ten pregnant women from rural areas reported that they arranged for a separate place and warm clothes. By background attributes, a slightly higher percentage than average of pregnant women from households whose highest education attainment was primary or non-formal (17.8%) or observed Christianity (15.1%) were able to arrange for a separate place and warm clothes after the earthquake. With the exception of households with these two attributes, only a nominal percentage of pregnant women had a separate place and warm clothes.

Table 8.6: Percent distribution of women respondents who adopted various solutions to maintain privacy while talking on the phone with peers and for pregnant women, sleeping, living and resting

Background variables	Maintaining privacy while talking on the phone with peers				For pregnant women sleeping, living and resting		
	Going far away of /outside home	Talking when no one is in the temporary shelter	Did not do anything	Total (n)	Arranged for a separate place and warm clothes	Did not do anything	Total (n)
Domain							
Severely hit	15.5	1.4	83.1	114	10.5	89.5	61
Crisis-hit	15.6	3.1	81.2	25	5.0	95.0	16
Kathmandu Valley	10.0	0.0	90.0	97	2.4	97.6	50
Residence							
Rural	13.5	1.7	84.8	138	11.1	88.9	70
Urban	12.9	0.0	87.1	98	1.1	98.9	56
Type of family							
Nuclear	12.2	0.6	87.2	138	9.9	90.1	65
Joint or extended	14.7	1.6	83.7	99	3.2	96.8	62
Sex of HH head							
Male	14.4	1.3	84.3	185	6.1	93.9	102
Female	9.0	0.0	91.0	52	9.1	90.9	24
Occupation of HH head							
Agriculture	15.7	1.7	82.6	140	7.9	92.1	86
Self-employed in non-agri.	9.4	0.0	90.6	26	0.0	100.0	8
Wage worker	10.2	0.0	89.8	26	0.0	100.0	9
Salaried worker	4.2	0.0	95.8	19	0.0	100.0	4
Other	13.1	0.0	86.9	26	7.7	92.3	21
Highest education of HH member							
No education	17.7	0.0	82.3	3	0.0	100.0	2
Primary & NFE	3.5	0.0	96.5	17	17.8	82.2	12
Secondary	11.1	2.3	86.6	70	6.6	93.4	48
Higher secondary	18.3	0.8	80.9	97	6.5	93.5	46
Higher	9.2	0.0	90.8	48	0.0	100.0	18
Religion							
Hindu	12.4	1.5	86.1	159	7.7	92.3	81
Bouddha	15.5	0.0	84.5	64	1.8	98.2	34
Kirant	0.0	0.0	100.0	2	0.0	100.0	2
Christian	13.8	0.0	86.2	12	15.1	84.9	11
Caste/ethnicity							
Brahman (Hill)	3.0	0.0	97.0	20	0.0	100.0	4
Chhetri/Thakuri	33.6	5.9	60.5	41	0.0	100.0	20
Tamang	18.2	0.0	81.8	41	7.4	92.6	30
Newar	7.1	0.0	92.9	68	4.7	95.3	30
Other Hill Janajatis	10.2	0.0	89.8	47	9.8	90.2	33
Dalit (Hill)	0.0	0.0	100.0	16	22.8	77.2	7
Other	0.0	0.0	100.0	3	0.0	100.0	3
Total	13.2	1.0	85.7	236	6.7	93.3	126
Total (n)	31	2	202		8	118	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Changing clothes

Women respondents were asked how they managed to change their clothes. The survey found that about one-third (32.6%) had problems changing their clothes (Table 8.7). Of them, 11 percent changed when no men were around, 7 percent asked men to leave their living quarters, and 4 percent used a toilet (Table 8.7).

Table 8.7: Percent distribution of women respondents who used various ways to solve the problem of changing clothes

Background variables	Changed clothes at streams or in field	Asked males to go outside	Changed in a toilet or behind the house	Went inside a cattle shed	Changed when no one was in the house	Changed by partition-ing the tent	Covered self with a cloth	Other	Did nothing	Total (n)
Domain										
Severely hit	4.0	7.5	4.3	1.6	12.9	2.2	2.2	3.0	62.3	594
Crisis-hit	0.7	5.5	7.2	1.0	10.7	2.1	0.3	3.4	70.0	230
Kathmandu Valley	1.8	4.8	1.2	0.9	6.9	0.6	1.5	3.0	79.8	202
Residence										
Rural	3.6	7.4	4.8	1.5	10.8	2.0	1.6	3.5	65.0	711
Urban	1.1	4.7	3.3	1.1	12.3	1.5	1.7	2.0	72.9	314
Type of family										
Nuclear	4.3	6.9	4.1	1.0	12.7	0.7	1.5	3.0	66.0	598
Joint or extended	0.8	6.0	4.7	1.8	9.3	3.5	1.7	3.1	69.4	428
Sex of HH head										
Male	3.0	6.9	4.0	1.4	12.7	1.4	1.6	3.6	65.7	822
Female	2.2	5.2	5.8	1.2	5.2	3.5	1.7	1.2	74.3	203
Occupation of HH head										
Agriculture	2.7	7.5	3.5	1.2	9.7	1.7	1.6	3.3	69.0	651
Self-employed in non-agri.	0.0	9.4	4.7	0.9	13.7	1.2	0.9	2.9	67.5	68
Wage worker	1.9	1.2	6.6	1.9	17.5	0.0	1.9	5.5	64.1	118
Salaried worker	8.3	3.7	8.3	0.9	14.4	1.2	2.5	0.0	60.8	65
Other	3.1	6.7	4.4	1.9	10.4	5.0	1.3	1.3	65.9	123
Highest edu. of HH member										
No education	0.0	12.3	7.0	0.0	28.0	7.0	0.0	0.0	45.6	23
Primary & NFE	3.4	3.4	2.1	0.0	17.5	3.5	3.4	4.9	61.8	113
Secondary	3.3	8.2	6.4	1.3	14.1	0.8	1.5	4.3	60.5	361
Higher secondary	2.8	5.7	3.8	1.7	6.4	1.7	1.3	1.9	75.0	401
Higher	1.7	6.3	1.7	1.6	9.7	2.5	1.9	2.4	72.2	127
Religion										
Hindu	2.7	8.4	3.4	0.9	10.7	2.6	1.6	2.9	67.5	656
Bouddha	2.9	3.9	6.5	2.2	9.1	0.5	1.6	3.4	69.7	293
Kirant	0.0	0.0	8.0	8.0	56.1	0.0	0.0	8.0	19.8	20
Christian	5.7	1.4	2.9	0.0	12.8	0.0	2.9	2.2	72.2	56
Caste/ethnicity										
Brahman (Hill)	2.0	5.5	6.4	0.7	11.2	2.0	2.9	1.4	69.5	112
Chhetri/Thakuri	4.9	10.7	5.9	0.4	11.1	2.4	2.4	2.7	60.4	195
Tamang	5.0	4.0	7.8	1.3	13.1	0.6	2.6	3.2	62.5	247
Newar	0.8	5.4	1.7	1.1	5.6	3.2	1.1	3.8	77.6	173
Other Hill Janajatis	0.9	6.8	0.9	0.9	6.3	1.3	0.3	2.2	80.5	184
Dalit (Hill)	2.8	8.7	3.0	3.1	14.8	3.1	0.0	4.1	60.4	78
Other	0.0	4.5	0.0	8.9	44.5	0.0	0.0	8.9	33.2	36
Total	2.9	6.6	4.4	1.3	11.3	1.8	1.6	3.1	67.4	1,025
Total (n)	29	67	45	14	115	19	17	32	691	

Note: Other ways include changing clothes in the dark of night, going behind a school, going to neighbour's house, going to a goat shed, and going to another cracked house belonging to one's own family.

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Going to the toilet

The earthquake compounded existing risk factors for girls and women because many toilet facilities disappeared when the earthquake damaged private and public buildings. In the survey, women respondents were asked about the measures they adopted to address problems related to toilet facilities. The majority (63.1%) reported that they had not adopted any solutions, but 15 percent

reported that they went to streams, farmland, or sloping land and 8 percent that they used others' toilets (Table 8.8). Smaller proportions said that they used a separate partition in a tent (5.6%) or repaired a damaged house and made a partition (3.8%).

Table 8.8: Percent distribution of women respondents using various ways to solve the problem of going to the toilet

Background variables	Went to a stream, farm land or sloping land	Used other's toilet	Covered with a cloth or made a separate partition in a tent	Went to damaged house or with companion	Repaired damaged house and made a partition	Used community's common toilet	Did nothing	Total (n)
Domain								
Severely hit	17.6	9.3	6.8	2.5	4.3	2.5	57.0	447
Crisis-hit	16.5	10.2	5.5	0.8	4.7	0.0	63.0	101
Kathmandu Valley	6.7	2.5	2.1	1.2	1.7	3.7	82.1	146
Residence								
Rural	16.9	9.2	6.9	2.3	4.2	2.2	58.3	515
Urban	10.1	4.5	1.9	1.2	2.6	3.1	77.0	178
Type of family								
Nuclear	15.3	10.1	4.2	2.1	3.9	3.2	61.2	443
Joint or extended	14.8	4.3	8.2	1.8	3.7	1.0	66.5	250
Sex of HH head								
Male	15.1	6.8	5.7	1.6	3.6	2.3	65.1	535
Female	15.1	12.2	5.5	3.4	4.6	2.8	56.4	157
Occupation of HH head								
Agriculture	18.6	8.9	6.5	2.3	3.9	1.0	59.0	418
Self-employed in non-agri.	10.7	8.8	2.7	2.7	2.7	7.3	65.1	52
Wage worker	6.9	9.1	2.2	0.0	1.1	2.2	78.5	73
Salaried worker	1.7	8.3	8.3	1.7	1.7	3.4	75.0	36
Other	13.7	3.5	5.3	1.9	6.3	5.3	64.0	114
Highest education of HH member								
No education	43.8	12.3	15.9	3.5	0.0	0.0	24.4	45
Primary & NFE	16.7	9.9	7.2	1.8	5.4	1.8	57.9	88
Secondary	18.7	6.3	6.5	1.2	4.5	1.6	61.3	242
Higher secondary	9.3	8.9	1.9	2.0	4.2	4.4	69.2	240
Higher	3.4	5.9	6.5	3.7	1.0	0.8	78.7	77
Religion								
Hindu	13.0	9.0	5.7	1.8	3.7	1.2	65.6	407
Bouddha	17.3	5.7	7.9	2.5	3.4	0.3	63.2	189
Kirant	63.6	36.4	0.0	0.0	0.0	0.0	0.0	9
Christian	15.6	5.5	0.9	1.8	5.5	12.8	57.9	87
Caste/ethnicity								
Brahman (Hill)	9.2	5.6	4.4	1.8	9.2	0.9	69.0	68
Chhetri/Thakuri	20.5	15.4	9.5	1.5	1.8	1.1	50.1	109
Tamang	17.7	5.4	5.9	3.2	5.1	5.5	57.5	198
Newar	5.2	5.1	1.6	1.9	2.1	1.1	83.0	114
Other Hill Janajatis	15.7	7.2	2.6	1.3	2.6	0.0	70.5	122
Dalit (Hill)	16.2	6.7	12.2	1.3	2.7	2.1	58.8	59
Other	28.6	25.0	7.2	0.0	3.5	7.2	28.5	22
Total	15.1	8.0	5.6	2.0	3.8	2.4	63.1	693
Total (n)	105	56	39	14	26	17	438	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

8.3 Violence against women, girls and children

Women, girls, and children are vulnerable to violence in a disaster situation (Aolin, 2011). Displacement from their usual place of residence put women, girls, and children at increased risk for domestic violence, coerced sex, and child trafficking after the earthquake. However, the data generated by this study was not adequate to draw conclusion about violence, child trafficking, and selling girls (Table 8.9). Among the total 3,000 survey respondents, 9 percent reported incidences of gender and sexual violence in their community before the earthquake. This figure was almost the same (8.9%) afterwards. There were more reports of gender and sexual violence in severely hit and crisis-hit districts than Kathmandu Valley both before and after the earthquake.

Respondents stated that violence against women and child trafficking were prevalent in their communities before the earthquake and that women and children in all domains continued to suffer after the earthquake. In both the pre- and post-earthquake periods, respondents reported, the government rehabilitated trafficked children in their communities but fewer cases were rehabilitated after the earthquake than before.

Table 8.9 shows that in the post-earthquake period, respondents knew about incidences of gender and sexual violence, child trafficking, girl child trafficking for sale, government initiatives in rehabilitating trafficked children, and punishment of people involved in child trafficking in their communities, but, overall, fewer than 10 percent of the respondents reported such incidences. More respondents knew about gender and sexual violence against women than other types of behaviour.

Table 8.9: Percent distribution of households by knowledge about occurrence of different violence-related incidences in the local community before and after the earthquake

Background variables	Knowledge before the earthquake					Knowledge after the earthquake					Total (n)
	Gender and sexual VAW	Child traffick-ing	Selling girls	Govt. rehabi-litation of trafficked children	Punish-ment of child traffickers	Gender and sexual VAW	Child traffick-ing	Selling girls	Govt. rehabi-litation of trafficked children	Punish-ment of child traffickers	
Domain											
Severely hit	11.0	6.7	3.3	3.1	2.8	10.2	6.0	2.9	2.5	2.4	1,601
Crisis-hit	11.4	6.3	2.0	2.1	1.6	11.0	5.7	2.0	2.0	1.8	791
Kathmandu Valley	2.6	2.5	1.3	1.3	1.2	2.8	2.6	1.5	1.5	1.3	607
Residence											
Rural	11.1	6.9	3.0	2.9	2.6	10.5	6.1	2.5	2.4	2.1	2,003
Urban	6.1	3.4	1.7	1.7	1.3	5.7	3.5	2.1	1.6	1.9	996
Type of family											
Nuclear	9.7	6.1	2.3	2.5	2.1	9.3	5.4	2.1	2.2	1.9	1,830
Joint or extended	8.9	5.3	3.0	2.5	2.3	8.2	5.0	2.7	2.1	2.1	1,169
Sex of HH head											
Male	9.4	6.1	2.7	2.7	2.3	9.1	5.8	2.5	2.4	2.1	2,382
Female	9.5	4.2	2.1	1.5	1.6	8.4	2.9	1.9	1.1	1.6	619
Occupation of HH head											
Agriculture	9.7	6.1	3.0	2.7	2.5	8.4	5.1	2.5	2.3	2.1	1,786
Self-employed in non-agri.	9.4	6.0	1.7	1.0	1.0	10.4	6.7	1.3	1.3	1.3	298
Wage worker	8.5	4.4	2.0	2.4	1.7	9.9	5.8	2.7	2.7	2.7	294
Salaried worker	15.3	12.3	4.5	5.4	4.4	13.9	10.4	4.9	3.9	3.9	203
Other	6.0	1.7	0.7	1.0	0.7	6.9	1.9	1.4	1.0	1.2	420
Highest edu. of HH member											
No education	4.0	2.3	1.7	1.7	1.7	5.2	2.3	1.7	1.7	1.7	173
Primary & NFE	7.6	3.4	1.5	0.0	0.6	6.1	1.5	0.6	0.0	0.0	328
Secondary	10.8	6.0	2.2	2.8	2.3	11.0	6.0	2.3	2.5	2.2	976
Higher secondary	8.8	6.1	3.0	3.0	2.5	8.2	5.4	2.4	2.5	2.4	1,105
Higher	11.5	7.4	3.6	2.4	2.4	9.6	7.0	4.1	2.2	2.6	417
Religion											
Hindu	9.3	5.9	2.4	2.2	2.2	8.7	5.5	2.2	1.9	1.9	1,968
Bouddha	8.9	6.0	2.9	3.6	2.7	7.5	5.3	3.4	3.1	2.7	828
Kirant	20.4	10.2	6.3	0.0	0.0	16.7	4.1	0.0	0.0	0.0	49
Christian	9.0	1.3	1.3	0.0	0.0	16.8	1.9	0.0	0.0	0.0	155
Caste/ethnicity											
Brahman (Hill)	9.6	7.3	3.8	3.8	3.3	7.3	6.0	2.8	3.0	2.0	397
Chhetri/Thakuri	10.6	7.6	3.4	3.4	3.2	10.2	7.8	3.7	3.0	3.5	566
Tamang	9.3	5.5	3.3	3.2	2.8	9.6	5.1	3.1	2.9	2.8	781
Newar	7.2	4.3	1.8	1.4	1.4	7.4	4.1	1.6	1.2	1.4	488
Other Hill Janajatis	9.2	5.6	0.7	1.8	0.4	8.3	4.5	1.1	1.3	0.4	445
Dalit (Hill)	10.2	3.4	0.4	0.4	1.7	9.8	3.8	0.9	0.0	0.8	236
Other	13.8	3.4	3.4	0.0	0.0	11.5	0.0	0.0	0.0	0.0	87
Total	9.4	5.7	2.6	2.5	2.2	8.9	5.2	2.4	2.1	2.0	3,000
Total (n)	282	172	77	74	65	267	157	71	64	61	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
VAW: Violence against women

A slightly higher percentage of respondents living in rural, nuclear, and male-headed households knew about these violence-related incidences than respondents living in urban, joint and extended, and female-headed households. It is noteworthy that girl child were being trafficked for sale during a period in which knowledge about the government's efforts to rehabilitate trafficked children and punishment of those involved in child trafficking had declined significantly (values dropped from 2.5% to 2.1% and from 2.2% to 2.0% respectively for before and after the earthquake). These data call for introducing strong interventions in child protection measures in earthquake-affected areas.

8.4 Knowledge about community awareness programs before and after the earthquake

Community awareness programs can help to identify risks of adverse activities and thereby reduce the likelihood of future social hazards. Upon inquiry, about one-fifth of respondents overall reported that the awareness programs against trafficking and promoting the security of children and women were conducted both before and after the earthquake (Table 8.10).

Table 8.10: Percent distribution of households by knowledge of different awareness-raising programs conducted in their local communities to reduce adverse activities before and after the earthquake

Background variables	Before the earthquake		After the earthquake		Total (n)
	Program on protection of children & women	Program against trafficking & for security of children & women	Program on protection of children & women	Program against trafficking & security of children & women	
Domain					
Severely hit	23.6	20.2	25.2	21.4	1,601
Crisis-hit	25.9	23.2	23.7	21.7	792
Kathmandu Valley	6.4	6.9	8.6	8.2	607
Residence					
Rural	23.5	20.9	24.8	21.9	2,004
Urban	15.2	13.1	14.7	12.6	996
Type of family					
Nuclear	21.3	18.7	23.9	20.4	1,830
Joint or extended	19.8	17.7	17.5	16.3	1,170
Sex of HH head					
Male	21.6	19.2	22.2	19.3	2,381
Female	17.4	14.9	18.8	17.0	619
Occupation of HH head					
Agriculture	21.4	18.4	20.7	18.6	1,785
Self-employed in non-agri.	24.2	20.8	27.2	22.5	298
Wage worker	15.3	15.6	18.4	15.6	294
Salaried worker	31.2	27.2	29.7	24.8	202
Other	14.5	13.6	19.0	16.4	420
Highest education of HH member					
No education	14.5	8.7	11.6	7.5	172
Primary & NFE	17.1	14.6	20.1	15.8	328
Secondary	19.0	15.9	21.8	18.9	976
Higher secondary	22.4	20.6	21.2	19.1	1,106
Higher	25.8	24.5	26.4	25.2	418
Religion					
Hindu	20.1	17.9	20.1	17.9	1,969
Bouddha	22.5	19.3	20.5	18.2	828
Kirant	29.2	32.7	37.5	34.7	48
Christian	17.4	12.9	39.1	29.0	155
Caste/ethnicity					
Brahman (Hill)	28.0	25.0	24.5	22.0	397
Chhetri/Thakuri	21.7	20.0	23.3	20.6	567
Tamang	22.3	19.7	22.1	18.4	782
Newar	15.6	12.3	15.8	13.9	488
Other Hill Janajatis	16.1	13.3	22.4	21.1	446
Dalit (Hill)	20.0	17.0	16.2	12.8	235
Other	25.0	26.4	30.7	28.4	88
Total	20.7	18.3	21.5	18.8	3,000
Total (n)	622	549	644	565	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The rates increased slightly in severely hit districts and Kathmandu Valley after the earthquake, but declined in crisis-hit districts, and in all cases but Kathmandu Valley before the earthquake there was slightly more knowledge about protection than anti-trafficking programs. For both types of programs, both before and after the earthquake, respondents in Kathmandu Valley were roughly one-third less knowledgeable than respondents in the other two domains.

These figures suggest that relatively few respondents were knowledgeable about programs designed to minimize adverse activities against women and children in their community before earthquake and, despite the need for greater vigilance afterwards, there has been no substantial increase in initiatives. After the earthquake, only 22 percent knew of protection programs and even fewer (18.8%) about anti-trafficking programs. There was little variation by background attribute (Table 8.10).

During FGDs, almost no community said that they had experienced any cases of child or women trafficking in their localities, but they wanted programs for women anyway. FGD participants from the Chhetri community (Sindhuli) not only said that they had not witnessed any incidents of violence against women but that security had improved since the earthquake: "*Previously there was a security problem for women in our VDCs. Males used to drink liquor everywhere and then roam around here and there but now this rarely occurs.*"

8.5 Experience of caste-based discrimination during and after the earthquake

In Nepal, caste, class, gender and ethnic inequalities are deeply entrenched in many communities, and people are discriminated against in the name of caste, class, gender and ethnic group. When asked about whether or not they had experienced caste-based during either the rescue operations or relief distribution, almost 8 in 10 (79.1%) respondents said that they had not. However, that proportion varies significantly by domain: in Kathmandu Valley, over 85 percent of respondents did not experience caste-based discrimination, but the proportion declined to 84 percent in crisis-hit districts and still further in severely hit districts (74.3%). Clearly, discrimination was less rife in Kathmandu Valley than elsewhere, perhaps owing to its urban character. On the other hand, 9 percent of respondents claimed that nothing had changed in terms of caste-based discrimination, with rates higher in severely hit districts (9.8%) and crisis-hit districts (9.0%) than Kathmandu Valley (5.1%). About 9 percent of respondents reported that there used to be discrimination but that now there no longer is. It is evident from this study that respondents saw more positive changes in community behaviour in severely and crisis-hit districts than Kathmandu valley.

About one-third (32.8%) of Hill Dalit respondents mentioned that they had experienced discrimination right from the beginning, but also that the situation had changed after the earthquake and 12 percent had not experienced any caste discrimination since the earthquake up to the time of the survey. About one-fifth of the Kirant felt that there used to be discrimination but there was no longer. Except for Dalits and the uneducated, the majority of respondents did not experience caste discrimination during the earthquake crisis (Table 8.11).

During FGDs, some respondents complained that they had been discriminated against during relief distribution and that they had received relief materials very late. The Kumal (Gorkha) and Majhi (Ramechhap) communities claimed, "*Our localities got only about half the number of relief packages that other localities did.*"

In contrast, others attributed positive changes in discrimination to the earthquake. They said, "*In the crisis, were more united and fought together against the immediate problems that appeared.*" Some FGD participants, particularly the Jirel (Dolakha) community said that discrimination based on caste and ethnicity had declined: "*We experienced many positive changes in our society. People have changed their attitudes and no longer discriminate in the basis of so-called high and low castes and ethnicities. We used to be dominated by Chhetris (Sindhuli) and we Jirel (Dolakha) used to suppress Dalit communities. We used to*

discriminate in terms of sharing food. However, the earthquake has brought all these communities together and contributed toward ending caste- and ethnicity-based discrimination for a short period."

Table 8.11: Percent distribution of households by experience of caste-based discrimination during the earthquake crisis, and whether felt equality in the rescue operation and relief distribution

Background variables	Experience of caste discrimination during earthquake crisis				Felt equality		Total (n)
	No discrimination initially but as time passed, discrimination resumed	No discrimination since the beginning	Discrimination existed right from the beginning	There was discrimination earlier but not now	In rescue operations	In relief distribution	
Domain							
Severely hit	6.7	74.3	9.8	9.2	85.0	72.8	1,601
Crisis-hit	0.8	83.8	9.0	6.4	81.9	56.1	791
Kathmandu Valley	3.5	85.8	5.1	5.6	83.0	56.5	607
Residence							
Rural	4.7	77.4	9.4	8.4	83.4	67.7	2,004
Urban	3.9	82.5	7.0	6.5	84.6	59.8	996
Type of family							
Nuclear	4.9	77.3	9.4	8.4	82.6	65.2	1,830
Joint or extended	3.8	82.1	7.4	6.8	85.8	64.8	1,170
Sex of HH head							
Male	4.2	79.4	8.7	7.6	84.0	66.3	2,382
Female	5.3	78.2	8.3	8.3	83.2	60.4	618
Occupation of HH head							
Agriculture	4.9	78.1	8.1	8.8	84.4	67.6	1,786
Self-employed in non-agri.	4.0	82.8	9.8	3.4	84.2	57.4	297
Wage worker	3.4	79.3	11.5	5.8	83.0	62.9	295
Salaried worker	4.0	82.2	5.0	8.9	80.8	62.1	202
Other	3.8	79.2	9.8	7.2	82.6	63.0	419
Highest edu. of HH member							
No education	4.7	75.6	12.2	7.6	79.7	65.1	172
Primary & NFE	3.0	76.0	13.7	7.3	83.9	67.1	329
Secondary	4.1	78.5	8.0	9.4	84.6	68.2	976
Higher secondary	5.4	80.5	7.8	6.3	84.0	62.5	1,105
Higher	3.8	81.3	7.0	7.9	83.2	63.3	417
Religion							
Hindu	5.0	77.6	9.6	7.8	83.3	61.9	1,969
Bouddha	3.9	82.3	6.4	7.5	83.3	69.4	829
Kirant	0.0	70.8	8.3	20.8	95.8	81.6	48
Christian	2.6	84.5	7.7	5.2	88.4	77.4	155
Caste/ethnicity							
Brahman (Hill)	5.3	80.6	7.3	6.8	85.1	61.6	397
Chhetri/Thakuri	6.0	75.1	8.8	10.1	84.6	60.8	567
Tamang	4.2	82.9	5.8	7.2	85.9	73.9	782
Newar	4.7	85.5	5.1	4.7	82.0	55.3	488
Other Hill Janajatis	1.8	85.9	5.4	7.0	79.8	69.4	446
Dalit (Hill)	5.5	49.8	32.8	11.9	81.7	61.7	235
Other	3.4	72.4	11.5	12.6	89.8	71.3	87
Total	4.5	79.1	8.6	7.8	83.8	65.1	3,000
Total (n)	134	2,374	259	233	2,514	1,953	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

8.6 Opinions about equality during rescue operations and relief distribution

There is a growing realization in the national and international humanitarian sectors of the need to address inequality in rescue operations and relief distribution. Survey respondents were asked how equal they thought rescue and relief were. In the case of rescue operations, 84 percent of respondents reported that there was equality and this proportion was similar in all domains. The proportion reporting that relief distribution was equal, was much lower, just 65 percent (Table 8.11). There was very little variation by background attributes.

Conclusion

The impacts of the earthquake were not uniformly distributed among all segments of the population. The findings of the survey show that women, girls, children, and some caste and ethnic groups experienced various problems both before and after the earthquake that the rest of the population did not. The needs of these vulnerable people are different from those of the average person. For this reason, special attention should be paid to enhancing women's capacity to manage risks, with a view toward reducing their vulnerability and maintaining or increasing their opportunities for development. The findings also show that violence increases after a disaster, but the data is not sufficient to explain the situation. Overall, the resilience of the earthquake-affected, even those groups considered vulnerable, was high.

Chapter IX
Impact of Earthquake on Mortality and Fertility

This chapter explores mortality- and fertility-related events in the post-earthquake period. The analysis herein is a cautious one in that all the deaths and births that occurred in this period cannot possibly be attributed to earthquake alone and that several other factors no doubt contributed to mortality and fertility in the population surveyed.

9.1 Impact of the earthquake on mortality

9.1.1 Deaths caused by the earthquake

The earthquake was responsible for a total of 66 deaths in the 3,000 surveyed households. Of the dead, 29 percent were males and 71 percent, females. The largest proportion of deaths (23.2%) fell in the age group 60-74, followed by 18 percent in the age group 45-59 (Table 9.1).

The fact that in every age group more females than males died reflects gender discrimination in three main ways. One was the fact that women were in the house doing chores when the earthquake struck at 11:56 A.M.; a second was the likely inability of sari-swathed women unused to dashing about to run and escape; and a third were the attempts of women to save their children.

Table 9.1: Percent distribution of population killed in the earthquake by age and sex

Age	Male	Female	Total	Difference Male-Female
0-4	11.8	6.0	7.6	5.8
5-9	3.2	6.8	5.8	-3.6
10-24	9.7	16.7	14.7	-7.0
25-44	9.7	15.9	14.1	-6.2
45-59	18.3	17.5	17.8	0.8
60-74	35.4	18.4	23.2	17.0
75 & above	11.8	18.8	16.8	-7.0
Total	100.0	100.0	100.0	0.0
Total (n)	19	47	66	-28

The proportions of households which had lost members were significantly greater in Kathmandu Valley (3.1%) and severely hit areas (2.0%) than in crisis-hit areas (0.4%). They were also greater in urban (2.1%) than rural (1.6%) areas and in joint (2.3%) than nuclear families (1.5%). In terms of occupation, the highest proportion of deaths was in households in which the household head engaged in agriculture (2.2%). In terms of education, illiterate households (4.0%) had the highest rate. Buddhists (2.2%) were the most affected religious group and Newars (3.9%) were the most affected ethnic group (Table 9.2).

The need for caution in assigning causation to the earthquake is made clear by the observation that death in surveyed household and the total number of deaths are not the same. For example, the proportion of households reporting deaths was higher in Kathmandu Valley (3.1%) than in severely hit areas (2.0%), but the percentage of people who died in severely hit areas (54.5%) was higher than the percentage of deaths in the Kathmandu Valley (40.9%). In terms of total deaths, households in rural areas (54.5%), joint and extended families (55.3%), male-headed households (80.0%), households whose head engaged in agriculture (69.7%), and households with at least one member with a secondary or higher level of education (34.8%) had the highest rates. Among religions and caste and ethnic groups, Hindus (67.2%), and Newars (37.3%) respectively had the highest percentages of total deaths (Table 9.2).

Table 9.2: Percent distributions of households with members who died in the earthquake and population dead by sex

Background variables	Households with dead member		Population dead			
	%	Total (n)	Males (%)	Females (%)	Total (%)	Total (n)
Domain						
Severely hit	2.0	1,601	52.6	55.3	54.5	36
Crisis-hit	0.4	792	0.0	6.4	4.5	3
Kathmandu Valley	3.1	607	47.4	38.3	40.9	27
Residence						
Rural	1.6	2,004	52.6	55.3	54.5	36
Urban	2.1	996	47.4	44.7	45.5	30
Type of family						
Nuclear	1.5	1,831	57.9	44.7	48.5	32
Joint or extended	2.3	1,170	42.1	55.3	51.5	34
Sex of HH head						
Male	1.8	2,382	66.7	85.1	80.0	52
Female	2.1	619	33.3	14.9	20.0	13
Occupation of HH head						
Agriculture	2.2	1,786	84.2	63.8	69.7	46
Self-employed in non-agri.	0.7	298	5.3	4.3	4.5	3
Wage worker	2.0	294	5.3	14.9	12.1	8
Salaried worker	0.5	203	0.0	2.1	1.5	1
Other	1.4	419	5.3	14.9	12.1	8
Highest education of HH member						
No education	4.0	173	21.1	6.4	10.6	7
Primary & NFE	1.5	329	0.0	12.8	9.1	6
Secondary	2.3	976	15.8	42.6	34.8	23
Higher secondary	1.4	1,106	52.6	27.7	34.8	23
Higher	1.2	417	10.5	10.6	10.6	7
Religion						
Hindu	1.8	1,964	63.2	68.8	67.2	45
Bouddha	2.2	830	36.8	27.1	29.9	20
Kirant	0.0	51	-	-	-	-
Christian	1.3	155	0.0	4.2	3.0	2
Caste/ethnicity						
Brahman (Hill)	0.5	396	5.3	4.2	4.5	3
Chhetri/Thakuri	1.1	567	15.8	12.5	13.4	9
Tamang	1.3	781	26.3	14.6	17.9	12
Newar	3.9	488	36.8	37.5	37.3	25
Other Hill Janajatis	3.4	445	15.8	25.0	22.4	15
Dalit (Hill)	0.8	236	0.0	4.2	3.0	2
Other	1.1	88	0.0	2.1	1.5	1
Total	1.8	3,000	100.0	100.0	100.0	66
% Row	-	-	28.8	71.2	100.0	
Total (n)	54	3,000	19	47	66	

Note: Other occupations include too old to work and retired; disabled; unemployed or searching for work; and too young to work.

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

NFE: Non-formal education

9.1.2 Children's deaths before and after the earthquake

The percentage of households in which mothers of reproductive age (15-49 years) had experienced the deaths of children under the age of five was higher in Kathmandu Valley (0.9%) than in severely hit (0.8%) and crisis-hit (0.4%) districts. It was also higher in rural (0.7%) than urban (0.6%) households. By type of family, deaths of children were less common in joint and extended families than in nuclear families both before (0.1% versus 0.6%) and after the earthquake (0.1% versus 0.8%). While male-headed households reported higher rates (0.1%) of children's deaths before the earthquake than female-headed households (0.1%), the case was the opposite afterwards, with female-headed households reporting 2 percent and male-headed households less than one percent. This change reflects a gender differential in people's capacity to cope with the earthquake. By

occupation, rates of child death were highest for wage workers (2.1%), while by education, religion, and caste and ethnic group, rates were highest for households with no education (1.2%), Buddhists (1.1%), and Newars (1.7%) and other Hill Janajatis (1.0%) (Table 9.3).

Table 9.3: Percent distribution of married women (15-49 years) who have had at least one live birth and who experienced any under 5 child dead either before or after the earthquake

Background variables	Before earthquake	Average children dead before EQ	After earthquake	Average children dead after EQ	Total (n)
Domain					
Severely hit	8.4	0.11	0.8	0.01	1,047
Crisis-hit	6.5	0.09	0.4	0.00	554
Kathmandu Valley	6.8	0.10	0.9	0.01	439
Residence					
Rural	8.1	0.10	0.7	0.01	1,353
Urban	6.4	0.09	0.6	0.01	687
Type of family					
Nuclear	8.9	0.12	0.8	0.01	1,141
Joint or extended	5.8	0.07	0.6	0.01	899
Sex of HH head					
Male	7.9	0.10	0.4	0.01	1,673
Female	6.0	0.08	1.9	0.03	367
Occupation of respondent					
Agriculture	7.1	0.09	0.5	0.01	1,120
Self-employed in non-agri.	6.9	0.07	0.9	0.01	116
Wage worker	12.8	0.19	2.1	0.01	47
Salaried worker	5.7	0.06	0.0	0.00	88
Other	8.4	0.11	0.9	0.01	669
Education of respondent					
No education	9.6	0.13	1.2	0.02	686
Primary & NFE	8.4	0.10	0.5	0.01	607
Secondary	7.3	0.09	0.5	0.00	413
Higher than secondary	2.1	0.03	0.0	0.00	335
Religion					
Hindu	6.7	0.09	0.5	0.01	1,355
Bouddha	9.0	0.11	1.1	0.01	544
Kirant	6.9	0.06	0.0	0.00	29
Christian	11.5	0.15	0.0	0.00	113
Caste/ethnicity					
Brahman (Hill)	4.9	0.07	0.0	0.00	300
Chhetri/Thakuri	7.7	0.10	0.8	0.01	396
Tamang	9.0	0.11	0.4	0.01	570
Newar	6.8	0.09	1.7	0.03	379
Other Hill Janajatis	6.9	0.09	1.0	0.01	318
Dalit (Hill)	7.3	0.13	0.0	0.00	171
Other	15.9	0.15	0.0	0.00	70
Total	7.5	0.10	0.7	0.01	2,040
Total (n)	154		14		

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
EQ: Earthquake

9.1.3 Deaths by type

The rate of instantaneous death in severely hit districts (94.4%) was higher than the comparable rates in Kathmandu Valley (70.4%) and crisis-hit districts (25.0%), but rates of deaths during rescue operations were higher Kathmandu Valley (14.8%) than in severely hit areas (5.6%). Only four deaths were recorded during the administration of the survey, the one in a crisis-hit district was instantaneous; of the other two, one occurred during and two occurred after medical treatment.

By place of residence, the number of deaths in rural households (37) was greater than that in urban areas (29), but large proportions in both areas (89.2% and 69.0%) were instantaneous. Urban areas

reported greater proportions of deaths during rescue (13.8%) and medical treatment (13.8%) than rural areas did for the same conditions (5.4% and 2.7% respectively). The fact that the proportions of deaths in rural areas during rescue and treatment were low is possibly due to two reasons: first, rural structures were more prone to damage during earthquake, thereby causing instantaneous death, and, second, there were fewer attempts at rescue and medical treatment in rural areas. While the total number of deaths in joint and extended (33) and nuclear (32) families was, the percentage of instantaneous deaths was higher for joint and extended families (90.9%) than nuclear families (71.9%). The similarity between this pattern and that for place of residence reflects the fact rural families tended to be joint and extended while urban families tended to be nuclear.

Table 9.4: Percent distribution of population dead by type of death

Background variables	Type of death				Total (n)
	Instantaneous	During rescue operation	During medical treatment	After treatment	
Domain					
Severely hit	94.4	5.6	0.0	0.0	36
Crisis-hit	25.0	0.0	25.0	50.0	4
Kathmandu Valley	70.4	14.8	14.8	0.0	27
Residence					
Rural	89.2	5.4	2.7	2.7	37
Urban	69.0	13.8	13.8	3.4	29
Type of family					
Nuclear	71.9	9.4	12.5	6.3	32
Joint or extended	90.9	6.1	3.0	0.0	33
Sex of HH head					
Male	77.8	11.1	7.4	3.7	54
Female	92.3	0.0	7.7	0.0	13
Occupation of HH head					
Agriculture	78.7	10.6	6.4	4.3	47
Self-employed in non-agri.	50.0	25.0	25.0	0.0	4
Wage worker	75.0	12.5	12.5	0.0	8
Salaried worker	0.0	0.0	100.0	0.0	1
Other	88.9	0.0	11.1	0.0	9
Highest education of HH member					
No education	100.0	0.0	0.0	0.0	7
Primary & NFE	83.3	0.0	0.0	16.7	6
Secondary	91.7	0.0	4.2	4.2	24
Higher secondary	65.2	21.7	13.0	0.0	23
Higher	57.1	14.3	28.6	0.0	7
Religion					
Hindu	73.3	13.3	11.1	2.2	45
Bouddha	95.0	0.0	0.0	5.0	20
Kirant	-	-	-	-	-
Christian	100.0	0.0	0.0	0.0	2
Caste/ethnicity					
Brahman (Hill)	50.0	0.0	50.0	0.0	2
Chhetri/Thakuri	87.5	0.0	12.5	0.0	8
Tamang	100.0	0.0	0.0	0.0	12
Newar	72.0	16.0	12.0	0.0	25
Other Hill Janajatis	93.3	0.0	0.0	6.7	15
Dalit (Hill)	0.0	100.0	0.0	0.0	2
Other	0.0	0.0	0.0	100.0	1
Total	81.0	8.9	7.7	2.4	66
Total (n)	53	6	5	2	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

More males (54) died than females (13), and 47 of the total 67 deaths were in households whose head was engaged in agriculture. The highest educational category of any household member was not a very good predictor because the most educated households (54) reported more deaths than another other category. That said, the category with the highest level of education did have the

lowest percentage of any educational category for instantaneous deaths. The fact that only two Brahmins and eight Chhetris died, fewer than the numbers of deaths for other caste and ethnic groups may be a reflection of their socioeconomic status as the structural condition of the houses of the affluent tends to be stronger than that of the poor.

The above analysis of deaths due to the earthquake indicates that there is significant social and economic inequality in Nepali society. Poor, joint and extended households in rural areas were more vulnerable than wealthy urban households in cities. Measures to equalize economic opportunities in rural and urban areas and to provide orientations to the particular risks associated with different household structures may reduce future death tolls.

Maternal mortality: Three women out of the total 47 pregnant women identified in the survey died during pregnancy and five women died within 42 days of miscarrying due to the effect of earthquake. These figures were not sufficient and the sample size was not adequate to calculate the maternal mortality rate, but it does seem that there was an increase in that rate due to the earthquake.

9.1.4 Compensations for deaths

Almost all (95.7%) households who lost a family member received compensation, with only two households in crisis-hit districts and one in Kathmandu Valley still waiting for compensation. Some participants who shared qualitative information said has authorities had discriminated against some households in the distribution of compensation, but said it was fair. That said, the timeliness of compensations was a pertinent issue: families of victims expected to get compensation promptly (Table 9.5) though not all did.

Examination of the impact of selected background attributes on compensation revealed that compensation was indeed distributed to deprived groups, more so than to advantaged groups. For example, more households in the severely hit category (91,818) received compensation than did those in Kathmandu Valley (74,814). Similarly, households in rural areas, of joint and extended types, female-headed, with wage worker heads, with no education, Christian and Buddhist, of other Hill Janajatis and Tamangs overwhelmed their corresponding sub-categories in receiving compensation; two Brahmin households were the sole exception. These figures suggest that the government focused on socially and economically marginalized groups of people while distributing relief and other support (Table 9.5).

One of the people who did not get compensation did not have a citizenship certificate in Kathmandu Valley, whereas the two from crisis-hit districts had no idea why compensation had been denied them (Table 9.6).

Table 9.5: Percent distribution of dead population for whom households received compensation from government and average amounts received for performing death rituals and compensation in cash for population dead

Background variables	Received compensation for dead member	Average amount received for performing death rituals	Average amount received as compensation	Total cases (n)
Domain				
Severely hit	100.0	40,000	91,818	35
Crisis-hit	50.0	40,000	100,000	4
Kathmandu Valley	96.3	40,512	74,814	27
Residence				
Rural	97.3	40,000	91,953	37
Urban	93.1	40,493	75,738	29
Type of family				
Nuclear	90.6	40,459	86,674	32
Joint or extended	100.0	40,000	83,499	34
Sex of HH head				
Male	94.3	40,000	82,597	53
Female	100.0	41,038	94,194	13
Occupation of HH head				
Agriculture	95.6	40,310	87,863	45
Self-employed in non-agri.	75.0	40,000	80,000	4
Wage worker	100.0	40,000	83,705	7
Salaried worker	100.0	40,000	50,000	1
Other	100.0	40,000	75,830	9
Highest education of HH member				
No education	100.0	41,905	100,000	7
Primary & NFE	83.3	40,000	87,914	6
Secondary	95.8	40,000	92,414	24
Higher secondary	95.7	40,000	75,867	23
Higher	85.7	40,000	70,500	7
Religion				
Hindu	95.5	40,314	78,934	44
Bouddha	95.0	40,000	97,308	20
Kirant	-	-	-	-
Christian	100.0	40,000	100,000	2
Caste/ethnicity				
Brahman (Hill)	100.0	40,000	100,000	2
Chhetri/Thakuri	88.9	40,000	65,634	9
Tamang	100.0	40,000	95,710	12
Newar	96.2	40,533	77,589	26
Other Hill Janajatis	93.3	40,000	100,000	15
Dalit (Hill)	100.0	40,000	60,000	2
Other	0.0	-	-	1
Total	95.5	40,212	84,968	66
Total (n)	63	63	63	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Table 9.6: Percent distribution of dead population for whom households did not receive compensation for a death by reasons

Reason for not receiving compensation for death	Domain							
	Severely hit		Crisis-hit		Kathmandu Valley		Total	
	n	%	n	%	n	%	n	%
Not having death certificate	0	0.0	0	0.0	1	50.0	1	21.7
Not having citizenship certificate	0	0.0	0	0.0	1	50.0	1	21.7
Don't know	0	0.0	2	100.0	0	0.0	2	56.6
Total	0	0.0	2	100.0	1	100.0	3	100.0

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

9.2 Impact of Earthquake on Marriage, Health, Family Planning, and Fertility

9.2.1 Earthquake and marriage

One percent of families postponed the marriage of a member due to the earthquake. This rate was 2 percent among respondents with household heads whose occupation was classified as 'other,' households in which at least one member had a tertiary level of education, and Christian households. Rates of holding marriages also varied across household categories. By type of family, joint and extended family groups were more likely to have held a marriage (4.9%) than nuclear families (1.9%). Crisis-hit districts had the highest rate (4.8%) by domain, as did 'other' (4.6%) among caste and ethnic groups. In terms of education, families with at least one member with a tertiary education were most likely to have held a marriage (4.1%), as were households whose head engaged in agriculture as his or her occupation (4.0%). In Europe during the recession of 1930s, the postponement of marriage was observed at a mass level and the average ages of marriage increased for both women and men. Nepal's April 2015 earthquake did not result in a similarly drastic response regarding marital behaviour (Table 9.7).

Table 9.7: Percent distribution of households postponing the marriage of a member due to earthquake and holding a marriage of any member after the earthquake

Background variables	Postponement of marriage	Occurrence of marriage	Total (n)
Domain			
Severely hit	0.9	2.9	1,601
Crisis-hit	0.9	4.8	792
Kathmandu Valley	1.5	1.2	608
Residence			
Rural	0.9	3.1	2,004
Urban	1.2	2.9	996
Type of family			
Nuclear	1.4	1.9	1,831
Joint or extended	0.3	4.9	1,169
Sex of HH head			
Male	1.1	3.0	2,381
Female	0.5	3.4	619
Occupation of HH head			
Agriculture	1.1	4.0	1,785
Self-employed in non-agri.	0.3	2.0	298
Wage worker	0.7	1.0	294
Salaried worker	0.0	1.5	202
HH work/student/other	1.9	1.9	420
Highest education of HH member			
No education	0.0	0.6	173
Primary & NFE	0.0	1.2	329
Secondary	0.7	3.1	976
Higher secondary	1.3	3.6	1,105
Higher	1.9	4.1	417
Religion			
Hindu	0.8	3.0	1,964
Bouddha	1.4	3.5	830
Kirant	0.0	3.9	51
Christian	1.9	1.3	155
Caste/ethnicity			
Brahman (Hill)	1.0	2.0	396
Chhetri/Thakuri	0.5	2.8	567
Tamang	1.7	3.5	782
Newar	1.0	3.3	487
Other Hill Janajatis	0.9	2.9	446
Dalit (Hill)	0.8	3.8	236
Other	0.0	4.6	87
Total	1.0	3.0	3,000
Total (n)	30	91	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Those respondents or heads of households in which someone had married before they were 18 years old after the earthquake were asked why they had married young. Most (81.4%) said that it had been their own wish, while 19 percent said they were following tradition (Table 9.8). It elucidated that the life was almost not considered as complicated in that level in which it can divert the course of family life.

Table 9.8: Percent distribution of household members who married after the earthquake by age at marriage and reason for marrying at young ages among those who married before they were 18

Age at marriage	% of HH members	Reason for early marriage (<18)	% of HH members
< 18	13.9	Own wish	81.4
18-19	22.8	Following tradition	18.6
20-21	18.9	Total	100.0
22-23	12.8	Total (n)	13
24-25	17.4		
> 25	14.1		
Total	100.0		
Total (n)	92		
Average	21.5		

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

9.2.2 Availability of health services after the earthquake

The earthquake caused injuries but, at the same time, resulted in scarcities of food, drinking water, medicine, and other supplies needed to maintain health. The survey asked if health service providers were available immediately after the earthquake. It discovered that service providers fled from their stations of duty and that there was a vacuum in supplies of health-related goods and services. Out of the total 2,203 married women aged 15- 49, 149 (6.8%) reported that there was a gap in availability of health services.

The provision of health services was better in crisis-hit districts (87.9%) than Kathmandu Valley (79.2%). In total 93 percent of respondents said that they were satisfied with the available health services, while 80 percent reported that they had had access to information related to family planning, reproductive health, and women's health issues (Table 9.9).

The use of family planning methods is one of the major determinants of fertility and was affected by the earthquake. Overall, the rate of use of family planning methods declined by 9 percentage points out of the total of 53 percent users, or almost 17 percent for the total population of the surveyed households. In other words, after the earthquake, on average, one married woman aged 15-49 years out of six who used family planning methods before the earthquake stopped doing so after the earthquake. This decline could cause an increment of some 6 percentage points in fertility, if fertility is attributed to family planning alone.

The highest decrease in the use of family planning methods was that in severely hit areas (11.1%), followed by that in Kathmandu Valley (8.4%). The decrease was least in crisis-hit areas (6.7%). These results suggest that family planning services must continue to be provided even after an earthquake or other natural calamity in order to prevent their effects on fertility. A higher percentages of females (9.6%) than males (3.3%) used family planning after the earthquake. The reasons for their use of contraception even in that extremely unfavourable condition should be an issue of further research (Table 9.10).

Table 9.9: Percent distribution of married women (15-49 years) responding access of health service providers and they providing advice or discussing about family planning (FP), reproductive health (RH) and women's health issues even after the earthquake; using FP method before and after the earthquake; and using FP method to avoid pregnancy during the exceptional situation created by the earthquake

Background variables	Access of health service provider after earthquake	Total cases (n)* for columns 2, 6 & 7	Service provider advising on FP, RH & women's health	Total cases (n) for column 4	Use of FP method before earthquake	Use of FP method after earthquake	Confirming use of FP method during exceptional situation	Total cases (n) for column 8
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Domain								
Severely hit	94.4	1,137	75.4	1,073	46.5	35.4	3.5	401
Crisis-hit	94.6	594	87.9	562	58.1	51.4	3.3	305
Kathmandu Valley	89.0	471	79.2	419	62.8	54.4	5.9	256
Residence								
Rural	94.7	1,459	80.7	1,381	50.9	41.5	3.6	606
Urban	90.5	744	77.3	673	57.5	48.0	5.0	358
Type of family								
Nuclear	93.6	1,216	77.2	1,138	55.6	44.8	4.4	545
Joint or extended	92.8	987	82.4	916	49.9	42.5	3.8	419
Sex of HH head								
Male	93.4	1,800	79.3	1,681	55.9	46.0	3.3	828
Female	92.6	403	80.7	373	40.7	33.7	9.6	136
Occupation of respondents								
Agriculture	94.2	1,190	80.3	1,121	54.8	43.9	5.2	523
Self-employed in non-agri.	90.6	127	77.4	115	63.8	50.4	1.6	64
Wage worker	94.0	50	85.1	47	66.0	62.0	3.2	31
Salaried worker	94.8	97	84.8	92	47.4	49.5	2.1	48
HH work/student/other	91.9	739	77.6	679	48.4	40.5	3.7	299
Education of respondents								
No education	92.0	700	79.1	645	58.4	44.7	3.5	313
Primary & NFE	93.9	638	80.8	599	55.6	43.4	3.2	277
Secondary	93.6	468	77.4	438	48.3	42.9	4.5	201
Higher than secondary	93.9	396	80.9	372	45.3	43.4	6.4	172
Religion								
Hindu	93.5	1,463	78.6	1,368	54.6	43.4	3.8	635
Bouddha	93.3	586	79.9	548	50.6	43.9	4.7	257
Kirant	94.3	35	97.0	33	44.1	44.1	0.0	15
Christian	88.3	120	84.9	106	49.2	47.5	7.0	57
Caste/ethnicity								
Brahman (Hill)	96.3	299	76.0	288	59.9	45.7	1.5	136
Chhetri/Thakuri	94.0	397	75.9	373	52.1	38.0	4.6	151
Tamang	93.1	569	80.9	530	52.7	46.0	6.1	262
Newar	88.7	379	78.3	336	62.0	52.6	2.0	199
Other Hill Janajatis	94.3	318	81.7	300	39.0	33.6	5.6	107
Dalit (Hill)	94.7	171	84.6	162	47.1	42.7	5.4	74
Other	92.8	69	89.1	64	62.3	50.7	2.9	35
Total	93.2	2,203	79.6	2,054	53.1	43.8	4.1	964
Total (n)	2,054		1,634		1,169	964	40	

*72 cases missing.

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Table 9.10: Percent distribution of married women (15-49 years) using different family planning methods before the earthquake

Background variables	Female sterilization	Male sterilization	IUCD	Depo-Provera	Implant	Pill	Male condom	Diaphragm	Natural method	Total (n)
Domain										
Severely hit	16.3	26.3	3.6	37.6	5.5	7.9	2.5	0.4	0.0	529
Crisis-hit	17.1	13.0	4.3	44.2	9.8	5.2	4.6	0.0	1.7	346
Kathmandu Valley	16.3	5.4	4.4	47.5	6.4	10.2	8.1	0.0	1.7	295
Residence										
Rural	15.3	21.0	4.2	41.9	6.7	6.6	3.6	0.0	0.7	743
Urban	18.5	10.3	4.0	42.3	7.7	9.3	6.1	0.5	1.4	428
Type of family										
Nuclear	18.9	20.2	4.4	37.5	6.9	7.7	3.7	0.0	0.6	677
Joint or extended	13.2	12.8	3.7	48.1	7.1	7.7	5.7	0.4	1.4	493
Sex of HH head										
Male	17.2	17.5	3.8	41.7	7.4	6.9	4.5	0.2	0.9	1,006
Female	12.3	14.7	5.5	44.2	4.9	12.9	4.9	0.0	0.6	163
Occupation of respondents										
Agriculture	17.6	21.1	3.2	38.4	8.9	7.0	3.1	0.3	0.3	653
Self-employed in non-agri.	13.4	17.1	4.9	47.6	3.7	7.3	4.9	0.0	1.2	82
Wage worker	8.8	5.9	2.9	58.8	2.9	5.9	11.8	0.0	2.9	34
Salaried worker	8.9	8.9	2.2	42.2	0.0	17.8	15.6	0.0	4.4	45
HH work/student/other	16.5	11.8	5.9	45.7	5.9	7.6	5.0	0.0	1.7	357
Education of respondents										
No education	20.5	18.8	4.4	39.1	9.3	5.9	1.7	0.0	0.2	409
Primary & NFE	19.5	21.2	3.4	40.1	7.1	4.8	3.1	0.0	0.8	354
Secondary	11.0	13.2	3.5	52.0	4.8	10.1	4.4	0.0	0.9	227
Higher than secondary	8.9	10.0	5.6	39.4	4.4	14.4	13.3	1.1	2.8	180
Religion										
Hindu	19.0	19.8	3.4	38.0	6.0	8.5	4.3	0.3	0.9	800
Bouddha	11.1	10.5	4.4	50.7	10.1	6.8	5.7	0.0	0.7	296
Kirant	20.0	13.3	20.0	20.0	13.3	13.3	0.0	0.0	0.0	15
Christian	8.3	15.0	8.3	58.3	3.3	1.7	3.3	0.0	1.7	60
Caste/ethnicity										
Brahman (Hill)	26.1	24.4	2.2	30.0	6.1	6.7	3.3	0.0	1.1	180
Chhetri/Thakuri	23.3	25.2	1.5	32.5	4.4	7.3	4.9	0.0	1.0	206
Tamang	12.6	10.3	5.0	52.0	9.3	6.6	3.3	0.0	1.0	302
Newar	12.3	10.6	6.8	47.2	5.1	11.9	5.1	0.0	0.9	235
Other Hill Janajatis	12.0	20.8	3.2	39.2	10.4	4.8	7.2	1.6	0.8	125
Dalit (Hill)	13.4	20.7	2.4	42.7	4.9	9.8	6.1	0.0	0.0	82
Other	13.6	13.6	11.4	43.2	11.4	4.5	2.3	0.0	0.0	44
Total	16.5	17.1	4.1	42.0	7.0	7.7	4.5	0.1	0.9	1,169
Total (n)	193	200	48	492	82	90	53	2	10	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

After the earthquake, the usage rates for some forms of birth control increased while those for others decreased. Female and male sterilization both decreased, by 6 percentage points each respectively, but the use of IUCD (0.3%), Depo-Provera injections (7.0%), implants (0.5%) pills (2.1%), and male condoms (1.3%) increased by the percentage points indicated. There was no report of female condom usage before the earthquake but two women reported using female condoms afterwards. The results raise a question: What were the reasons that, except for the permanent methods requiring surgery, the rates of use of all forms of contraception increased after the earthquake? Considering that the increase in male condoms was almost negligible, one possible explanation is that women did not want to become pregnant in adverse economic and social conditions but that there were equally or even more sexually active after the earthquake than they were before it (Table 9.11).

Table 9.11: Percent distribution of married women (15-49 years) using different family planning methods after the earthquake

Background variables	Female sterilization	Male sterilization	IUCD	Depo-Provera	Implant	Pill	Male condom	Female condom	Diaphragm	Natural method	Total (n)
Domain											
Severely hit	7.5	17.9	4.0	48.5	6.5	11.9	2.7	0.5	0.5	0.0	402
Crisis-hit	14.1	8.2	4.3	48.2	10.5	5.9	6.2	0.0	0.0	2.6	305
Kathmandu Valley	10.5	4.7	5.0	50.8	5.4	11.2	10.1	0.0	0.0	2.3	258
Residence											
Rural	9.6	13.5	4.5	51.5	6.9	8.6	4.5	0.0	0.0	1.0	606
Urban	11.8	7.3	4.2	45.1	8.1	11.8	8.4	0.6	0.6	2.2	357
Type of family											
Nuclear	11.6	14.1	4.0	45.3	7.7	10.1	6.1	0.4	0.0	0.7	545
Joint or extended	8.8	7.6	4.8	53.8	6.9	9.5	5.7	0.0	0.5	2.4	420
Sex of HH head											
Male	11.1	11.1	4.5	48.7	7.6	9.3	5.7	0.2	0.2	1.6	828
Female	5.2	12.6	3.7	51.9	5.9	13.3	6.7	0.0	0.0	0.7	135
Occupation of respondents											
Agriculture	10.5	13.7	3.6	47.7	9.5	8.6	5.2	0.4	0.4	0.4	524
Self-employed in non-agri.	12.7	6.3	3.2	55.6	3.2	11.1	6.3	0.0	0.0	1.6	63
Wage worker	6.3	6.3	3.1	56.3	3.1	12.5	9.4	0.0	0.0	3.1	32
Salaried worker	6.4	10.6	2.1	40.4	0.0	19.1	17.0	0.0	0.0	4.3	47
HH work/student/other	10.7	8.7	6.4	50.3	6.0	10.1	4.7	0.0	0.0	3.0	298
Education of respondents											
No education	13.5	15.1	4.8	43.6	12.2	8.3	2.2	0.0	0.0	0.3	312
Primary & NFE	11.5	13.3	3.6	51.1	7.2	6.5	5.0	0.7	0.0	1.1	278
Secondary	6.5	8.0	4.0	59.7	4.0	10.9	5.5	0.0	0.0	1.5	201
Higher than secondary	7.6	4.7	5.8	43.0	2.9	16.9	14.0	0.0	1.2	4.1	172
Religion											
Hindu	13.6	13.4	4.1	44.6	5.5	11.0	5.8	0.0	0.3	1.6	634
Bouddha	4.7	6.2	3.5	58.9	11.2	7.0	6.6	0.8	0.0	1.2	258
Kirant	0.0	12.5	12.5	31.3	31.3	12.5	0.0	0.0	0.0	0.0	16
Christian	3.6	10.7	8.9	58.9	3.6	8.9	3.6	0.0	0.0	1.8	56
Caste/ethnicity											
Brahman (Hill)	18.2	20.4	3.6	34.3	5.8	8.8	5.8	0.0	0.0	2.9	137
Chhetri/Thakuri	19.2	15.9	0.7	43.0	3.3	9.3	7.3	0.0	0.0	1.3	151
Tamang	5.3	6.1	5.0	59.2	11.1	8.4	3.4	0.0	0.0	1.5	262
Newar	8.5	6.5	7.5	50.8	4.0	14.1	7.0	0.0	0.0	1.5	199
Other Hill Janajatis	7.5	16.8	1.9	45.8	9.3	7.5	8.4	0.0	1.9	0.9	107
Dalit (Hill)	6.9	12.5	2.8	56.9	2.8	13.9	4.2	0.0	0.0	0.0	72
Other	5.6	5.6	11.1	41.7	22.2	5.6	2.8	5.6	0.0	0.0	36
Total	10.4	11.3	4.4	49.0	7.5	9.8	5.8	0.2	0.2	1.5	964
Total (n)	100	109	42	473	72	95	56	2	2	14	
Gap (Before-After)	-6.1	-5.8	0.3	7.0	0.5	2.1	1.3	0.2	0.1	0.6	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

9.2.3 Pregnancy before and after the earthquake

In severely hit districts and Kathmandu Valley the rate of pregnancy increased slightly (1.3% points) after the earthquake, but the rate declined in crisis-hit districts. A caution in interpreting the results must be noted: the survey was conducted seven or eight months after the earthquake, at which point it was very obvious that people had continued living much as before and that pregnancy and childbirth were commonplace even in adverse conditions (Table 9.12).

Some 19 children under the age of 14 died due to the earthquake. It is natural that the parents of a dead child will compensate for the death by deciding to have one or more additional children. Their desire is likely to have been one of the many reasons that pregnancy and childbirth resumed after the earthquake.

Table 9.12: Percent distribution of pregnant married women (15-49 years) who had conceived before or after the earthquake, and had regular ante-natal care (ANC) check-ups before or/and after the earthquake

Background variables	Pregnant before earthquake	Total (n)	Pregnant after earthquake	Total (n)	Regular ANC before earthquake	Total (n)	Regular ANC after earthquake	Total (n)
Domain								
Severely hit	1.4	1,137	2.7	1,120	87.5	16	89.4	47
Crisis-hit	2.0	595	1.4	583	91.7	12	85.0	20
Kathmandu Valley	1.3	471	2.6	465	100.0	6	88.9	18
Residence								
Rural	1.6	1,459	2.4	1,435	91.7	24	86.2	58
Urban	1.3	744	2.3	734	100.0	10	88.9	27
Type of family								
Nuclear	1.2	1,217	2.2	1,202	86.7	15	88.1	42
Joint or extended	1.9	986	2.4	967	95.0	20	86.0	43
Sex of HH head								
Male	1.8	1,800	2.3	1,768	93.8	32	86.3	73
Female	0.5	403	2.3	400	50.0	2	91.7	12
Occupation of respondents								
Agriculture	0.7	1,190	1.5	1,183	87.5	8	96.0	25
Self-employed in non-agri.	3.1	127	0.8	123	100.0	4	66.7	6
Wage worker	8.0	50	2.2	46	100.0	4	100.0	5
Salaried worker	2.1	96	2.1	95	100.0	2	75.0	4
HH work/student/other	2.2	739	4.0	723	87.5	16	84.4	45
Education of respondents								
No education	0.4	700	1.7	697	50.0	4	86.7	15
Primary & NFE	0.8	638	0.2	633	83.3	6	57.1	7
Secondary	1.9	468	3.9	460	100.0	9	92.6	27
Higher than secondary	4.3	396	5.0	379	100.0	17	88.9	36
Religion								
Hindu	1.6	1,462	2.4	1,439	95.8	24	91.2	57
Bouddha	1.4	586	1.9	578	77.8	9	73.7	19
Kirant	2.9	35	5.9	34	100.0	1	100.0	2
Christian	1.7	120	3.4	118	100.0	2	100.0	6
Caste/ethnicity								
Brahman (Hill)	0.7	300	1.0	298	100.0	2	80.0	5
Chhetri/Thakuri	1.3	397	2.6	392	100.0	5	100.0	15
Tamang	1.4	569	1.4	561	77.8	9	68.8	16
Newar	2.9	379	3.5	368	100.0	11	83.3	24
Other Hill Janajatis	1.6	318	2.9	313	100.0	5	100.0	14
Dalit (Hill)	1.7	172	3.0	169	66.7	3	87.5	8
Other	1.4	69	4.4	68	100.0	1	100.0	4
Total	1.5	2,203	2.3	2,169	94.1	34	87.1	84
Total (n)	34		50		32		74	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

9.2.4 Antenatal care check-ups before and after earthquake

The percentage of women who had regular ANC check-ups decreased by 7 percent after the earthquake. This reduction was higher in Kathmandu Valley with 13 percentage points than in crisis-hit areas, which was 6 percentage points (Table 9.12).

A detailed classification of the ANC status of pregnant women before and after earthquake revealed that despite the adverse situation after the earthquake, reproductive health-related care was not affected very much. Indeed, if rates of care showed any change, they increased. A greater percentage of women were pregnant after the earthquake (2.3%) than before it (1.5%). If those categories of households where the number of pregnant women was below 10 are ignored, the percentage of pregnant women increased in most categories. Kathmandu Valley and severely hit districts reported increments of 1 percentage points each, and both urban and rural areas have increments of 1 percentage points each respectively. Women in nuclear families were more likely to be pregnant after the earthquake (they reported an increase of 1.0% points) than women in joint families (which

reported an increase of 0.5% points). Among occupational categories, households where the occupation of the head was classified as 'other' reported the greatest increase in pregnancy rates (1.8% points). Among educational groups, it was households with at least one member with a secondary education that reported the greatest increase (2 percentage points). While the rate of pregnancy among the Tamang was relatively stable (1.4% before and after the earthquake), other ethnic groups reported an increase (Table 9.15). The tendency of parents to compensate for the death of a child by deciding to have another child or children is one of the theoretical tenants of fertility theory[16]. It seems to have been upheld during the earthquake in Nepal.

9.2.5 Reasons for not having regular antenatal care check-ups

There was a dramatic change in the reasons given for not for having regular ANC check-ups before and after the earthquake. Fifty percent of the concerned women (those pregnant at the time of the survey or recently pregnant) said their lack of knowledge was the reason after the earthquake but nobody named ignorance as the reason before the earthquake. The results raise an interesting question: does knowledge diminish because of a natural calamity? Since the number of cases was very few, 12 in total and only 2 for the before-earthquake period, triangulation and qualitative methods must be used to seek an explanation. The suggestion that health services were not accessible before the earthquake but suddenly increased after the earthquake (before the earthquake all of women respondents said that health facilities were inaccessible, but afterwards only 13.5% gave this response) is also questionable and warrants further examination (Table 9.13).

Table 9.13: Percent distribution of married women (15-49 years) by reason for not having regular ante-natal care check-ups before and after the earthquake

Reason for not having regular ANC check-ups	Before earthquake	After earthquake
Health service facility not accessible	100.0	13.5
Lack of knowledge	0.0	50.1
Fear	0.0	7.6
Not desired	0.0	21.2
Not required	0.0	7.6
Total	100.0	100.0
Total (n)	2	10

9.2.6 Deliveries in the last 12 months and receipts of delivery allowances

In order to encourage women to deliver their babies in institutions, the government provides a "delivery allowance" to mothers who deliver at designated health facilities across the country. Before the earthquake, receipt of this allowance was high (84.7%), while afterwards, the rate of receipt dropped to just 65 percent. In total, the percentage of mothers giving birth before the earthquake was slightly less (5.1%) than afterwards (5.2%) (Table 9.14). This increase may reflect the postulate of fertility theory that fertility increases after a disaster as parents seek to replace children who have died. It also suggests that fear about whether or not their children will survive induces parents to have more children after a devastating natural calamity than before it.

[16] As described by P.N. Mari Bha in his 1988 article "Micro and Macro Effects of Child Mortality on Fertility: The Case of India" in M.R. Montgomery and B. Cohen (eds.) *From Death to Birth: Mortality Decline and Reproductive Change*. Washington, D.C.: National Academies Press. Available at http://www.ncbi.nlm.nih.gov/books/NBK233812/

Table 9.14: Percent distributions of married women (15-49 years) giving birth in the past 12 months and those who delivered a baby in birthing centre receiving delivery allowances before and after the earthquake

Background variables	Gave birth before earthquake	Total (n)	Gave birth after earthquake	Total (n)	Received allowance for birth before EQ	Total (n)	Received allowance for birth after EQ	Total (n)
Domain								
Severely hit	5.6	1,092	6.2	1,031	100.0	29	73.2	41
Crisis-hit	5.7	575	4.6	542	87.5	16	68.4	19
Kathmandu Valley	3.1	454	3.6	439	50.0	14	33.3	15
Residence								
Rural	5.8	1,402	5.8	1,321	92.1	38	65.4	52
Urban	3.8	718	4.2	691	71.4	21	62.5	24
Type of family								
Nuclear	4.3	1,176	3.4	1,125	96.0	25	52.2	23
Joint or extended	6.0	944	7.6	887	76.5	34	69.8	53
Sex of HH head								
Male	4.7	1,727	5.1	1,646	85.1	47	66.7	63
Female	6.6	393	5.7	367	76.9	13	53.8	13
Occupation of respondents								
Agriculture	5.7	1,166	3.6	1,099	93.8	32	80.8	26
Self-employed in non-agri.	3.3	122	3.4	118	50.0	2	100.0	4
Wage worker	0.0	45	2.2	45	-	-	100.0	1
Salaried worker	5.4	93	4.5	88	66.7	3	25.0	4
HH work/student/other	4.7	695	8.5	662	77.3	22	52.5	40
Education of respondents								
No education	3.2	685	1.5	663	88.9	9	100.0	2
Primary & NFE	5.1	632	5.3	600	100.0	15	56.5	23
Secondary	7.0	441	9.0	410	92.3	13	74.1	27
Higher than secondary	6.4	362	7.7	339	66.7	21	58.3	24
Religion								
Hindu	4.0	1,407	5.3	1,352	81.1	37	58.9	56
Bouddha	7.1	567	5.3	528	88.2	17	82.4	17
Kirant	12.5	32	7.1	28	66.7	3	0.0	2
Christian	7.8	115	4.7	106	100.0	4	100.0	2
Caste/ethnicity								
Brahman (Hill)	2.4	295	4.5	289	50.0	6	69.2	13
Chhetri/Thakuri	3.6	384	4.3	370	81.8	11	50.0	12
Tamang	6.0	553	5.4	520	93.8	16	72.2	18
Newar	2.0	355	2.3	347	83.3	6	33.3	9
Other Hill Janajatis	8.9	304	11.6	277	88.9	9	88.9	18
Dalit (Hill)	9.8	164	3.4	149	75.0	8	50.0	4
Other	6.2	65	6.6	61	100.0	4	0.0	3
Total	5.1	2,120	5.2	2,012	84.7	59	64.5	76
Total (n)	108		105		50		49	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

9.2.7 Place of delivery before and after earthquake

A higher proportion of women delivered in birthing centers after the earthquake (72.4%) than before it (54.6%). Home deliveries decreased from 43 percent to 21 percent, perhaps because the destruction of homes forced women to deliver elsewhere. Nearly 3 percent of deliveries took place in temporary shelters.

Despite the fact that much informational, educational and communication material has been disseminated through the media and a number of government and non-government organizations to promote institutional delivery, a number of women had not delivered in health facilities or birthing during the 12 months before the survey. For the purposes of this study, this 12-month period was split into the period before the earthquake and that afterwards. It was found that 49 women gave birth before the earthquake and 29 after it.

Table 9.15: Percent distribution of married women (15-49 years) by place of latest delivery in the past 12 months before and after the earthquake

Background variables	Before earthquake			Total (n)	After earthquake					Total (n)
	Birthing centre	Home	Cattle shed		Birthing centre	Home	Cattle shed	Camp	Temporary shelter	
Domain										
Severely hit	47.5	47.5	4.9	61	64.6	24.6	3.1	3.1	4.6	65
Crisis-hit	50.0	50.0	0.0	34	76.0	24.0	0.0	0.0	0.0	25
Kathmandu Valley	100.0	0.0	0.0	14	93.8	6.3	0.0	0.0	0.0	16
Residence										
Rural	47.5	48.8	3.8	80	68.8	22.1	2.6	2.6	3.9	77
Urban	77.8	22.2	0.0	27	82.1	17.9	0.0	0.0	0.0	28
Type of family										
Nuclear	48.1	48.1	3.8	52	60.5	21.1	5.3	5.3	7.9	38
Joint or extended	59.6	36.8	3.5	57	79.1	20.9	0.0	0.0	0.0	67
Sex of HH head										
Male	57.3	39.0	3.7	82	75.0	16.7	2.4	2.4	3.6	84
Female	46.2	53.8	0.0	26	59.1	40.9	0.0	0.0	0.0	22
Occupation of respondents										
Agriculture	47.8	47.8	4.5	67	63.4	31.7	0.0	0.0	4.9	41
Self-employed in non-agri.	33.3	66.7	0.0	3	100.0	0.0	0.0	0.0	0.0	4
Wage worker	-	-	-	-	100.0	0.0	0.0	0.0	0.0	1
Salaried worker	80.0	20.0	0.0	5	100.0	0.0	0.0	0.0	0.0	4
HH work/student/other	68.8	31.3	0.0	32	71.9	17.5	3.5	3.5	3.5	57
Education of respondents										
No education	40.9	50.0	9.1	22	20.0	80.0	0.0	0.0	0.0	10
Primary & NFE	46.9	46.9	6.3	32	69.7	18.2	6.1	6.1	0.0	33
Secondary	43.8	56.3	0.0	32	73.0	21.6	0.0	0.0	5.4	37
Higher than secondary	91.3	8.7	0.0	23	88.9	3.7	0.0	0.0	7.4	27
Religion										
Hindu	65.5	34.5	0.0	55	78.9	21.1	0.0	0.0	0.0	71
Bouddha	42.5	50.0	7.5	40	58.6	27.6	6.9	0.0	6.9	29
Kirant	50.0	50.0	0.0	4	100.0	0.0	0.0	0.0	0.0	2
Christian	44.4	55.6	0.0	9	33.3	0.0	0.0	33.3	33.3	6
Caste/ethnicity										
Brahman (Hill)	85.7	14.3	0.0	7	100.0	0.0	0.0	0.0	0.0	13
Chhetri/Thakuri	78.6	21.4	0.0	14	75.0	25.0	0.0	0.0	0.0	16
Tamang	48.5	42.4	9.1	33	62.1	17.2	6.9	6.9	6.9	29
Newar	75.0	25.0	0.0	8	100.0	0.0	0.0	0.0	0.0	8
Other Hill Janajatis	33.3	66.7	0.0	27	56.3	37.5	0.0	0.0	6.3	32
Dalit (Hill)	50.0	50.0	0.0	16	80.0	20.0	0.0	0.0	0.0	5
Other	100.0	0.0	0.0	4	75.0	25.0	0.0	0.0	0.0	4
Total	54.6	42.6	2.8	108	72.4	21.0	1.9	1.9	2.9	105
Total (n)	59	46	3		76	22	2	2	3	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

After the earthquake, the main reason for not opting for an institutional delivery was lack of knowledge (35.6% reported this reasons); there not being an accessible health facility, at 21 percent trailed by almost 14 percentage points. In contrast, the rates of these two reasons were the same before the earthquake, 28 percent each respectively. The results suggests that there was a gap in healthcare workers at the grassroots level immediately after the earthquake because many government health personnel fled and private service providers did not step in for a long time. Fear as a reason for avoiding an institutional delivery increased five-fold after the earthquake, from 3 percent to 17 percent. This result suggests that people did not have faith in the physical structures where health services were provided. Though these two sample sizes used to contrast reasons for delivering at home and must, therefore by interpreted with caution, they suggest that women were in need, they indicate that they were also forced to give birth at home because either they did not know about, could not access, or were afraid of health facilities. Economic hardship, as a reason given by 12 percent increased to 14 percent, may also have placed a role (Table 9.16).

Table 9.16: Percent distribution of married women (15-49 years) by reason for delivering birth at home, cattle shed or in any other place other than a birthing centre in the past 12 months

Reason	Before earthquake	After earthquake
Lack of knowledge	27.8	35.6
Health service facility not accessible	27.9	21.2
Fear	3.3	16.5
Economic hardship	11.5	13.7
Forced to give birth at home by family member	18.0	13.1
Lack of skilled birth attendant	11.5	-
Total	100.0	100.0
Total (n)	49	29

According to FGD and KIIs participants, pregnant women were unable to go for check-ups at nearby health facilities. Most communities said that pregnant women had delivered their babies on hay in nearby cattle sheds. They expressed concern about the treatment of pregnant women and new mothers. FDG participants in Kavre stated: "*We could not provide nutritious and hygienic foods to eat when they [pregnant women and new mothers] were in acute need. We had to give them biscuits, noodles and water – nothing more"*. The Jirel community in Dolakha agreed that women lacked nutritious food in this risky period.

The Gurung community from Gorkha reported that deliveries were carried out in tents because the health post in their locality had been damaged. They also attributed on miscarriage to the earthquake: "*Because of the earthquake, the four-month-old fetus of one woman died. The doctor who discovered this fact suggested she has an abortion.*" The Hayu community in Ramechhap explained that new mothers had to live in tents after delivery and that they had suffered due to the winter cold and the common flu. The Sanyasi community in Nuwakot said that the cold had caused pregnant women's bodies to swell. The Pahari community in Lalitpur also pointed out the challenges for new mothers of living in a tent and enduring the winter cold. They said that it was very difficult for them to protect both new mothers and newborns, especially when it came to timely treatment and support and care during delivery. They claimed that they had never experienced such difficulties: "*Some children were born during the earthquake and its aftershocks and caring for them in a timely fashion has been the most serious problem we have ever had in our entire lives.*"

The Newar community in Kathmandu added that it was not just new mothers but also children and elderly people that suffered.

9.2.8 Number of children ever born

The average number of children ever born among the surveyed households was 2.5, a figure slightly lower than the national average (2.7). The average among households in Kathmandu Valley was 2, while those for the crisis-hit and severely hit districts were 2.6 each respectively (Table 9.17).

9.2.9 Desire for additional children

Almost one in five (20.5%) married women of reproductive age wished to have an additional child. The time they intended to wait ranged from less than a year to more than 5 years. The proportion of mothers desiring a birth spacing period of two years was found among those households which reported high casualties. They included households in Kathmandu Valley (23.2% planned to have a child in two years), urban households (23.9%), households who heads are wage workers (37.5%), and households in no adult member is educated (38.0%). In terms of caste and ethnicity, Newars (27.5%) other Hill Janajatis (23.8%) and 'other' group (28.6%) had the highest rates of planning to have another child in two years. Although no direct linkage can be established, the findings indicate that parents tend to compensate for dead children by planning to have more children. The percentage of respondents planning to have another child within a year was also derived (it was 25.9%), but due to shock and emotional reasons, this information may be biased by the "immediate response effect."

For this reason, this analysis considers a planned birth spacing of two years, which may be a more realistic figure to consider for drawing implications for fertility (Table 9.18).

Table 9.17: Percent distribution of married women (15-49 years) by number of children ever born

Background variables	Number of children ever born (CEB)							Average CEB	Total (n)
	0	1	2	3	4	5	>5		
Domain									
Severely hit	7.9	18.0	26.9	23.0	12.4	6.6	5.2	2.58	1,137
Crisis-hit	6.7	18.9	29.8	20.7	13.0	5.4	5.4	2.60	595
Kathmandu Valley	6.8	27.2	39.6	15.5	6.8	2.8	1.3	2.03	471
Residence									
Rural	7.3	18.8	26.5	22.5	13.2	6.3	5.3	2.60	1,459
Urban	7.5	22.9	38.0	17.4	7.7	3.9	2.7	2.20	743
Type of family									
Nuclear	6.1	12.8	31.0	24.7	14.0	6.4	5.0	2.71	1,216
Joint or extended	8.9	29.3	29.7	16.0	8.1	4.4	3.7	2.17	988
Sex of HH head									
Male	7.0	19.4	29.8	21.5	11.8	6.0	4.5	2.52	1,800
Female	8.9	23.8	33.3	17.4	9.2	3.5	4.0	2.24	403
Occupation of respondents									
Agriculture	5.9	14.8	28.7	24.2	14.5	6.1	5.8	2.73	1,190
Self-employed in non-agri.	8.7	19.7	39.4	16.5	8.7	6.3	0.8	2.18	127
Wage worker	6.1	38.8	28.6	14.3	8.2	2.0	2.0	1.93	50
Salaried worker	8.2	37.1	36.1	16.5	0.0	2.1	0.0	1.67	97
HH work/student/other	9.3	25.5	31.2	16.9	8.4	5.0	3.7	2.23	739
Education of respondents									
No education	2.1	5.6	24.7	27.9	20.4	9.4	9.9	3.35	700
Primary & NFE	5.0	14.6	31.1	26.0	12.7	7.0	3.6	2.66	639
Secondary	11.8	30.6	37.3	13.3	4.3	1.7	1.1	1.80	468
Higher than secondary	15.4	42.9	31.1	8.6	1.3	0.5	0.3	1.39	396
Religion									
Hindu	7.3	19.5	32.1	20.8	10.9	5.7	3.7	2.42	1,462
Bouddha	7.2	21.5	27.5	21.8	11.6	5.1	5.3	2.53	586
Kirant	17.1	17.1	17.1	5.7	28.6	5.7	8.6	2.81	34
Christian	5.8	24.2	26.7	19.2	10.8	5.0	8.3	2.55	120
Caste/ethnicity									
Brahman (Hill)	3.7	17.7	36.0	27.0	10.3	3.3	2.0	2.41	300
Chhetri/Thakuri	7.8	19.6	30.7	19.6	12.8	7.3	2.0	2.40	397
Tamang	6.3	21.0	27.5	21.9	12.4	5.3	5.6	2.55	569
Newar	7.1	23.5	38.8	16.4	6.9	4.2	3.2	2.20	378
Other Hill Janajatis	9.4	19.5	21.4	21.7	12.6	6.9	8.5	2.75	318
Dalit (Hill)	12.2	16.9	27.9	20.9	9.9	5.8	6.4	2.48	172
Other	8.7	20.3	29.0	10.1	21.7	5.8	4.3	2.52	69
Total	7.4	20.2	30.4	20.8	11.4	5.5	4.4	2.47	2,203
Total (n)	162	445	669	458	250	120	97		

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Severely hit districts had higher fertility rates than other domains as well as lower rates of ANC visits. In addition, households in severely hit districts were keener to have additional children (22.4% wanted more) than households in both crisis-hit districts (19.2%) and Kathmandu Valley (17.5%). In seeking an explanation for the desire for more children, it is important to consider that Kathmandu Valley includes Kathmandu, Lalitpur and Bhaktapur districts, which although they are designated as urban areas, it is rural and traditional social settings that prevail (Table 9.18). It is also crucial to factor in the total number of children aged 0-14 who died (Table 8.3) and the fact that child deaths comprised 29 percent of the total deaths. The fact that the demand for additional children declined gradually from severely hit districts to crisis-hit districts to Kathmandu valley supports the claim established above that poor districts had high fertility rates and weak structures that were easily damaged and thereby resulted in higher casualty rates.

Table 9.18: Percent distribution of married women (15-49 years) willing to have another child and years of birth spacing planned after the date of survey

Background variables	Willing to give birth	Total (n)	Years of birth spacing planned after the survey date							Total (n)
			<1	1	2	3	4	5	>5	
Domain										
Severely hit	22.4	1,137	26.0	5.1	23.2	18.1	8.7	14.6	4.3	254
Crisis-hit	19.2	595	23.0	5.3	22.1	22.1	12.4	11.5	3.5	113
Kathmandu Valley	17.6	472	31.7	4.9	23.2	11.0	11.0	15.9	2.4	82
Residence										
Rural	21.7	1,459	25.4	5.4	22.9	17.8	9.5	14.6	4.4	315
Urban	18.1	744	27.6	4.5	23.9	17.2	11.9	12.7	2.2	134
Type of family										
Nuclear	14.7	1,216	33.9	5.6	25.6	13.9	3.9	14.4	2.8	180
Joint or extended	27.6	987	20.9	5.1	21.2	20.1	14.3	13.9	4.4	273
Sex of HH head										
Male	19.7	1,800	26.1	6.0	21.3	19.3	9.9	13.6	3.7	352
Female	24.1	403	25.8	2.1	29.9	11.3	10.3	16.5	4.1	97
Occupation of respondents										
Agriculture	17.6	1,190	27.6	5.2	18.6	18.6	12.4	13.3	4.3	210
Self-employed in non-agri.	20.5	137	30.8	7.7	34.6	7.7	3.8	15.4	0.0	26
Wage worker	32.0	50	6.3	6.3	37.5	25.0	0.0	12.5	12.5	16
Salaried worker	28.9	97	10.7	3.6	28.6	7.1	17.9	25.0	7.1	28
HH work/student/other	23.3	739	27.3	5.2	24.4	18.6	8.1	13.4	2.9	172
Education of respondents										
No education	7.0	700	34.0	4.0	38.0	12.0	4.0	4.0	4.0	50
Primary & NFE	14.9	638	37.5	4.2	16.7	11.5	13.5	14.6	2.1	96
Secondary	31.4	468	23.0	4.7	19.6	23.6	7.4	16.9	4.7	148
Higher than secondary	40.3	395	19.5	6.3	25.8	17.6	12.6	13.8	4.4	159
Religion										
Hindu	18.1	1,462	25.1	4.9	22.1	19.4	11.4	14.4	2.7	263
Bouddha	23.9	586	30.5	5.7	20.6	14.9	9.2	12.8	6.4	141
Kirant	40.0	35	28.6	0.0	21.4	0.0	14.3	21.4	14.3	14
Christian	27.7	119	11.8	5.9	38.2	23.5	5.9	14.7	0.0	34
Caste/ethnicity										
Brahman (Hill)	13.3	300	12.5	7.5	20.0	27.5	20.0	12.5	0.0	40
Chhetri/Thakuri	17.6	397	18.6	4.3	22.9	21.4	8.6	20.0	4.3	70
Tamang	23.9	569	28.1	7.4	20.7	15.6	9.6	12.6	5.9	135
Newar	18.0	378	30.4	5.8	27.5	11.6	8.7	14.5	1.4	69
Other Hill Janajatis	24.8	318	28.8	1.3	23.8	16.3	10.0	16.3	3.8	80
Dalit (Hill)	22.1	172	28.9	5.3	21.1	26.3	10.5	7.9	0.0	38
Other	29.0	69	28.6	0.0	28.6	9.5	9.5	14.3	9.5	21
Total	20.5	2,203	25.9	5.3	23.0	17.5	10.2	14.2	4.0	451
Total (n)	451		117	24	104	79	46	64	18	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

9.2.10 Reasons for postponement of birth

Nearly one in five (18.3%) married woman of reproductive age reported that they were planning to postpone their next child by at least one year due to the earthquake. Other reasons included that mothers' youngest children were still too young (59.6%), spouses were not currently living together (9.9%), women were involved in their studies (3.9%), and couples did not desire another child (3.0%). The proportion of women who postponed birth due to the earthquake was highest in Kathmandu Valley (28.6%) among domains and slightly higher in rural (18.6%) than urban (17.3%) areas (Table 9.19).

The percentages of earthquake-induced postponement were high among nuclear (21.8%) and male-headed (19.2%) families, as well as among those whose heads were wage workers (20.0%) or farmers (19.9%) or whose members had no education (36.4%). Christians (23.3%) and other Hill Janajatis (19.6%) and Newar (20.8%) also had above average rates. Clearly, the earthquake had a real impact on fertility. Postponement of birth by at least a year can affect in the number of children ever born and total fertility in the long run.

Table 9.19: Percent distribution of married women (15-49 years) by reasons for planning to delay birth for at least one year

Background variables	Earthquake	Latest child still too young	Currently not living together with spouse	Study	No desire right now	Other*	Total (n)
Domain							
Severely hit	18.0	58.2	12.7	3.2	2.6	5.3	189
Crisis-hit	12.6	70.1	6.9	3.4	2.3	4.6	87
Kathmandu Valley	28.6	50.0	3.6	7.1	3.6	7.1	56
Residence							
Rural	18.6	62.3	9.7	3.4	2.5	3.4	236
Urban	17.3	53.1	10.2	5.1	4.1	10.2	98
Type of family							
Nuclear	21.8	54.6	8.4	5.9	2.5	6.7	119
Joint or extended	16.3	62.3	10.7	2.8	3.3	4.7	215
Sex of HH head							
Male	19.2	61.2	6.9	5.0	2.7	5.0	260
Female	15.1	54.8	20.5	0.0	2.7	6.8	73
Occupation of respondents							
Agriculture	19.9	60.3	9.3	1.3	4.6	4.6	151
Self-employed in non-agri.	16.7	55.6	5.6	11.1	0.0	11.1	18
Wage worker	20.0	73.3	0.0	0.0	0.0	6.7	15
Salaried worker	4.0	68.0	16.0	4.0	0.0	8.0	25
HH work/student/other	19.0	55.6	11.9	6.3	2.4	4.8	126
Education of respondents							
No education	36.4	42.4	9.1	0.0	3.0	9.1	33
Primary & NFE	8.2	73.8	9.8	1.6	0.0	6.6	61
Secondary	15.9	61.1	9.7	4.4	4.4	4.4	113
Higher than secondary	20.9	55.8	10.1	5.4	3.1	4.7	129
Religion							
Hindu	17.8	56.3	11.2	4.1	4.1	6.6	197
Bouddha	17.3	67.3	9.2	1.0	2.0	3.1	98
Kirant	20.0	30.0	20.0	30.0	0.0	0.0	10
Christian	23.3	63.3	0.0	6.7	0.0	6.7	30
Caste/ethnicity							
Brahman (Hill)	15.2	66.7	6.1	6.1	3.0	3.0	33
Chhetri/Thakuri	19.3	45.6	14.0	5.3	5.3	10.5	57
Tamang	18.4	65.3	7.1	2.0	2.0	5.1	98
Newar	20.8	56.3	6.3	4.2	4.2	8.3	48
Other Hill Janajatis	19.6	66.1	10.7	0.0	0.0	3.6	56
Dalit (Hill)	17.9	57.1	14.3	3.6	7.1	0.0	28
Other	15.4	46.2	15.4	23.1	0.0	0.0	13
Total	18.3	59.6	9.9	3.9	3.0	5.4	334
Total (n)	61	199	33	13	10	18	

*Other reasons include being recently married, too busy, too young, economic hardship, the desire fora son and the death of a child after a live birth.

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

The research sought to discover whether or not people were avoiding immediate childbirth due to the earthquake. Almost half of the respondents (52.1%) completely agreed that people were indeed putting off having a baby. Those sub-categories which had the highest percentages of complete agreement were severely hit districts (54.6%) among domains, rural (52.3%) residences, nuclear (52.1%) family types, female-headed households (52.3%), household heads self-employed in a non-agricultural sector (53.5%), households with at least one member with a tertiary education (55.4%), Christian (56.1%) households, and Hill Brahmin (55.4%) among caste and ethnic groups (Table 9.20).

Though the results suggest that advantaged groups were more likely to be in complete agreement that the earthquake had resulted in a postponement of birth, the fact that these groups were not significantly higher than the average signified that opinion was not strongly skewed. It was clear that

the earthquake was the major reason that the surveyed households had postponed birth by at least by one year.

Table 9.20: Percent distribution of respondents according to opinions about claim that in an extraordinary situation like that after an earthquake, people avoid giving birth

Background variables	Completely agree	Partially agree	Indifferent	Completely disagree	Partially disagree	Total (n)
Domain						
Severely hit	54.6	26.6	12.0	4.2	2.6	1,601
Crisis-hit	46.3	27.2	13.8	7.6	5.2	791
Kathmandu Valley	53.0	18.3	20.2	7.6	1.0	608
Residence						
Rural	52.3	25.3	14.1	4.8	3.5	2,005
Urban	51.5	24.5	14.4	7.7	1.9	996
Type of family						
Nuclear	52.1	25.4	14.6	5.5	2.5	1,830
Joint or extended	52.0	24.6	13.4	6.2	3.7	1,169
Sex of HH head						
Male	52.0	25.3	13.8	5.7	3.3	2,381
Female	52.3	24.2	15.7	6.0	1.8	619
Occupation of HH head						
Agriculture	52.2	25.1	14.7	5.3	2.7	1,785
Self-employed in non-agri.	53.5	25.6	11.1	5.7	4.0	297
Wage worker	51.7	23.8	11.9	9.2	3.4	294
Salaried worker	53.2	27.1	10.8	4.4	4.4	203
HH work/student/other	50.1	24.2	17.3	6.2	2.1	421
Highest education of HH member						
No education	42.0	26.4	27.6	3.4	0.6	174
Primary & NFE	44.1	27.7	17.6	7.9	2.7	329
Secondary	52.6	24.0	15.3	5.1	3.1	976
Higher secondary	54.2	25.2	11.4	5.8	3.3	1,106
Higher	55.4	24.5	10.6	6.7	2.9	417
Religion						
Hindu	53.6	24.8	13.4	5.4	2.9	1,964
Bouddha	48.4	25.8	16.1	6.4	3.4	831
Kirant	41.2	27.5	25.5	5.9	0.0	51
Christian	56.1	23.9	9.7	7.1	3.2	155
Caste/ethnicity						
Brahman (Hill)	55.4	26.7	8.8	4.3	4.8	397
Chhetri/Thakuri	54.1	22.4	15.9	5.3	2.3	567
Tamang	48.8	23.0	16.9	7.3	4.0	782
Newar	53.3	23.2	13.9	7.0	2.7	488
Other Hill Janajatis	52.4	30.1	12.6	3.4	1.6	445
Dalit (Hill)	52.8	28.9	10.6	5.1	2.6	235
Other	43.2	26.1	21.6	9.1	0.0	88
Total	52.1	25.1	14.1	5.8	3.0	3,000
Total (n)	1,562	752	424	173	89	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

9.3 The impact of the earthquake on children's health

Children's health is closely associated with fertility and total reproductive health as well as safe motherhood-related practices. Children's health influences the total time mothers and fathers need to spend on childcare and often determines the participation of mothers in income-generating as well as social and community activities. Since children's health affects on mortality and fertility in general, it was included in this study. This section considers children's health, focusing on breastfeeding, nutrition (Table 9.21), and pregnancy loss.

Table 9.21: Percent distribution of married women (15-49 years) who regularly breastfeed their latest child aged 2 years or below before and after the earthquake and by whether fed milk that received in relief

Background variables	Regular breastfeeding			Whether fed milk that received in relief			Total (n)
	Before earthquake	After earthquake	Increment in Breastfeeding	Yes	No	Not received milk in relief	
Domain							
Severely hit	67.2	95.6	28.4	13.6	12.8	73.6	250
Crisis-hit	75.0	96.3	21.3	9.3	29.6	61.1	108
Kathmandu Valley	62.5	95.8	33.3	2.1	18.8	79.2	48
Residence							
Rural	70.5	96.7	26.2	13.3	16.2	70.5	308
Urban	63.3	92.9	29.6	5.1	22.4	72.4	98
Type of family							
Nuclear	71.3	94.6	23.3	15.6	14.4	70.1	167
Joint or extended	67.2	96.7	29.5	7.9	20.5	71.5	238
Sex of HH head							
Male	69.1	95.2	26.1	10.9	17.6	71.5	330
Female	68.0	98.7	30.7	13.3	18.7	68.0	75
Occupation of respondent							
Agriculture	72.9	96.3	23.4	11.8	18.2	70.1	188
Self-employed in non-agri.	73.3	93.3	20.0	13.3	13.3	73.3	15
Wage worker	58.3	83.3	25.0	27.3	36.4	36.4	12
Salaried worker	83.3	95.8	12.5	4.2	29.2	66.7	24
Other	62.3	95.8	33.5	10.2	15.0	74.9	167
Education of respondent							
No education	79.2	91.8	12.6	12.3	11.0	76.7	72
Primary & NFE	63.5	96.9	33.4	13.4	17.5	69.1	96
Secondary	64.7	98.3	33.6	15.7	17.4	67.0	116
Higher than secondary	71.1	95.0	23.9	5.0	23.1	71.9	121
Religion							
Hindu	65.4	96.7	31.3	5.0	15	80	240
Bouddha	73.3	97.4	24.1	16.2	23.1	60.7	116
Kirant	66.7	85.7	19.0	0.0	0.0	100.0	6
Christian	76.2	88.1	11.9	33.3	23.8	42.9	42
Caste/ethnicity							
Brahman (Hill)	67.5	97.5	30.0	5.0	17.5	77.5	40
Chhetri/Thakuri	71.6	100.0	28.4	4.5	7.5	88.1	67
Tamang	75.0	95.4	20.4	18.3	21.4	60.3	132
Newar	69.2	94.9	25.7	7.7	25.6	66.7	39
Other Hill Janajatis	54.2	92.8	38.6	11.9	21.4	66.7	83
Dalit (Hill)	81.8	97.0	15.2	6.1	12.1	81.8	33
Other	50.0	83.3	33.3	15.4	15.4	69.2	12
Total	68.7	95.8	27.1	11.4	17.8	70.9	405
Total (n)	279	388		46	72	287	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

9.3.1 Breastfeeding

Breastfeeding increased by almost 27 percent, from slightly over two-thirds (68.7%) before the earthquake to 96 percent thereafter. The reasons for the increase in breastfeeding ranged from less involvement in activities outside the home to school closure. Women explained that there was a hiatus in all activities outside the home after the earthquake, so mothers were with their children all the time and could, practically speaking, breastfeed regularly. Another reason was psychological: since mothers had observed other children die and were frightened by those deaths, they demonstrated their love and affection more overtly than usual (Table 9.21).

The majority of the mothers (69.4%) stopped breastfeeding their children because they were older than 18 months; only a few (17 mothers, or 3.6%) had to stop breastfeeding even if their children were less than six months old (Table 9.22). The reasons the 17 mothers gave for not breastfeeding

their children included its being inappropriate due to the earthquake (37.7%), being injured or sick themselves (32.8%), being pregnant (25.9%), and being unable to produce breast milk (3.6%).

Table 9.22: Percent distribution of married women (15-49 years) by reason for not breastfeeding the latest child aged 2 years or below after the earthquake and age of child at the time of weaning

Reason for not breastfeeding	%	Age of child (in months)	%
Being inappropriate due to the earthquake	37.7	≤ 6	3.6
Being injured or sick oneself	32.8	7 – 12	8.2
Being pregnant	25.9	13 – 18	18.7
Being unable to produce breast milk	3.6	> 18	69.4
Total	100.0	Total	100.0
Total (n)	17	Total (n)	17
		Average age (in months)	20.2

9.3.2 Nutrition

The nutritional status of children in the post-earthquake period was not directly measured by the survey, but information about the major determinant of their nutritional status, the nature and frequency of feeds during the 24 hours before the interview, was collected. During the 24 hours before the interview, 95 percent of mothers had breastfed their children under two. More than half (53.8%) had breastfed their children more than eight times and more than one third (34.4%) mothers had fed their children more than five times. More than half (53.4%) had fed their children liquids, the majority (51.8%), three or four times. About 57 percent of mothers fed their children solid items, the majority (54.4%), three or four times (Table 9.23). This level of feeding illustrates that the families were very concerned about the wellbeing of their children. Adequate quantities of good-quality food were not always available, but families were very aware about the dietary needs of children.

Table 9.23: Percent distribution of married women (15-49 years) who fed breast milk, liquid items and solid food stuffs to the latest child aged 2 years or below in the last 24 hours and number of times fed

Fed in last 24 hours	%	Number of times fed	Breast milk	Liquids	Solid foods
Breast milk	95.3	Up to 2	1.3	36.2	34.7
Liquids (milk, lentil soup, Lactogen*, juice, etc.)	53.4	3-4	10.5	51.8	54.4
Solid foods (rice, *Lito***, fruits, etc.)	57.4	5-6	16.8	10.1	8.0
Total (n)	405	7-8	17.6	0.7	1.2
		> 8	53.8	1.1	1.7
		Total	100.0	100.0	100.0
		Total (n)	386	216	232
		Average	7.5	3.1	3.1

*The brand name of a commonly fed infant formula.
**A high-protein infant-weaning food often containing soybeans and wheat or other combination of legumes and cereals.
Note: Multiple responses possible for items fed in the last 24 hours.

9.3.3 Loss of pregnancy

Altogether 115 women experienced a pregnancy loss in the year before the earthquake; fourteen experienced pregnancy losses afterwards, but only six cases were directly related to the earthquake. As participants from the Danuwar community reported, some pregnant women gave birth prematurely.

Pregnant women and new mothers faced several challenges. The Hayu community reported, "*[Pregnant women] suffered severely due to the harsh winter cold during winter and were badly affected by the common cold.*" The Pahari community in Lalitpur highlighted others, like living in a tent after delivery and living outdoors in the winter. They said that it was very difficult to protect and care for both mothers and children, particularly in terms of providing them with timely treatment and care and support during delivery. A few remarked, "*Some children were born while the earthquake and*

aftershocks were occurring and their timely care has been one of the most serious problems we have ever faced in our lives."

Women reported that excessive workloads were a contributing factor to pregnancy loss both before (22.7%) and after (17.6%) the earthquake. Uterine problems (before, 9.8%; after, 9.0%), lack of knowledge (9.6%), and inaccessibility of birthing centres (6.9%) were other reasons that could have been controlled and corrected. Some 16 percent of women reported that, before the earthquake, their pregnancies had been terminated because of the physical violence of their husbands (Table 9.24). Large proportions of women before (34.5%) and after (33.8%) were unaware of the reason for their pregnancy loss, and it can be assumed that some gender violence is also hidden in these proportions. The gender discriminatory behaviour prevailing in society appears to still be a factor in unsuccessful pregnancies.

Table 9.24: Percent distribution of married women (15-49 years) experiencing a pregnancy loss and reason for the loss before and after the earthquake

Pregnancy loss	Before EQ	After EQ	Reason for pregnancy loss	Before EQ	After EQ
Yes	5.3	0.7	Excessive workload	22.7	17.6
No	94.7	99.3	Uterine problem	9.8	9.0
Total	100.0	100.0	Lack of knowledge	9.6	-
Total (n)	2,203	2,203	Birthing centre not accessible	6.9	-
			Physical violence by husband	16.4	-
			Earthquake	-	39.6
			Don't know	34.5	33.8
			Total	100.0	100.0
			Total (n)	115	14

EQ: Earthquake

Conclusion

More women than men died due to the earthquake as they were inside their homes and often risk their own lives in an attempt to save their children. This difference implies that women are more vulnerable than men due to their gender roles. Several gaps in the availability of health services after the earthquake were observed, including in ANC, suggesting that there could be future adverse effects on women's reproductive health and childbirth. Increased institutional delivery, especially in birthing centers, was attributable primarily to lack of a conducive environment for delivery at home. The figure for children ever born was slightly lower than the national average.

Severely hit areas reported a higher fertility rate and lower rate of ANC visits than other domains. Willingness to have additional babies was also higher in severely hit districts than in crisis-hit districts and in Kathmandu valley. The fact that the demand for additional children declined gradually from severely hit districts to crisis-hit districts to Kathmandu Valley supported the postulate established above that poorer districts had higher fertility rates than richer ones as well as weaker structures that suffered more damaged and therefore resulted in more casualties.

The earthquake was the major reason that many surveyed households postponed birth by at least by one year. On average, the rate of regular breastfeeding increased by one-third among married women of reproductive ages who had a child aged two years or less in the period after the earthquake.

Families were very concerned about the wellbeing of their children. Good-quality food in sufficient quantities was not always available but awareness about the nutritional requirements of children was high. Only in six cases was the loss of pregnancy attributed to the earthquake. Other reasons both before and after the earthquake were excessive workloads, uterine problems, lack of knowledge, and inaccessibility of birthing centers, all that could have been controlled and corrected.

Chapter X
Earthquake and Population Mobility

Disaster has an impact on population mobility that is manifested worldwide as disaster-induced migration, much of which is forced. To see the impact a disaster has on population mobility, we must compare population flows before and after the disaster.

In the case of 25 April, 2015, earthquake in Nepal, the reference period for migration data was data collected the year before the earthquake. After the earthquake, people went missing, were displaced, or were forced to flee from the place where they used to reside. Analyzing migration data in this multifaceted situation is a challenging task because of what is known as the "voluntary-forced dichotomy,"[17] or the difficulty in segregated migration willingly embarked upon and that which the disaster compels.

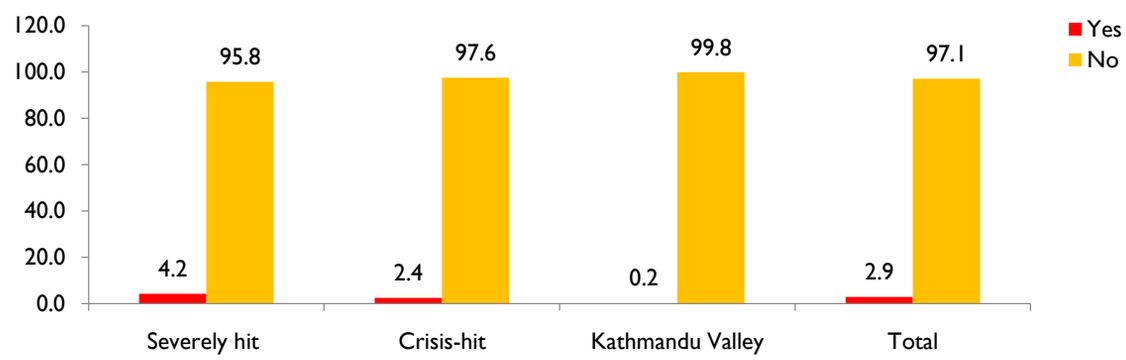
10.1 Impacts of the earthquake on migration

10.1.1 Displacement

Disasters displace people due to three main kinds of threats: direct, indirect and perceived. Direct displacement is a situation in which people are forced to leave their original place because they have been directly impacted. For example, their house has collapsed in an earthquake or been buried by a landslide. Indirect displacement occurs when people whose house is not directly impacted nonetheless move because they have observed a direct impact on others or are at risk of a direct impact themselves. People are also displaced due to perceived threats: because they hear bad news about their locality, they are reluctant to stay.

The study of displacement is still relatively new: it dates to the framing of "Guiding Principles of Internal Displacement" by the UN in 1998. This document defines displaced people as "persons or groups of persons who have been forced or obliged to flee or leave their homes or places of habitual residence."This is the definition adopted to analyze the situation after the April 2015 earthquake.

Figure 10.1: Percent of households reporting at least one member displaced due to the earthquake



Of the 3,000 surveyed households, only 87 (2.9%) reported that at least one family member had been displaced due to earthquake. The rate of displacement was considerably higher in crisis-hit districts, where 4 percent (67 households) were displaced due to earthquake. The proportions of displaced people were 4 percent each from rural areas and nuclear families, and 3 percent among female-headed households (Table 10.1).

[17] A term first used by Shanmuguratnam (2006) to analyze displacement in Sri Lanka due to political conflict.

About 7 percent of households among those whose heads were wage workers, had displaced family members after the earthquake followed by those engaged in self-employed in non-agricultural sector (4.0%), agriculture (1.1%) and salary workers (0.5%). But the largest proportion (8.8%) comprised among those households whose heads were engaged in occupations other than mentioned above.

According to caste/ethnicity, it was among the Tamang communities which had the largest proportion of households (8.2%) with displaced family members. Six percent of households among caste/ethnicity of 'other' category had any family member displaced after the earthquake followed by 3 percent among Dalits and less than one percent each among Brahmans and Newars households respectively. But there was none among Chhetri/Thakuri households.

Table 10.1: Percent distributions of households with at least one member displaced due to the earthquake; and displaced population by main reason and place of displacement

Background variables	HH with displaced member		Main reason for displacement of population		Place of displacement				Total (n)
	%	Total (n)	Complete-ly damaged house	Landslide caused unsuitable to live in origin place	Same village/ location	Different village, but same district	Different district	Foreign country	
Domain									
Severely hit	4.2	1,601	15.5	84.5	2.3	94.6	2.3	0.8	258
Crisis-hit	2.4	792	28.8	71.3	41.3	51.3	7.5	0.0	80
Kathmandu Valley	0.2	607	100.0	0.0	50.0	50.0	0.0	0.0	2
Residence									
Rural	4.3	2,004	17.2	82.8	9.9	85.8	3.6	0.6	332
Urban	0.1	996	100.0	0.0	100.0	0.0	0.0	0.0	8
Type of family									
Nuclear	4.3	1,830	17.2	82.8	9.4	87.9	2.0	0.7	297
Joint or extended	0.8	1,169	32.6	67.4	30.2	55.8	14.0	0.0	43
Sex of HH head									
Male	2.8	2,381	22.1	77.9	11.4	84.9	3.7	0.0	272
Female	3.4	618	7.4	92.6	14.5	79.7	2.9	2.9	68
Occupation of HH head									
Agriculture	1.1	1,786	21.1	78.9	34.2	52.6	13.2	0.0	76
Self-employed in non-agri.	4.0	298	45.8	54.2	31.9	68.1	0.0	0.0	48
Wage worker	6.5	294	6.3	93.7	0.0	100.0	0.0	0.0	79
Salaried worker	0.5	203	100.0	0.0	0.0	100.0	0.0	0.0	4
Other	8.8	420	13.5	86.5	0.0	97.0	1.5	1.5	133
Highest edu. of HH member									
No education	1.2	173	0.0	100.0	0.0	100.0	0.0	0.0	3
Primary & NFE	7.9	329	3.4	96.6	3.4	92.1	2.2	2.2	88
Secondary	3.8	976	24.4	75.6	17.4	76.1	6.5	0.0	156
Higher secondary	2.0	1,106	27.3	72.7	10.2	89.8	0.0	0.0	88
Higher	0.5	418	0.0	100.0	40.0	60.0	0.0	0.0	5
Religion									
Hindu	0.6	1,968	50.0	50.0	36.4	63.6	0.0	0.0	44
Bouddha	0.6	828	70.0	30.0	0.0	50.0	50.0	0.0	20
Kirant	8.2	49	0.0	100.0	100.0	0.0	0.0	0.0	14
Christian	43.9	155	11.1	88.9	3.8	94.6	0.8	0.8	261
Caste/ethnicity									
Brahman (Hill)	0.5	397	62.5	37.5	0.0	100.0	0.0	0.0	8
Chhetri/Thakuri	0.0	567	17.0	-	-	-	-	-	-
Tamang	8.2	781	100.0	83.0	0.0	95.3	4.7	0.0	253
Newar	0.2	487	4.2	0.0	100.0	0.0	0.0	0.0	8
Other Hill Janajatis	2.9	445	100.0	95.8	51.0	49.0	0.0	0.0	48
Dalit (Hill)	0.9	235	0.0	0.0	85.7	14.3	0.0	0.0	7
Other	5.7	88		100.0	12.5	75.0	0.0	12.5	16
Total	2.9	3,000	19.1	80.9	12.1	83.8	3.5	0.6	340
Total (n)	87		65	275	41	285	12	2	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.
NFE: Non-formal education

The screening survey revealed that land in many places in the 14 most earthquake-affected districts was cracked and that this fact had forced people to leave their original places of residence. FGD participants during the main field study explained that much of the displacement was temporary: *"All*

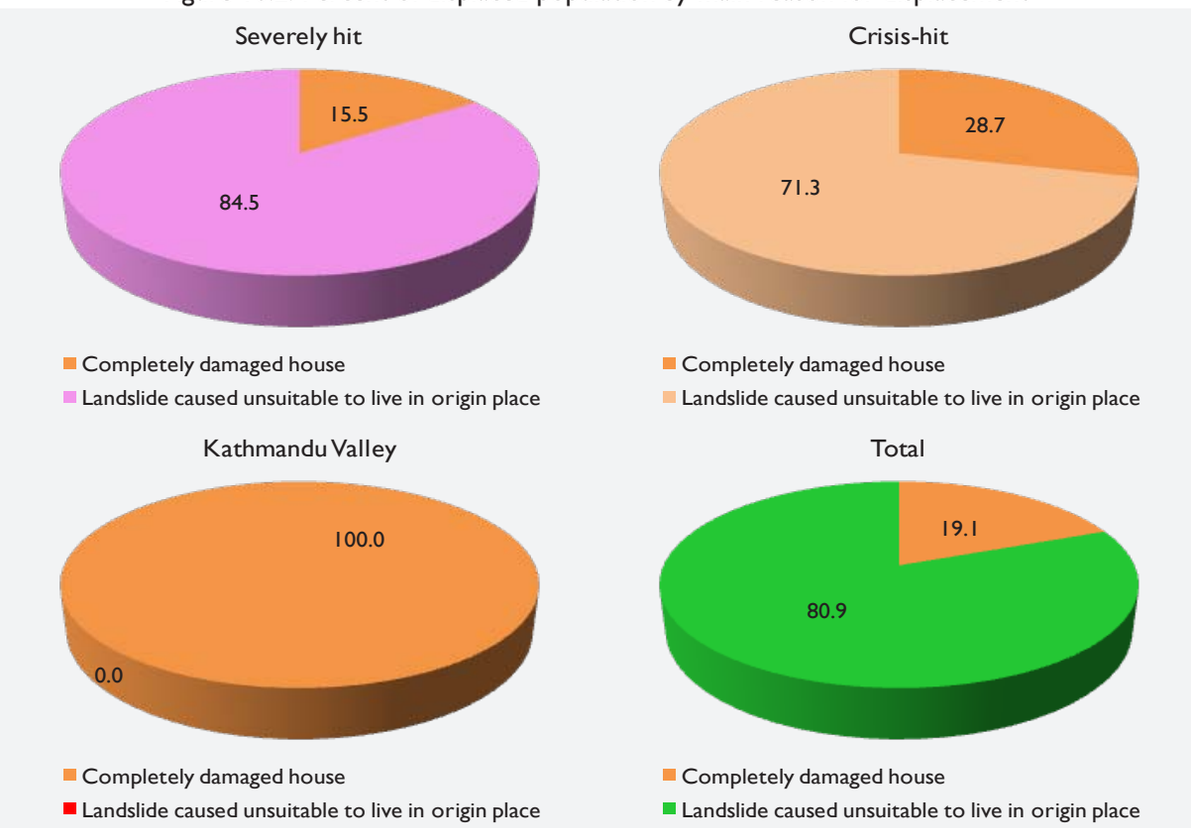
people were displaced in the beginning due to the effect of the earthquake, but now almost 75 percent have returned to their own places."

10.1.2 Reasons for displacement

At the time of the survey, 340 members of 87 households were still displaced due to the earthquake. Respondents identified two main reasons for their displacement. Over 80 percent reported that landslides had rendered their place of origin unsuitable for habitation while one-fifth (19.1%) said that their houses had been completely damaged. In Kathmandu Valley the only reason for displacement was the destruction of the respondent's house (Figure 10.2).

These findings help us conclude that the earthquake had a direct impact on the displaced population, forcing them to flee their original places of residence due to the fear of physical harm. Some indirect impact was also observed – some people left home to seek livelihood opportunities.

Figure 10.2: Percent of displaced population by main reason for displacement



10.1.3 Place of destination

Locating a safe place as their destination is the priority of displaced people, but most have no plan about where to go and no way to determine which place is safest. Besides, a disaster like an earthquake makes every place in a wide area unsafe. It is human nature for people, being social creatures, to "go with the flow" and follow other people in the same situation and adopt the same destination. Most of the displaced people (83.8%) in this study moved from their places of origin to different villages in the same district. Another 12 percent stayed in the same village of location. The percentage of displaced people who moved to a different village in the same district was highest (94.6%) in severely hit districts (Figure 10.3). The proportion of displaced people who moved to foreign countries was negligible.

Figure 10.3: Percent of displaced population by place of destination

10.1.4 Migration before the earthquake

Migration in both its domestic and international dimensions is a common phenomenon in Nepal. Traditionally, most migration took place within the country's borders or across the border to India. But Nepal's entry into the global economy has since re-defined these historical trends, and now Nepalis can be found all over the globe.

Of the 3,000 households surveyed, only 221 households (7.4%) reported that at least one member of their family migrated in the year before the earthquake and had not returned after the earthquake. About 9 percent households each from rural areas and joint or extended families had at least one member who out-migrated or emigrated. Similarly, 15 percent from female-headed households 8 percent households with agriculture as main occupation and 10 percent households with member attending only primary education as highest educational attainment, that is, up to grade 5, had at least one member who out-migrated or emigrated (Table 10.2).

Table 10.2: Percent distributions of households with at least one member who had out migrated or emigrated in the one year period before the earthquake and migrant population by age group

Background variables	HH with any member migrated		Age group of migrant population								Total (n)
	%	Total (n)	< 15	15-19	20-24	25-29	30-34	35-39	40-49	50 & +	
Domain											
Severely hit	10.0	1,601	9.5	5.5	26.9	22.9	9.0	10.9	14.4	1.0	201
Crisis-hit	5.6	792	9.5	12.2	29.7	14.9	16.2	6.8	5.4	5.4	74
Kathmandu Valley	2.8	607	11.5	3.8	26.9	34.6	15.4	7.7	0.0	0.0	26
Residence											
Rural	8.5	2,004	9.8	8.1	29.1	19.2	10.7	11.1	11.1	0.9	234
Urban	5.0	996	9.0	3.0	22.4	31.3	13.4	4.5	10.4	6.0	67
Type of family											
Nuclear	6.3	1,830	13.7	8.5	28.8	15.7	10.5	11.8	9.8	1.3	153
Joint or extended	9.1	1,169	5.5	5.5	26.7	28.8	11.6	7.5	12.3	2.1	146
Sex of HH head											
Male	5.4	2,381	11.3	6.5	33.3	28.5	9.7	4.3	4.8	1.6	186
Female	15.0	618	7.1	8.0	18.6	11.5	13.3	18.6	21.2	1.8	113
Occupation of HH head											
Agriculture	8.2	1,786	8.7	6.7	29.2	19.5	11.8	10.8	11.8	1.5	195
Self-employed in non-agri.	5.7	298	12.0	8.0	32.0	24.0	8.0	8.0	8.0	0.0	25
Wage worker	5.8	294	21.7	13.0	30.4	26.1	8.7	0.0	0.0	0.0	23
Salaried worker	4.5	203	11.1	5.6	16.7	11.1	27.8	5.6	11.1	11.1	18
Other	7.4	420	5.4	2.7	21.6	35.1	2.7	13.5	16.2	2.7	37
Highest edu. of HH member											
No education	4.0	173	25.0	0.0	50.0	25.0	0.0	0.0	0.0	0.0	8
Primary & NFE	10.0	329	15.4	11.5	13.5	23.1	13.5	11.5	11.5	0.0	52
Secondary	8.0	976	7.8	5.8	35.0	17.5	11.7	8.7	13.6	0.0	103
Higher secondary	7.4	1,106	9.2	6.4	24.8	26.6	10.1	11.0	9.2	2.8	109
Higher	5.0	418	7.1	3.6	32.1	21.4	10.7	7.1	10.7	7.1	28
Religion											
Hindu	7.1	1,968	9.6	6.6	24.4	22.3	12.7	9.6	12.7	2.0	197
Bouddha	8.1	828	8.0	3.4	37.9	21.8	9.2	10.3	9.2	0.0	87
Kirant	4.1	49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	2
Christian	9.0	155	20.0	33.3	13.3	20.0	0.0	13.3	0.0	0.0	15
Caste/ethnicity											
Brahman (Hill)	7.1	397	14.3	8.2	18.4	18.4	12.2	14.3	10.2	4.1	49
Chhetri/Thakuri	7.4	567	7.3	3.6	23.6	30.9	10.9	9.1	14.5	0.0	55
Tamang	7.4	781	9.6	8.2	41.1	17.8	6.8	9.6	6.8	0.0	73
Newar	4.3	487	6.5	6.5	35.5	32.3	3.2	3.2	6.5	6.5	31
Other Hill Janajatis	12.6	445	13.5	6.8	23.0	18.9	14.9	12.2	10.8	0.0	74
Dalit (Hill)	4.7	235	0.0	7.7	23.1	15.4	15.4	0.0	38.5	0.0	13
Other	5.7	88	0.0	0.0	0.0	16.7	33.3	16.7	0.0	33.3	6
Total	7.4	3,000	9.6	7.0	27.6	21.9	11.0	10.0	11.0	2.0	301
Total (n)	221		29	21	83	66	33	30	33	6	

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

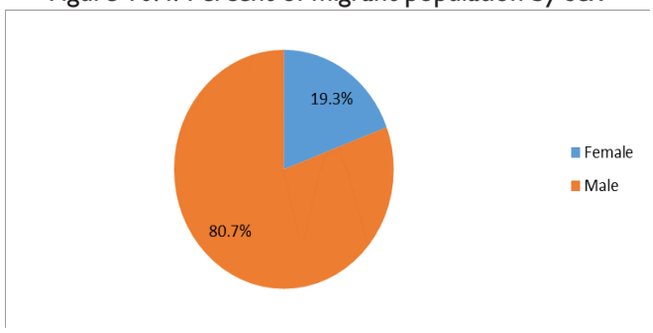
10.1.5 Age and sex of migrant population

A total of 301 people from 221 households migrated in the year before the earthquake. Male migrants (80.7%) outnumbered females (19.3%) by a ratio of nearly five is to one (Table 10.3).

Table 10.3: Percent distribution of migrant population by age and sex who migrated in the one year period before the earthquake by age and sex

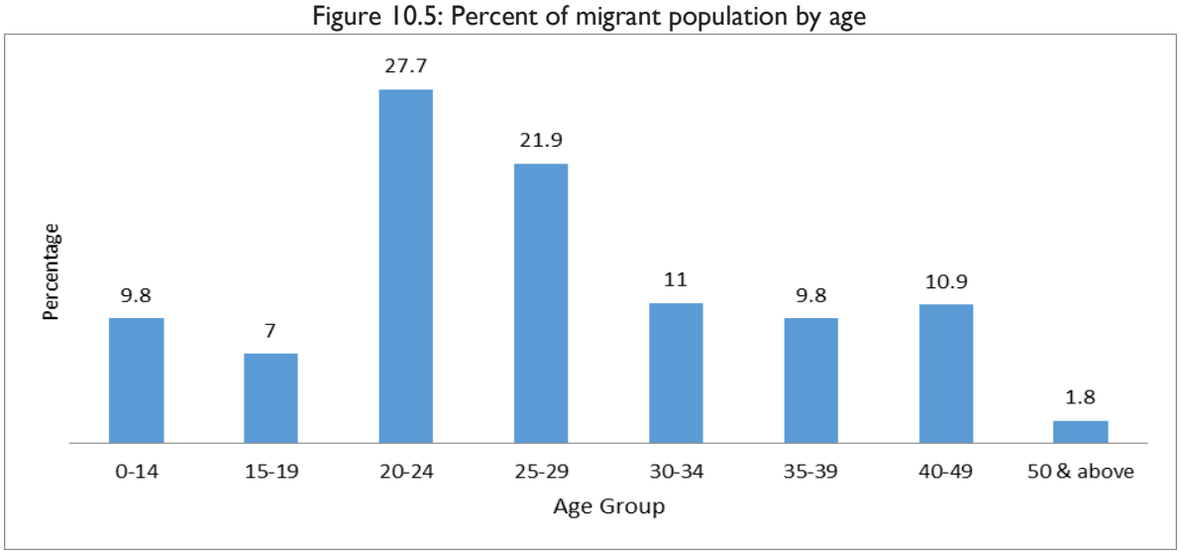
Age group	Sex of migrant					
	Male		Female		Total	
	Number	Percent	Number	Percent	Number	Percent
0-14	23	9.6	6	10.4	29	9.8
15-19	9	3.9	12	20.4	21	7.0
20-24	70	28.9	13	22.5	83	27.7
25-29	55	22.4	11	19.8	66	21.9
30-34	26	10.8	7	11.8	33	11.0
35-39	23	9.5	6	11.1	30	9.8
40-49	32	13.2	1	1.4	33	10.9
50 & above	4	1.6	2	2.7	6	1.8
Total	243	100.0	58	100.0	301	100.0

Figure 10.4: Percent of migrant population by sex



In terms of age, almost half of all migrants (49.6%) fall in the age group 20-29 years, and 11 percent in the age group 30-44. The former age group, which consists largely of individuals who have recently joined the workforce, can be considered to be the most active and most mobile category of individuals. The proportion of migrants is higher among males than females across all age groups except the age group 15-19. Among female migrants, 20 percent are 15-19 years age group whereas the percentage share is only 4 among the male of the same age group (Figure 10.5).

Figure 10.5: Percent of migrant population by age



FGD participants from Nuwakot, Sindhuli, Kathmandu, and Sindhupalchowk noted that there was a surge in labour migration abroad in search of work after the earthquake. The Jirel and Tamang communities noted that it was youth especially who were increasingly going abroad to earn money to sustain their households. The Newar communities in Kathmandu and Bhaktapur stated, "*We have seen households send members abroad by taking loan from the bank.*" A number of participants also noted a rise in the numbers of people moving to cities.

Economic status helped determine whether or not migration was a possibility. The Dalit community from Dhading, for example, remarked that almost all the households in their communities were poor and that, for this reason, they could note even consider foreign labour migration as an option. Dalits in Sindhupalchowk, Makwanpur and Rasuwa noted how steep the loans taken to finance migration were: "*Many people went abroad; they even took loans up to NPR 80 -100 thousand.*"

Some respondents, like the Kumal (Gorkha) community, remarked that the absence of youth made it difficult to distribute relief immediately after the earthquake.

However, not all have not gone abroad, largely because of the financial pinch of the earthquake. The Majhi community (Ramechhap) stated, "*The earthquake sharply increased the crisis of money in the village, so people willing to go abroad have not gone.*"

10.2 Remittance

It is often argued that disasters result in a surge in remittances and that these inflows of cash are of direct benefit in that they help affect families meet their needs. Indeed, remittance is considered an important mechanism for supporting recovery and rehabilitation after natural disasters. In Nepal, the media reported that remittance in-flows suddenly and dramatically increased in the second week following the earthquake of 25 April.

10.2.1 Remittance sent by migrants to cope with the crisis

Remittances can form a safety net for households vulnerable to the risks of disaster. The capacity of people and groups to adapt to change or to cope with disaster, a particular type of change, depends on many factors, including their access to financial resources, information, education, healthcare, social resources, infrastructure, and technology. Migration can make a positive contribution toward the ability to access many of these resources. For example, remittances contribute to household income, are often spent on healthcare and education, and are a source of funds to invest in the construction of more resilient houses.

Respondents were asked whether any member of their household not living at home who had not returned after the earthquake had sent any amount of remittance to aid in the management of the crisis situation after the earthquake. About sixty percent (59.5%) had received remittances (Table 10.4).

10.2.2 Amount of remittances sent by migrants

The average income transfer in the form of remittances was NPR 58,967 (in current prices) per recipient household. Of the three domains, the amount of remittance was highest in Kathmandu Valley (NPR 89,647) and the lowest in the crisis-hit districts (NPR 38,964). The majority of households in Kathmandu Valley and severely hit districts (45.5% and 32.3% respectively) received remittances ranging between NPR 25,001 and NPR 50,000, but in crisis-hit districts, majority of the households (45.5%) received remittance less than NPR 25,000 (Table 10.4).

Table 10.4: Percent distribution of households with at least one member living outside/abroad who did not return but did send remittances to cope with the crisis after the earthquake by amount of remittance

Background variables	Sent remittance		Amount of remittance						Average remit-tance	Total (n)
	%	Total (n)	≤ 25,000	25,001-50,000	50,001-75,000	75,001-100,000	100,001-200,000	>200,000		
Domain										
Severely hit	61.9	160	29.3	32.3	14.1	14.1	8.1	2.0	60,244	99
Crisis-hit	50.0	44	45.5	31.8	9.1	9.1	4.5	0.0	38,964	22
Kathmandu Valley	58.8	17	18.2	45.5	9.1	9.1	9.1	9.1	89,647	11
Residence										
Rural	62.6	171	32.4	33.3	14.8	12.0	5.6	1.9	55,402	107
Urban	50.0	50	23.1	34.6	7.7	15.4	15.4	3.8	74,127	25
Type of family										
Nuclear	60.3	116	33.3	27.5	10.1	17.4	10.1	1.4	59,557	70
Joint or extended	58.5	106	29.0	40.3	16.1	8.1	3.2	3.2	58,305	62
Sex of HH head										
Male	51.9	129	43.9	30.3	7.6	15.2	1.5	1.5	49,468	67
Female	69.9	93	18.5	38.5	18.5	9.2	12.3	3.1	68,842	65
Occupation of HH head										
Agriculture	58.9	146	32.6	36.0	14.0	11.6	5.8	0.0	48,396	86
Self-employed in non-agri.	41.2	17	0.0	28.6	42.9	28.6	0.0	0.0	68,314	7
Wage worker	76.5	17	46.2	7.7	15.4	30.8	0.0	0.0	48,978	13
Salaried worker	55.6	9	16.7	16.7	0.0	16.7	33.3	16.7	136,951	5
Other	65.6	32	23.8	47.6	4.8	4.8	9.5	9.5	86,546	21
Highest edu. of HH member										
No education	85.7	7	71.4	28.6	0.0	0.0	0.0	0.0	20,000	6
Primary &NFE	78.8	33	30.8	34.6	0.0	34.6	0.0	0.0	51,070	26
Secondary	56.4	78	35.6	35.6	13.3	4.4	11.1	0.0	46,989	44
Higher secondary	53.7	82	22.2	35.6	13.3	13.3	11.1	4.4	78,599	44
Higher	52.4	21	27.3	18.2	45.5	0.0	0.0	9.1	69,757	11
Religion										
Hindu	55.4	139	22.1	40.3	11.7	13.0	9.1	3.9	68,702	77
Bouddha	68.7	67	44.4	31.1	13.3	6.7	4.4	0.0	42,536	46
Kirant	100.0	2	0.0	0.0	0.0	100.0	0.0	0.0	100,000	2
Christian	46.2	13	42.9	0.0	28.6	28.6	0.0	0.0	50,000	6
Caste/ethnicity										
Brahman (Hill)	50.0	28	50.0	8.3	8.3	16.7	16.7	0.0	65,385	14
Chhetri/Thakuri	52.4	42	18.2	40.9	18.2	9.1	9.1	4.5	72,866	22
Tamang	70.7	58	42.5	27.5	15.0	10.0	5.0	0.0	45,352	41
Newar	52.4	21	33.3	33.3	0.0	16.7	16.7	0.0	54,775	11
Other Hill Janajatis	57.9	57	26.5	41.2	11.8	8.8	5.9	5.9	64,876	33
Dalit (Hill)	66.7	12	12.5	62.5	25.0	0.0	0.0	0.0	47,026	8
Other	80.0	5	0.0	20.0	0.0	80.0	0.0	0.0	83,126	4
Total	59.5	221	31.1	33.9	13.2	12.6	7.1	2.1	58,967	132
Total (n)	132		41	45	17	17	9	3		

Note: Sums may differ slightly from summation of individual figures due to rounding effects of weighted data.

Conclusion

Some indirect impacts were observed due to the movement of the affected people due to earthquake who had left their house for other livelihood opportunities. Moving to a safer place was priority for the displaced. Remittances constituted an important mean to manage the crisis for the affected households. These findings suggest the urgency of formulating and implementing an appropriate resettlement policy (returning to place of origin, rehabilitation in the current place of residence, or resettlement in a third place) to address the needs of the displaced population based on informed choice. The findings on significant migrant members of affected households sent home a significant amount of remittances immediatelty after the earthquake suggest to ensure this in the wellbeing of the household members.

Chapter XI
Conclusions and Recommendations

11.1 Conclusions

The sex ratio of the sample population was higher than the national level, as was the economically active population. About two-thirds of households were nuclear. The marital status of several people, women in particular, changed after the earthquake. The overall literacy rate was 75 percent but males where considerably more literate. The population involved in the agricultural sector decreased after the earthquake.

The majority of immediate rescue was provided by family members and community volunteers. There was a need for adequate and appropriate living conditions. Community members expressed a strong desire and readiness to build houses with monetary support from the government for purchasing materials. The earthquake resulted in changes in household utilities and public facilities.

On the day of the earthquake half of the families did not have food; their fear and consequent psycho-physiological stress caused them to lose their appetites. Agriculture continued to be the major source of livelihood despite the effects of the earthquake. There was no enthusiasm to or joy in celebrating festivals because living arrangements were poor and a separate place to perform rituals and worships was often lacking. Food security, labour, employment, and occupation have changed since the earthquake, and these differences vary among social groups, educational status, and place of residence.

The earthquake affected the regular attendance of school-going children because they feared aftershocks and because schools were damaged. Some children dropped out altogether. Damage to houses and schools caused students' motivation to learn to decline. While TLCs were set up as an alternative to regular classrooms, they did not provide an atmosphere conducive to learning. The study also found some cases of earthquake-induced health problems, most of which were treated at facilities in various district headquarters. The study also highlighted the psycho-physiological impact on family members, particularly on pregnant women and elderly people.

The results of the study show that women, girls, children, and some particular caste and ethnic groups experienced various problems before and after the earthquake. Since women's needs are different from those of other groups of people, special attention should be paid toward enhancing women's capacity to manage risks in order to reduce their vulnerability.

More women than men died due to the earthquake, perhaps as they were the ones at home and because they often attempted to save their children. This fact suggests that women were more vulnerable because of their gender roles. Gaps in the availability of health services were evident. There was also a gap in ANC after the earthquake, a fact which could have had adverse effects on women's reproductive health and childbirth. The increase in institutional delivery, especially in birthing centres, was primarily due to the lack of a conducive environment for delivery at home. The average number of children ever born was slightly lower than the national average.

The earthquake had a direct impact on the population displaced as people moved due to their fears of physical harm. It also had an indirect impact in that some people left their households in search of other livelihood opportunities. Moving to a safer place was a priority for the displaced. Remittances constituted an important means for affected households to manage the crisis.

11.2 Recommendations

Socio-demographic characteristics of affected population

Key messages: Economically active population is found higher in most affected districts which imply that the capability of community to cope with disaster could also be high. Changing marital and occupational status of household population in the aftermath of earthquake shows a disruption in social situation resulting in early age marriage, early age child bearing and pregnancy complexities of the young mother. Among married couples, incidences of single population due to divorce or separation are also observed.

Policy actions:

- Take advantage of the fact that the economically active population is present in the affected districts and provide them with appropriate skills for and employment opportunities related to reconstruction activities. Connect this initiative to long-term economic and livelihood opportunities in order to prevent this age group from migrating.
- To respond to the changes observed in the marital status of females, including those under the age of 18, after the earthquake, conduct further analysis to understand the extent to which the changes affected adolescent groups belonging to specific caste and ethnic groups in order to inform appropriate interventions to prevent future early marriages in post-disaster settings.
- Recognizing that the earthquakes affected different communities disproportionately due to their different socio-economic statuses and geographical locations, take appropriate measures to ensure equity-based reconstruction support prevails over blanket interventions.

Stakeholders' Participation in Rehabilitation and Reconstruction

Key messages: Community people are undoubtedly the first to respond to the disaster that demands the family/community members the first target groups of any disaster preparedness efforts related to knowledge, skills and technology. Immediate relief is found to be taken for/ of a community than an individual. Almost all communities had to have collective foods during the period of the earthquake. Environment in camp shelter is not satisfactory, even worse in crisis hit domain (Kathmandu valley), so the respondents/victims opined to build their house in their original place than others.

Policy actions:

- Given that the early responders to the disaster were community members themselves, especially in remote crisis-hit areas, build the capacity of communities for disaster preparedness and rescue operations, ensuring the optimum participation of women and youth.
- Ensure that there are provisions at the community level, particularly in urban centers, for adequate open spaces and community housing and storage facilities where displaced community members can be temporarily housed and relief packages stored respectively as part of preparedness and response during an emergency.
- Acknowledging the preference expressed by the majority of the affected households in severely hit areas, consider providing a combination of monetary, technical, and skill-building support so they can build their houses and communities back better. As far as possible give priority to their original place of residence.

Social Impacts of the Earthquake

Key messages: There have been changes in food security, employment and occupation with variation by social groups and place of residence. Agriculture is found a dominant occupation for affected population as a major source of livelihood. There was no enthusiasm to or joy in celebrating festivals because living arrangements were poor and a separate place to perform rituals and worships was

often lacking. Food security, labour, employment, and occupation have changed since the earthquake, and these differences vary among social groups, educational status, and place of residence.

Policy actions:

- Given that the majority of communities across all affected areas depend on agriculture, strengthen this sector so it provides adequate food security and support micro-economic activities as a form of agricultural value chain in order to generate the cash income needed to sustain the daily lives of the affected populations.
- Considering that the majority of the affected populations belonged to communities that rely on traditional occupations and indigenous skills, conduct an in-depth study to assess the impact of community reconstruction and rehabilitation efforts on the preservation of such occupations and skills.

Impact on Education, Health and Elderly Care

Key messages: The earthquake affected the regular attendance of school going children. TLCs were identified as an alternative management for education of these children. However, TLCs were not found up to the quality to ensure children's fair environment of learning. Damage to houses and schools caused students' motivation to learn to decline. A large number of elderly citizens were still scared of the earthquake.

Policy actions:

- Noting the long disruption of educational services in the affected areas, restore a safe and learning environment with appropriate motivational activities to ensure regular school attendance, especially by girl students.
- Acknowledging that a disaster such as the earthquake has a significant effect on maternal, child, and mental health services, ensure that these services are an integral part, even priority area, of future health-sector disaster and response planning.
- Noting that senior citizens and people with disabilities suffered more physical injuries than other groups because of their limited mobility, ensure that the reconstruction and rehabilitation efforts prioritize infrastructures that are disability- and elderly-friendly.

Impact on Vulnerable Populations

Key messages: Vulnerable communities like women, girls, children, and some particular caste and ethnic groups face difficulties due to disaster which demand management both in the short-run and long-run. Women's needs are special during disaster from those of other groups of people.

Policy actions:

- Recognizing the fact that girls and women, particularly pregnant women, faced special problems and additional burdens while living in temporary shelters, ensure the provision of child- and female-friendly spaces and supplies that protect the dignity of girls and women in post-disaster situations.
- Given that a large number of toilets were destroyed by the earthquake, ensure that new houses include toilet facilities.
- Any future humanitarian response must go beyond the immediate provision of food and shelter. Reproductive health, including family planning and safe motherhood, as well as prevention of and response to gender-based violence should be priority issues. It is imperative to protect the dignity of women and girls and focus on empowering them to play a role in rebuilding their lives and communities as well as restoring their physical health and wellbeing.

Impact of Earthquake on Mortality and Fertility

Key messages: Gaps in the availability of health services were evident. There was also a gap in ANC after the earthquake, a fact which could have had adverse effects on women's reproductive health and childbirth. The increase in institutional delivery, especially in birthing centres, was primarily due to the lack of a conducive environment for delivery at home. The average number of children ever born was slightly lower than the national average.

Policy actions:

- Recognising that the number of antenatal care (ANC) visits made by pregnant women decreased after the earthquake in remote areas of the affected districts and that institutional delivery increased, strengthen the capacity of birthing centres to manage emergency obstetric care services and referrals in disaster-affected areas.
- Disseminate information on the importance of antenatal care through FHCVs, radio and other communication channels.
- Given that married women of reproductive age in the affected districts expressed a desire to postpone their next pregnancy due to the earthquake, ensure that health-sector response and recovery programs in disaster settings offer family planning services and raise awareness about the different contraceptive methods available.

Earthquake and Population Mobility

Key messages: The earthquake had a direct impact on the population displaced as people moved due to their fears of physical harm. It also had an indirect impact in that some people left their households in search of other livelihood opportunities. Moving to a safer place was a priority for the displaced. Remittances constituted an important means for affected households to manage the crisis.

Policy actions:

- Recognizing the fact that a significant number of people in the affected districts were displaced due to physical damage and landslides caused by the earthquake, formulate and implement an appropriate resettlement policy (returning to place of origin, rehabilitation in the current place of residence, or resettlement in a third place) to address the needs of the displaced population based on informed choice.
- Noting that the migrant members of affected households sent home a significant amount of remittances immediately after the earthquake, ensure that the government's reconstruction program leverages household remittances to jointly fund "building back better" initiatives.

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Annexes

Annex I: Allocation of PSUs

SN	District and VDC/Municipality	No. of PSUs
	Domain-1 (Severely hit districts)	
	Ramechhap	**6**
	1. Bethan VDC, Ward 7	1
	2. Doramba VDC, Ward 5	1
1	3. Hiledevi VDC, Ward 8	1
	4. Namadi VDC, Ward 5	1
	5. Rakathum VDC, Ward 7	1
	6. Ramechhap Municipality, Ward 8	1
	Dolakha	**7**
	1. Alampu VDC, Ward 5	1
	2. Bhimeshwar Municipality, Ward 2	1
2	3. Tamche Dudhpokhari VDC, Ward 6	1
	4. Jugu VDC, Ward 1	1
	5. Lamabagar VDC, Ward 6	1
	6. Namdu VDC, Ward 3	1
	7. Suri VDC, Ward 5	1
	Sindhupalchowk	**10**
	1. Banskharka VDC, Ward 5	1
	2. Bhotsipa VDC, Ward 5	1
	3. Fulpingdanda VDC, Ward 8	1
	4. Haibung VDC, Ward 3	1
3	5. Karthali VDC, Ward 8	1
	6. Mankha VDC, Ward 6	1
	7. Ramche VDC, Ward 7	1
	8. Tatopani VDC, Ward 9	1
	9. Thulosirubari VDC, Ward 7	1
	10. Melamchi Municipality, Ward 11	1
	Nuwakot	**7**
	1. Bhadrutar VDC, Ward 9	1
	2. Bungtang VDC, Ward 6	1
4	3. Ganeshthan VDC, Ward 4	1
	4. Kalyanpur VDC, Ward 7	1
	5. Madanpur VDC, Ward 4	1
	6. Samari VDC, Ward 5	1
	7. Thansing VDC, Ward 2	1
	Rasuwa	**2**
5	1. Goljung VDC, Ward 7	1
	2. Yarsa VDC, Ward 9	1
	Dhading	**10**
	1. Bhumesthan VDC, Ward 3	1
	2. Darkha VDC, Ward 8	1
	3. Gumdi VDC, Ward 2	1
	4. Lapa VDC, Ward 2	1
6	5. Reegaun VDC, Ward 9	1
	6. Marpak VDC, Ward 4	1
	7. Phoolkharka VDC, Ward 6	1
	8. Salyantar VDC, Ward 5	1
	9. Tipling VDC, Ward 6	1
	10. Nilkantha Municipality, Ward 10	1

7	**Gorkha** 1. Mirkot VDC, Ward 8 2. Barpak VDC, Ward 2 3. Gumda VDC, Ward 9 4. Laprak VDC, Ward 7 5. Gorkha Municipality, Wards 1 & 15 6. Tandrang VDC, Ward 3 7. Palungtar Municipality, Ward 3	**8** 1 1 1 1 2 1 1
8	***Domain-2 (Crisis hit districts, except Kathmandu Valley)*** **Okhaldhunga** 1. Waksa VDC, Ward 2 2. Bilandu VDC, Ward 7 3. Harkapur VDC, Ward 9 4. Khiji Phanlate VDC, Ward 7 5. Palapu VDC, Ward 3 6. Ragani VDC, Ward 9 7. Baruneshwar VDC, Ward 1 8. Siddhicharan Municipality, Ward 1	 **8** 1 1 1 1 1 1 1 1
9	**Sindhuli** 1. Amale VDC, Ward 9 2. Bhimeshwar VDC, Ward 2 3. Jhangajholi Ratamata VDC, Ward 2 4. Kamalamai Municipality, Wards 6 & 12 5. Kholagaun VDC, Ward 6 6. Majhuwa VDC, Ward 2 7. Shanteshwari (Rampur) VDC, Ward 1 8. Khangsang VDC, Ward 5	**9** 1 1 1 2 1 1 1 1
10	**Kavrepalanchowk** 1. Banepa Municipality, Ward 3 2. Bhimkhori VDC, Ward 9 3. Chandeni Mandan VDC, Ward 5 4. Dhulikhel Municipality, Ward 3 5. Dolalghat VDC, Ward 3 6. Gokule VDC, Ward 2 7. Kalati Bhumidanda VDC, Ward 5 8. Kavre Nitya Chandeshwar VDC, Ward 8 9. Kusadevi VDC, Ward 2 10. Mahadevsthan Mandan VDC, Ward 2 11. MahendraJyoti VDC, Ward 9 12. Ugrachandi Nala VDC, Ward 7 13. Panauti Municipality, Wards 2 & 10 14. Rabiopi VDC, Ward 1 15. Shankhupati Chaur VDC, Ward 5 16. Shikhar Ambote VDC, Ward 1 17. Thuloparsel VDC, Ward 9 18. Panchkhal Municipality, Wards 3 & 10 19. Kashikhand Municipality, Wards 1 & 10	**22** 1 1 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 2 2

11	**Makawanpur**	**11**
	1. Aambhanjyang VDC, Ward 1	1
	2. Chitlang VDC, Ward 2	1
	3. Faparbari VDC, Ward 7	1
	4. Hetauda Municipality, Wards 4, 12 & 28	3
	5. Kulekhani VDC, Ward 3	1
	6. Manthali VDC, Ward 5	1
	7. Shikharpur VDC, Ward 5	1
	8. Sisneri Mahadevsthan VDC, Ward 6	1
	9. Thaha Municipality, Ward 4	1
12	***Domain-3 (Kathmandu valley)***	
	Lalitpur	**12**
	1. Chapagaun VDC, Ward 7	1
	2. Dhusel VDC, Ward 7	1
	3. Kaleshwar VDC, Ward 7	1
	4. Lalitpur Municipality, Ward 8	1
	5. Lele VDC, Ward 6	1
	6. Nallu VDC, Ward 7	1
	7. Thecho VDC, Ward 7	1
	8. Godavari Municipality, Ward 10	1
	9. Karyavinayak Municipality, Wards 8 & 10	2
	10. Mahalaxmi Municipality, Wards 7 & 14	2
13	**Bhaktapur**	**12**
	1. Bhaktapur Municipality, Wards 1,2 & 6	3
	2. Madhyapur Thimi Municipality, Wards 3, 8 & 9	3
	3. Anantalingeshwar Municipality, Wards 7 & 8	2
	4. Changunarayan Municipality, Ward 1	1
	5. Mahamanjushree Nagarkot Municipality, Ward 12	1
	6. Suryavinayak Municipality, Wards 7 & 8	2
14	**Kathmandu**	**26**
	1. Kathmandu Municipality, Wards 4, 9, 18, 23 & 35	5
	2. Kirtipur Municipality, Wards 7 & 15	2
	3. Budhanilkantha Municipality, Wards 1,2 & 4	3
	4. Chandragiri Municipality, Wards 6, 16 & 22	3
	5. Dakshinkali Municipality, Ward 11	1
	6. Gokarneshwar Municipality, Ward 7	1
	7. Kageshwari Manahara Municipality, Wards 2 & 8	2
	8. Nagarjun Municipality, Wards 4 & 10	2
	9. Shankharapur Municipality, Wards 3 & 10	2
	10. Tarakeshwar Municipality, Wards 3, 9, 14 & 20	4
	11. Tokha Municipality, Ward 10	1
	Total	**150**

Annex II: Sampling errors of selected key variables

Variable	Value (r)	Standard error (SE)	Weighted cases	Design effect	Relative error	Confidence limit	
						Lower	Upper
HH with EQ victim ID card of completely damaged house	0.901	0.023	3,000	4.220	0.026	0.855	0.947
Nuclear family	0.610	0.025	3,000	2.798	0.041	0.560	0.660
Female HH head	0.206	0.019	3,000	2.586	0.093	0.168	0.244
Children (0-14)	0.245	0.012	14,987	3.325	0.048	0.222	0.268
Working population (15-59)	0.649	0.010	14,987	2.652	0.016	0.628	0.670
Elderly (60 & above)	0.106	0.006	14,987	2.330	0.055	0.094	0.118
Unmarried population	0.360	0.010	14,987	2.410	0.028	0.340	0.380
Married population	0.580	0.011	14,987	2.568	0.019	0.558	0.602
Change in marital status after EQ	0.007	0.002	12,870	2.498	0.262	0.003	0.011
Population engaged in agriculture	0.343	0.023	12,870	5.601	0.068	0.296	0.390
No education	0.242	0.012	14,001	3.404	0.051	0.217	0.267
Primary & non-formal education	0.291	0.014	14,001	3.528	0.047	0.264	0.318
Secondary education	0.254	0.008	14,001	2.248	0.033	0.237	0.271
Higher education	0.212	0.017	14,001	5.024	0.082	0.177	0.247
Possessing citizenship certificate	0.885	0.010	10,989	3.232	0.011	0.865	0.905
Knowledge on safety, rescue and relief management during earthquake	0.431	0.032	3,000	3.509	0.074	0.368	0.494
Completely damaged among HH with single house damage	0.841	0.032	2,500	4.320	0.038	0.778	0.904
Both completely damaged among HH with 2 houses damage	0.721	0.068	438	3.169	0.094	0.585	0.857
All 3 completely damaged among HH with 3 houses damage	0.778	0.118	62	2.224	0.152	0.541	1.015
Security personnel as first rescuer	0.905	0.006	3,000	1.083	0.006	0.893	0.917
HHs not taking dinner at the evening on the day of earthquake hit	0.508	0.039	3,000	4.241	0.076	0.431	0.585
HHs possessing any land either owned or rented in	0.966	0.010	3,000	2.877	0.010	0.947	0.985
HHs with land damaged by earthquake	0.245	0.050	2,899	6.245	0.204	0.145	0.345
HHs with food insufficiency for 12 months from usual own production	0.712	0.042	2,696	4.854	0.059	0.627	0.797
Population with change in occupation after EQ	0.029	0.010	12,870	6.706	0.342	0.009	0.049
HHs with major traditional occupation/work affected by EQ	0.165	0.039	3,000	5.694	0.234	0.088	0.242
HH with returnee member who was working outside/abroad before EQ	0.117	0.020	3,000	3.489	0.175	0.076	0.158
Returnee labour migrants who brought remittance for crisis management while returning back to home	0.619	0.060	459	2.626	0.096	0.500	0.738
HHs with any child/adolescent (5-19 years) deprived of school education from EQ	0.064	0.017	2,001	3.091	0.264	0.030	0.098
HHs responding child-friendly education class operating in the area after EQ	0.139	0.022	1,888	2.772	0.159	0.095	0.183
HHs with any member injured or with serious health problem from EQ	0.029	0.007	3,000	2.263	0.239	0.015	0.043
Physical disability as the major problem of injury/illness of population from EQ	0.816	0.096	95	2.406	0.118	0.624	1.008
Population disabled after the EQ among disabled	0.106	0.039	263	2.052	0.368	0.028	0.184
Elderly people with any injury from EQ	0.062	0.013	1,565	2.086	0.205	0.037	0.087
Children under 5 years receiving regular vaccination before EQ	0.841	0.024	900	2.008	0.029	0.792	0.890
Children under 5 years receiving regular vaccination after EQ	0.354	0.037	900	2.314	0.104	0.280	0.428
Female HH heads feeling high insecurity after EQ	0.274	0.035	614	1.948	0.128	0.204	0.344
Women respondents feeling uncomfortable during eating meals, sleeping and living while staying in temporary place, shelter camp or own cracked house after EQ	0.625	0.045	2,962	5.093	0.073	0.534	0.716
Know incidence of gender and sexual VAW after EQ	0.089	0.020	3,000	3.917	0.229	0.048	0.130
Know incidence of child trafficking after EQ	0.052	0.018	3,000	4.434	0.346	0.016	0.088
Feeling no biasness in rescue operation	0.838	0.021	3,000	3.067	0.025	0.797	0.879
Feeling no biasness in relief distribution	0.651	0.038	3,000	4.361	0.058	0.575	0.727
HHs with dead members in the EQ	0.018	0.009	3,000	3.880	0.523	-0.001	0.037
Population dead 60 years & above	0.394	0.122	66	2.013	0.310	0.150	0.638
Received compensation for dead person	0.955	0.054	66	2.086	0.056	0.848	1.062
Access of health service provider after EQ	0.932	0.016	2,203	3.011	0.017	0.900	0.964
Use of FP method before EQ	0.531	0.029	2,203	2.699	0.054	0.474	0.588
Use of FP method after EQ	0.438	0.031	2,203	2.948	0.071	0.376	0.500

… … … *Annex II continued*

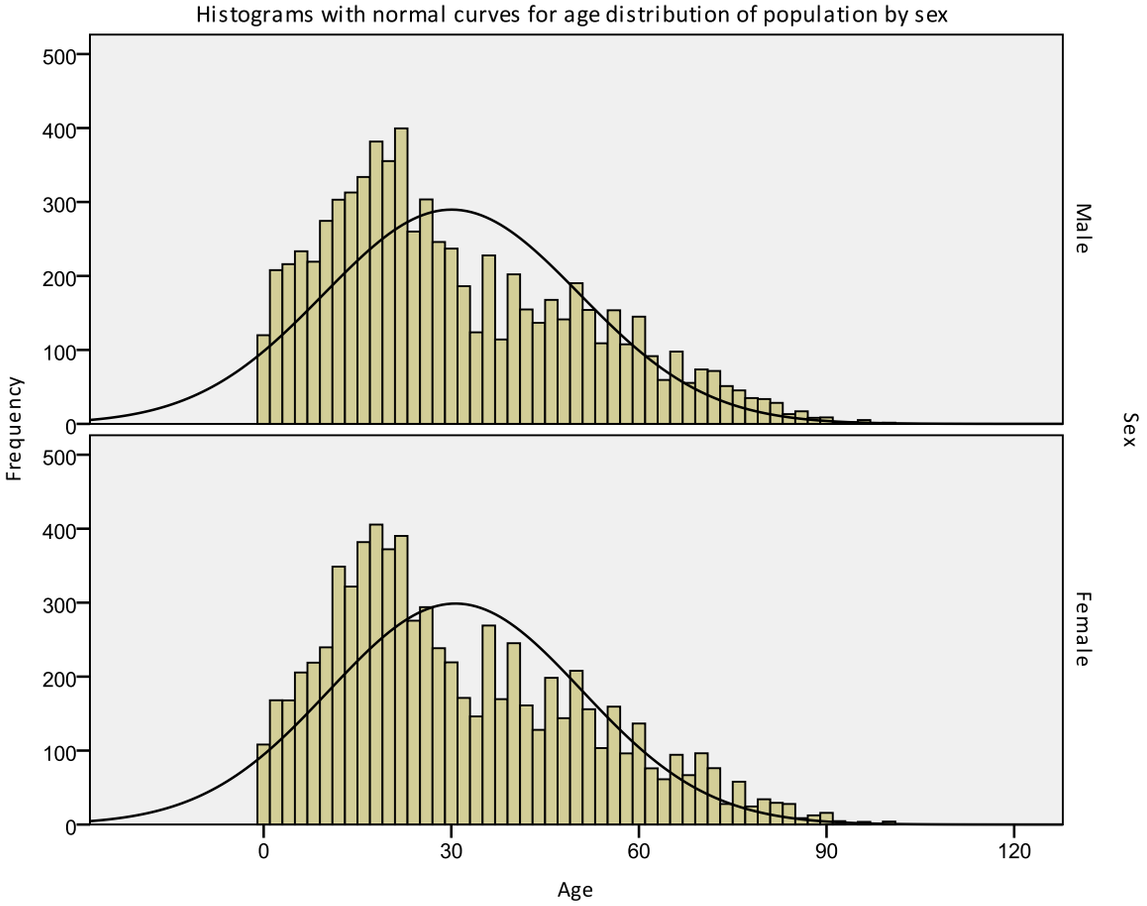
Variable	Value (r)	Standard error (SE)	Weighted cases	Design effect	Relative error	Confidence limit	
						Lower	Upper
ANC before EQ	0.941	0.106	34	2.589	0.113	0.729	1.153
ANC after EQ	0.871	0.080	84	2.182	0.092	0.710	1.032
Given birth in past 12 months before EQ	0.051	0.012	2,120	2.464	0.231	0.027	0.075
Given birth after EQ	0.052	0.011	2,012	2.293	0.218	0.029	0.075
Birth delivery at birthing centre before EQ	0.546	0.114	108	2.367	0.209	0.318	0.774
Birth delivery at birthing centre after EQ	0.724	0.102	105	2.331	0.141	0.520	0.928
Regularly breastfeeding before EQ	0.687	0.051	405	2.220	0.075	0.585	0.789
Regularly breastfeeding after EQ	0.958	0.023	405	2.325	0.024	0.912	1.004
Under 5 child dead before EQ	0.075	0.014	2,040	2.445	0.190	0.046	0.104
Under 5 child dead after EQ	0.007	0.005	2,040	2.900	0.765	-0.004	0.018
EQ as reasons for planning to give birth to a child later (after one year)	0.183	0.052	334	2.454	0.284	0.079	0.287
EQ as reason for pregnancy loss	0.396	0.315	14	2.324	0.796	-0.234	1.026
Completely agree with opinion on the statement that in extraordinary situation after earthquake, people avoid to give birth	0.521	0.037	3,000	4.076	0.071	0.447	0.595
HHs with any incident of postponement of marriage of member due to EQ	0.010	0.004	3,000	2.336	0.424	0.002	0.018
HHs with any absentee population (within and/or outside the country) for labour migration/seeking work after EQ	0.055	0.011	3,000	2.556	0.193	0.034	0.076
EQ as reason for labour migration of absentees after EQ	0.252	0.082	174	2.484	0.325	0.088	0.416
HHs with displaced member from EQ	0.029	0.027	3,000	8.921	0.943	-0.026	0.084
Completely damaged house from EQ as main reason for displacement among displaced population	0.191	0.106	340	4.986	0.557	-0.022	0.404
Place of displacement (for displaced population) at different village, but same district	0.838	0.162	340	8.120	0.194	0.513	1.163
HHs with any member out-migrated within one-year before EQ	0.074	0.013	3,000	2.752	0.178	0.048	0.100
Youth (15-24) migrants	0.348	0.062	301	2.246	0.177	0.224	0.472
HHs with any member living outside/abroad who did not return but sent remittance for managing the crisis after EQ	0.595	0.078	221	2.356	0.131	0.439	0.751

Annex III: Completeness of reporting

Variable	% with missing information	No. of cases
HHs responding country of international security forces	25.0	4
Households responding on reasons for not receiving relief in cash (other than compensation for death) from government	5.36	317
Female household heads responding on feeling themselves secured before and after the earthquake	0.16	615
Women respondents responding on feeling uncomfortable during eating meals, sleeping and living while staying in temporary place, shelter camp or own cracked house after earthquake	0.03	2,963
Population responding on reason for change in occupation	2.63	380
Disabled population responding on whether they were disabled even before or after the earthquake	0.75	265
Elderly people responding on whether there were inside or outside the house at the time of earthquake	1.63	1,591
Children below 5 years of age for regular vaccination before and after the earthquake	9.78	988
HHs responding on member suffering from different type of diseases	0.03	3,000
Married women (15-49 years) responding on access of health service provider after earthquake; providing advice on FP, RH & women's health issues; use of FP methods; pregnancy; delivery; breastfeeding; nutrition of child; dead of under 5 child; CEB; and willingness to give birth to next child, pregnancy loss	3.16	2,275

Annex IV: Histograms with normal curves for checking quality of data

Histograms with normal curves for age distribution of population by sex



Cases weighted for sample proportion

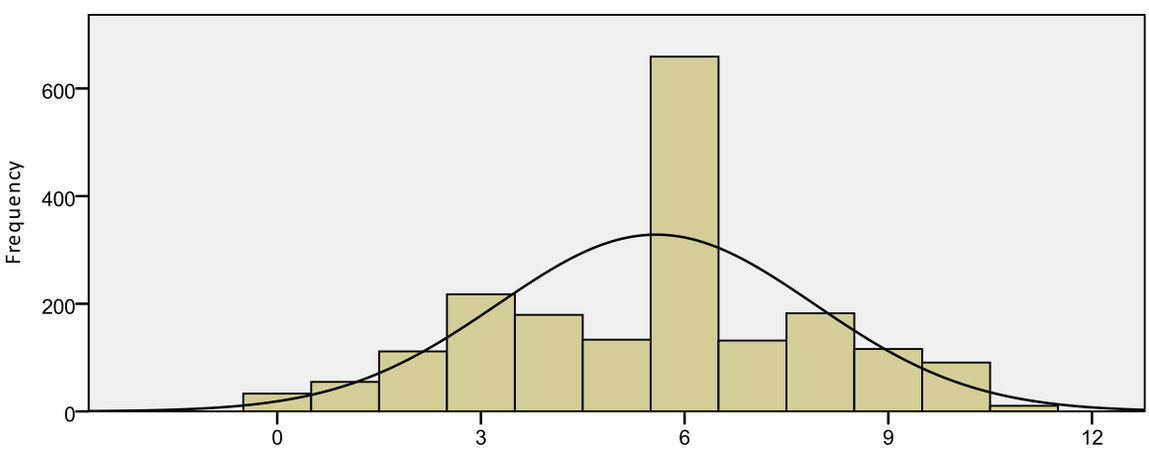
Histogram with normal curve for age distribution of married women (15-49) interviewed for birth and children dead

Cases weighted for sample proportion

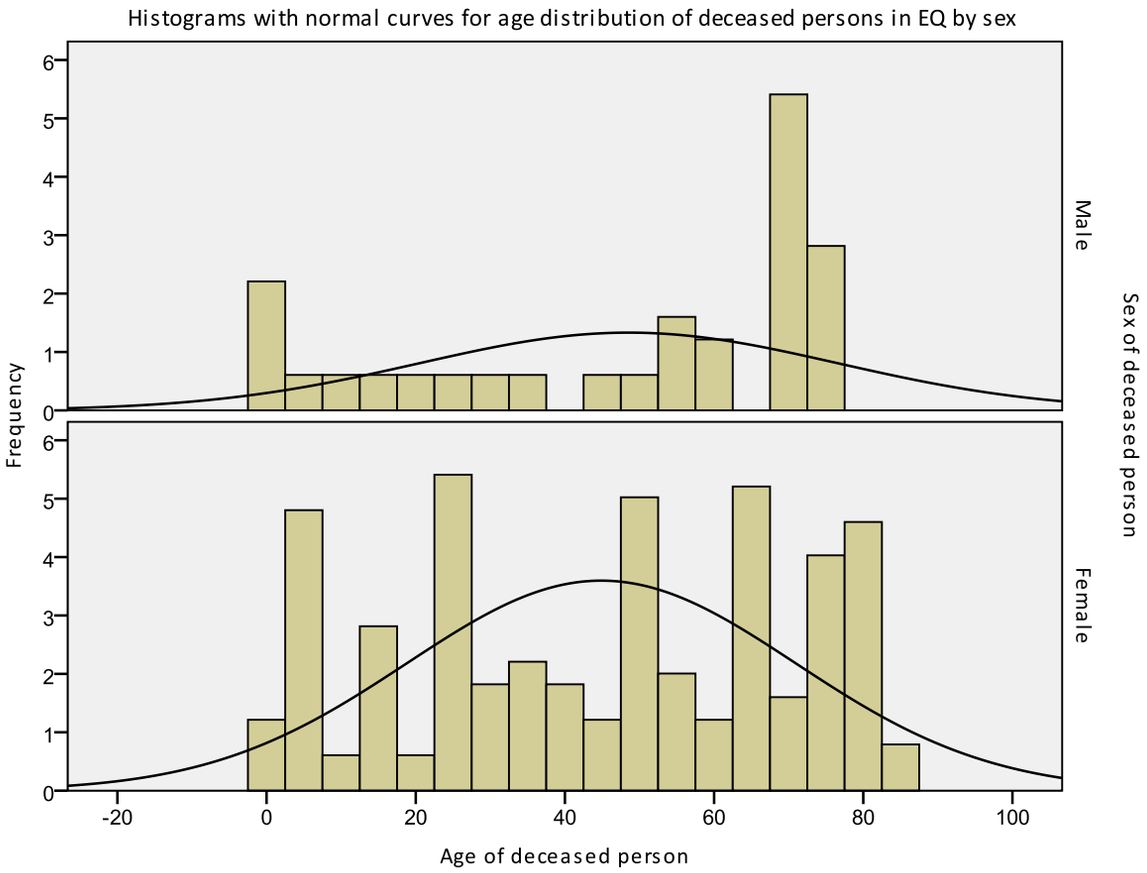
Histogram with normal curve for age at marriage of population who married after EQ

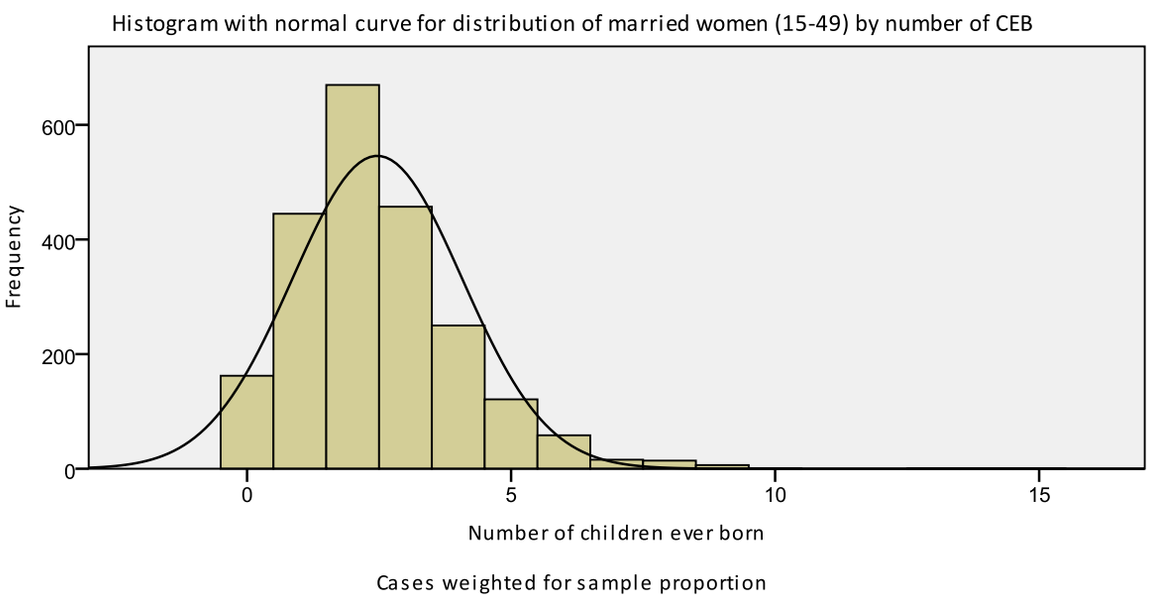
Cases weighted for sample proportion

Histogram with normal curve for months of food insufficiency for whole year from usual own production

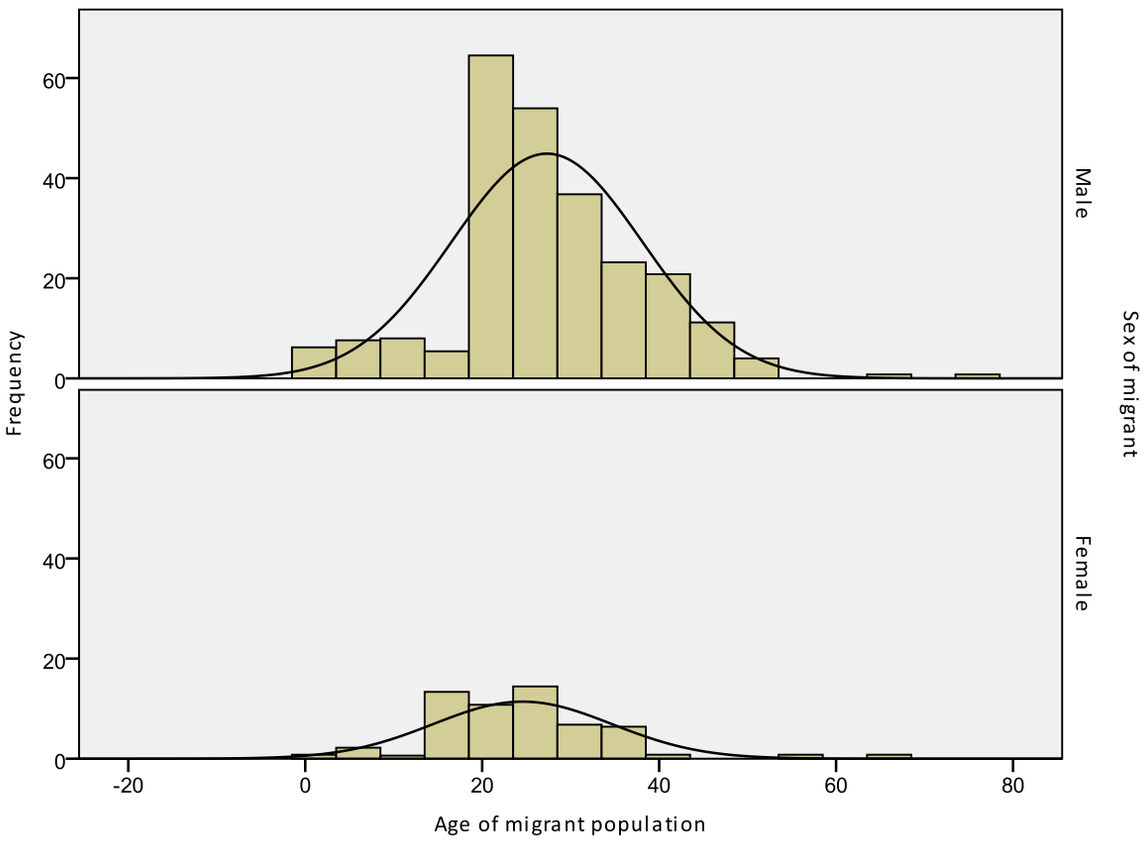


Cases weighted for sample proportion


Histograms with normal curves for age distribution of deceased persons in EQ by sex
Frequency
Male
Female
Sex of deceased person
Age of deceased person
Cases weighted for sample proportion

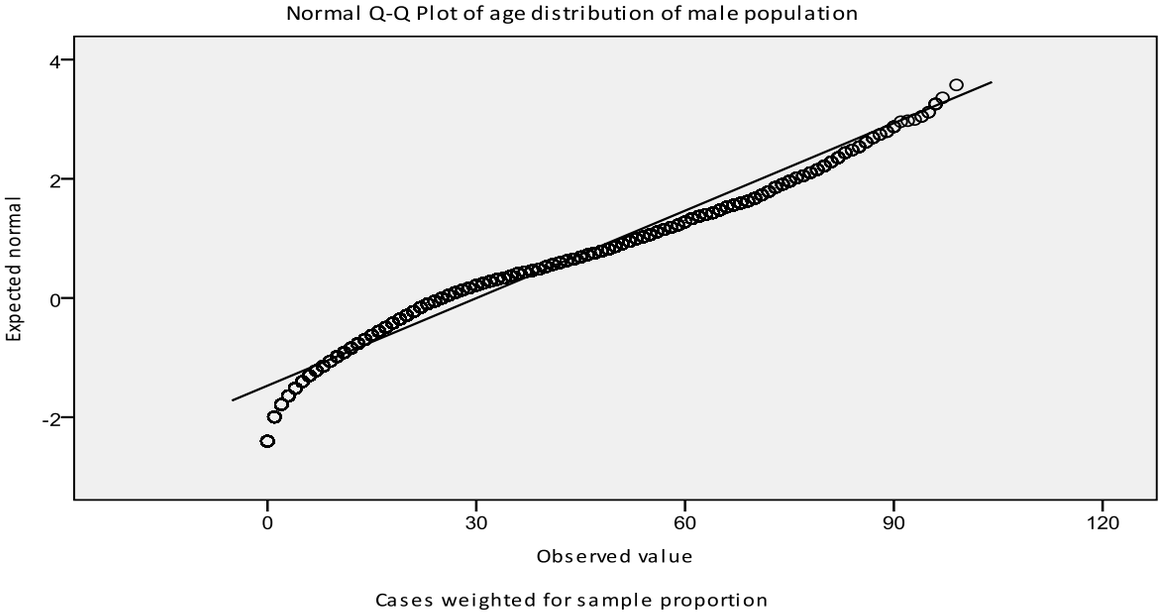

Histogram with normal curve for distribution of married women (15-49) by number of CEB
Frequency
Number of children ever born
Cases weighted for sample proportion

Histogram with normal curves for migrant population by sex who migrated within 1-year period before EQ

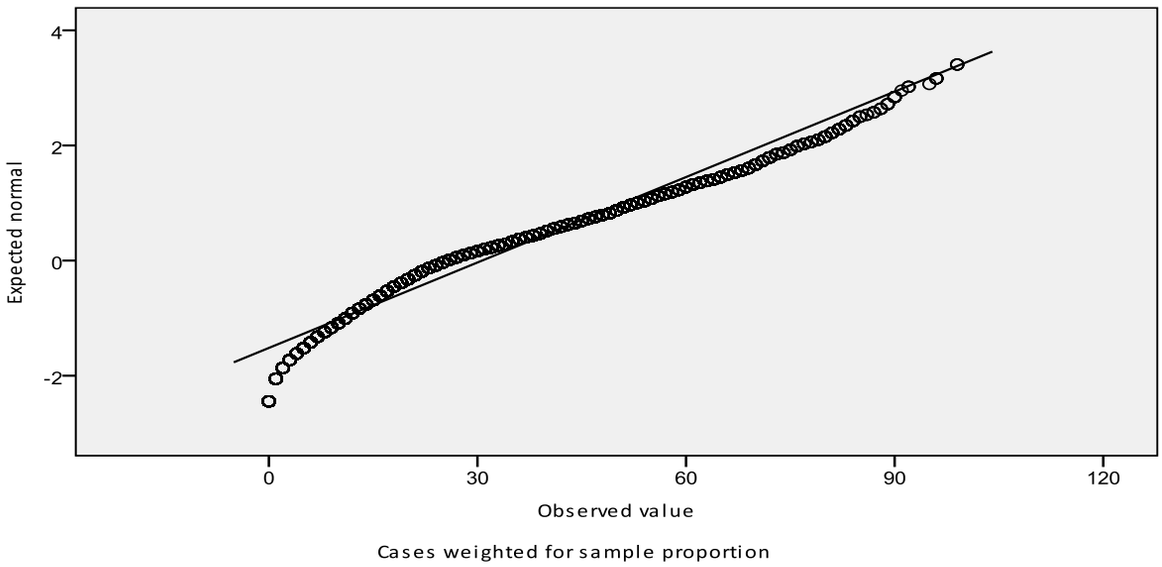


Annex V: Normal Q-Q Plot for checking quality of data

Normal Q-Q Plot of age distribution of male population



Normal Q-Q Plot of age distribution of female population

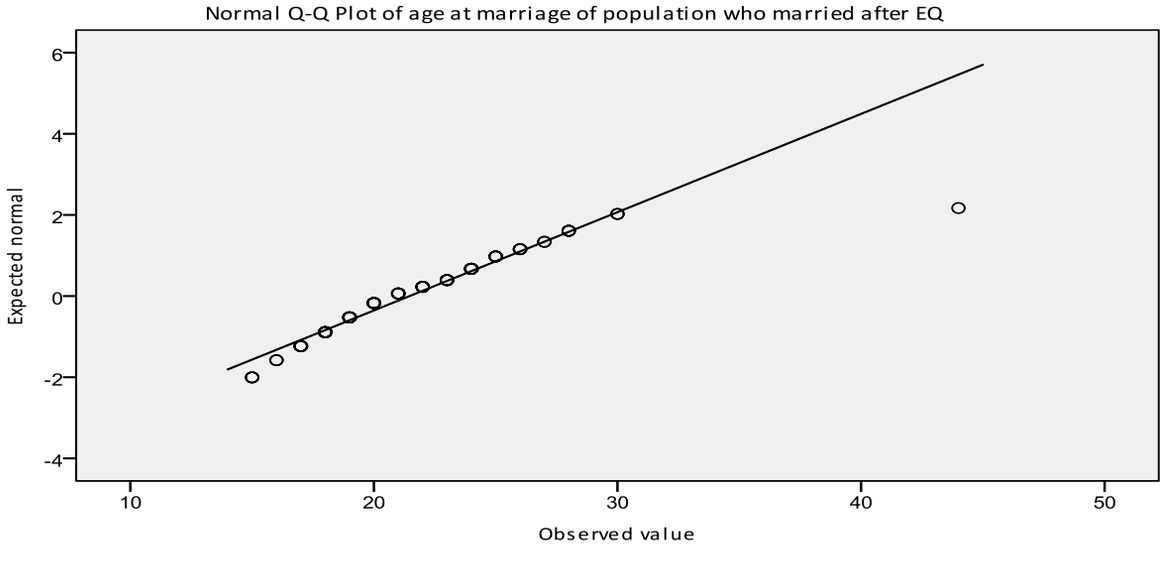


Cases weighted for sample proportion

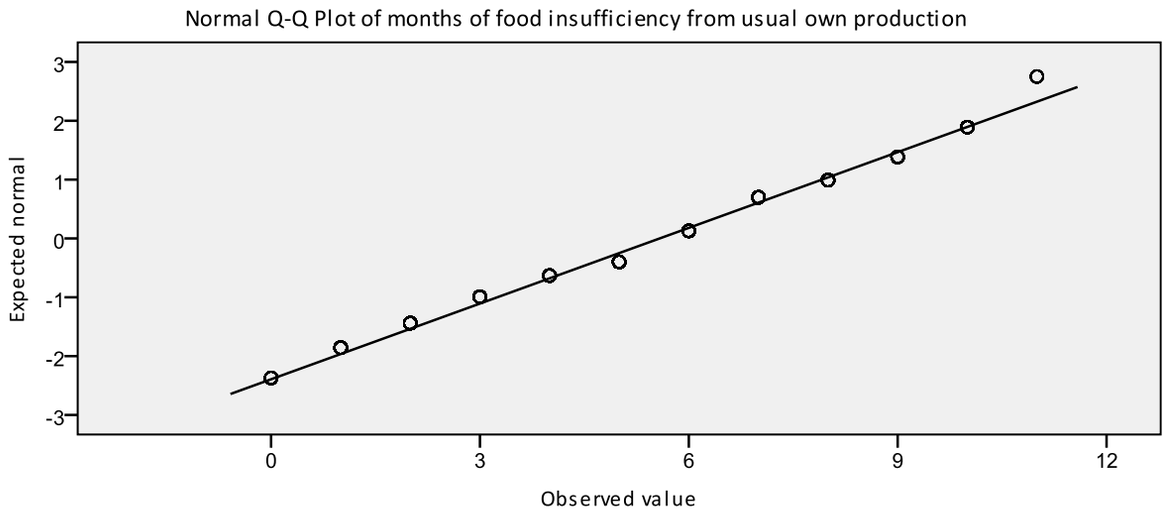
Normal Q-Q Plot of age distribution of married women (15-49) interviewed for birth and children dead

Cases weighted for sample proportion

Normal Q-Q Plot of age at marriage of population who married after EQ



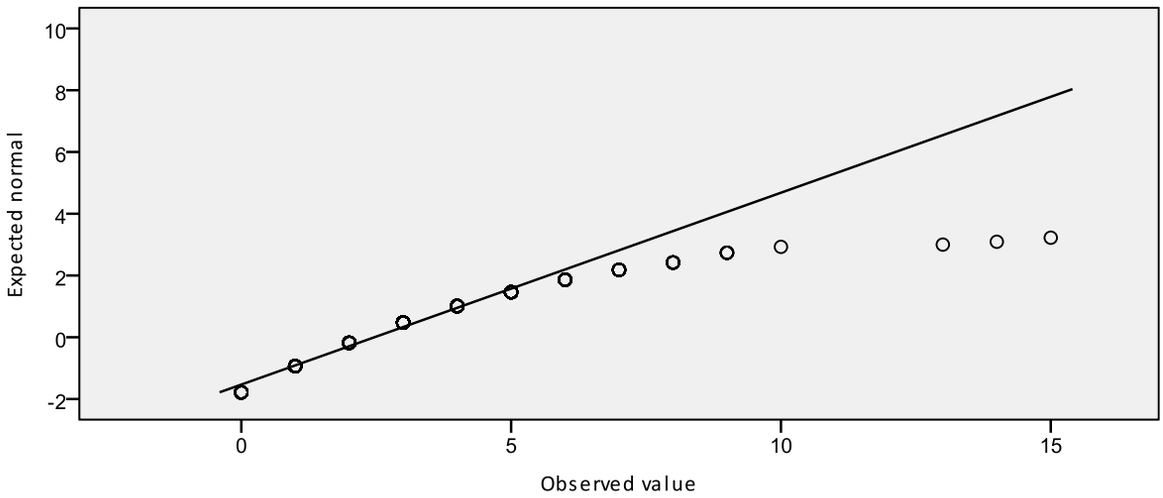
Cases weighted for sample proportion


Normal Q-Q Plot of months of food insufficiency from usual own production
Expected normal
3
2
1
0
-1
-2
-3
0
3
6
9
12
Observed value
Cases weighted for sample proportion


Normal Q-Q Plot of age distribution of deceased male population in earthqauke
Expected normal
2
1
0
-1
-2
-3
-20
0
20
40
60
80
100
Observed value
Cases weighted for sample proportion

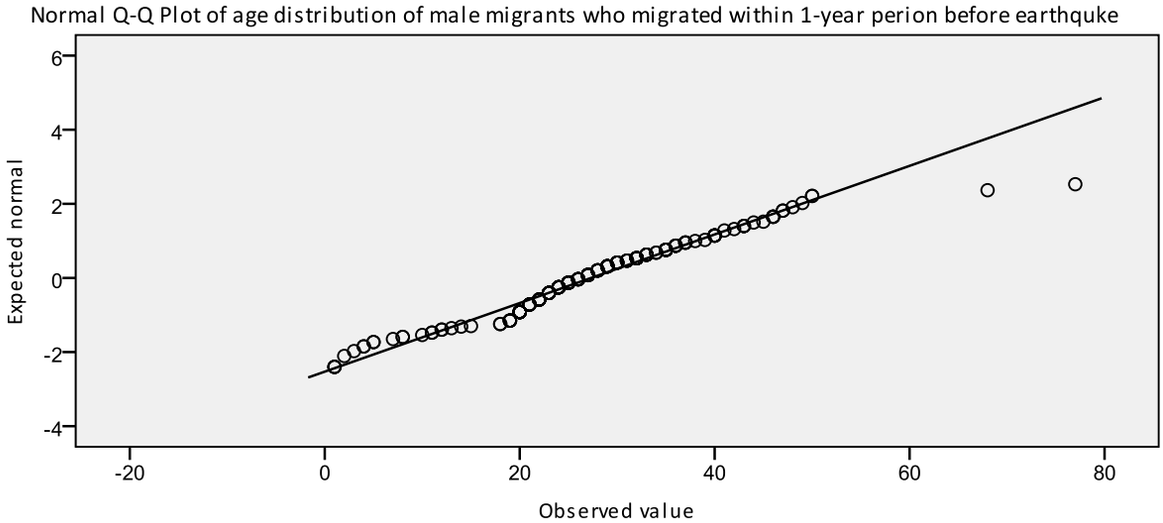

Normal Q-Q Plot of age distribution of deceased female population in earthquake
Expected normal
2
1
0
-1
-2
-20
0
20
40
60
80
100
Observed value
Cases weighted for sample proportion

Normal Q-Q Plot of distribution of married women (15-49) by number of children ever born



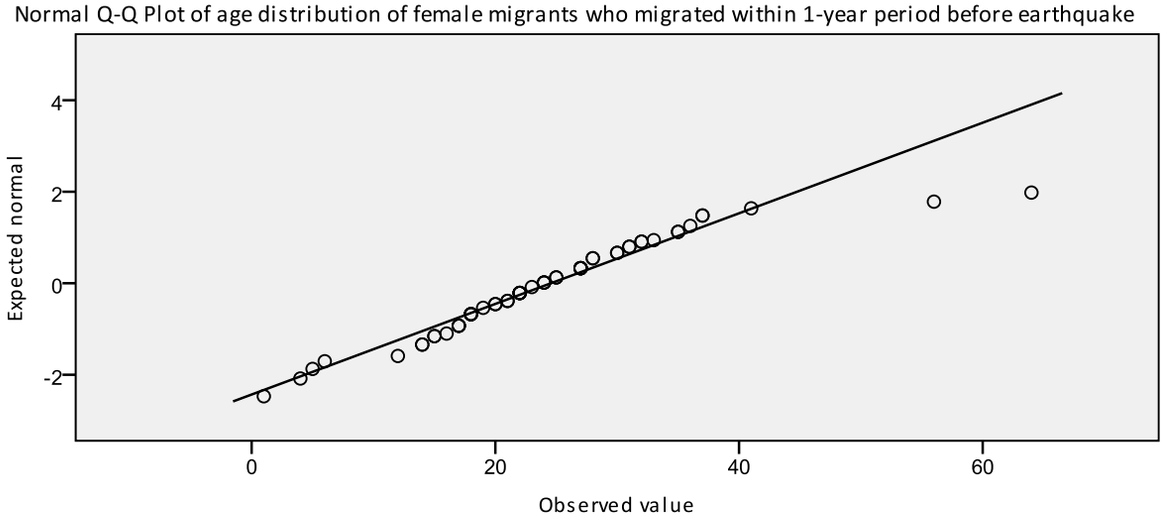
Cases weighted for sample proportion

Normal Q-Q Plot of age distribution of male migrants who migrated within 1-year perion before earthquke



Cases weighted for sample proportion

Normal Q-Q Plot of age distribution of female migrants who migrated within 1-year period before earthquake



Cases weighted for sample proportion

Annex VI: Persons involved in Nepal Earthquake 2015: A Socio-demographic Impact Study (With Reference to 14 Most Affected Districts)

TECHNICAL AND ADMINISTRATION STAFF

Study Director
Prof. Dr. Ram Sharan Pathak

Study Coordinator
Mr. Bal Krishna Mabuhang

Team Members
Dr. Dhanendra Veer Shakya
Dr. Padma Prasad Khatiwada

Team Associates
Mr. Bishnu Bahadur Khatri
Mr. Pawan Kanel
Ms. Kamala Lamichhane

Research Assistants
Ms. Rita Devi Karki
Ms. Ranjana Rijal
Mr. Bishnu Lamichhane

Finance and Administrative Staff
Mr. Rajendra Prasad Acharya
Ms. Anju Rajbanshi
Ms. Nirmala Devi Shrestha
Ms. Ira Paudel
Mr. Giri Raj Dahal
Ms. Meera Kafle
Mr. Janardan Budhathoki
Mr. Rati Lal Uranw
Mr. Machhindra Khatiwada
Mr. Naran Tamang
Ms. Sunita Kumari Lama

Surveyors Involved in the Screening Survey

Name of Researchers	Post title	Research Districts
Prof. Dr. Pushpa Kamal Subedi	Consultant	Dhading
Ms. Rubi Poudel	Associate	Dhading
Dr. Sangram Singh Lama	Consultant	Rasuwa
Ms. Jayanti Dhital	Associate	Rasuwa
Dr. Padma Prasad Khatiwada	Team Member	Sindhupalchok
Ms. Sunita Koirala	Associate	Sindhupalchok
Prof. Dr. Shishir Subba	Consultant	Bhaktapur
Ms. Sharada Bhattarai	Associate	Bhaktapur
Mr. Bal Krishna Mabuhang	Study Coordinator	Gorkha
Ms. Sushila Kumari Pulami	Associate	Gorkha
Mr. Bidhan Acharya	Consultant	Lalitpur
Mr. Suman Thapaliya	Associate	Lalitpur
Mr. Sunil Kumar Acharya	Consultant	Dolakha
Ms. Rita Karki	Research Assistant	Dolakha
Mr. Mahendra Prasad Sharma	Consultant	Ramechhap
Mr. Santosh Dahal	Associate	Ramechhap
Ms. Kamala Lamichhane	Team Associate	Kathmandu
Ms. Tara Kumari Tharu	Associate	Kathmandu
Ms. Bhagabati Sedhai	Consultant	Nuwakot
Ms. Ranjana Rijal	Research Assistant	Nuwakot
Dr. Keshab Prasad Adhikari	Consultant	Makawanpur
Ms. Delina Maharjan	Associate	Makawanpur
Dr. Dhanendra Veer Shakya	Team Member	Kavrepalanchok
Ms. Surakshya Panthi	Associate	Kavrepalanchok
Mr. Bishnu Bahadur Khatri	Team Associate	Sindhuli
Mr. Subhash Koirala	Associate	Sindhuli
Mr Pawan Kanel	Team Associate	Okhaldhunga
Mr. Bishnu Lamichhane	Research Assistant	Okhaldhunga

Surveyors Involved in the Field Survey

Name of Surveyors	Position	District of Work
Mr. Tantrika Raj Khanal	Supervisor	Makawanpur
Ms. Kamana Jha	Enumerator	Makawanpur
Ms. Prajita Subedi	Enumerator	Makawanpur
Ms. Manju Yadav	Supervisor	Sindhuli
Ms. Sharmila Koirala	Enumerator	Sindhuli
Mr. Bhim Prasad Rai	Supervisor	Kavre
Mr. Subas Thapa Magar	Enumerator	Kavre
Ms. Radha Sherpunja	Enumerator	Kavre
Ms. Anjana Lamichhane	Enumerator	Kavre
Ms. Kamala Dong	Enumerator	Kavre
Mr. Tanka Subba	Supervisor	Okhaldhunga
Mr. Surya Prakash Sunuwar	Enumerator	Okhaldhunga
Mr. Dilip Bar Singh Thapa	Supervisor	Ramechhap
Mr. Bhishma Raj Rijal	Enumerator	Ramechhap
Ms. Lal Kumari Rokka	Supervisor	Gorkha
Mr. Bishnu Gurung	Enumerator	Gorkha
Ms. Sanju Subedi	Enumerator	Gorkha
Mr. Dil Bikram Angdembe	Supervisor	Dolakha
Mr. Kamal Acharya	Enumerator	Dolakha
Mr. Bhumidatta Paudel	Supervisor	Sindhupalchok
Ms. Parbati Tamang	Enumerator	Sindhupalchok
Ms. Laxmi Paudel	Enumerator	Sindhupalchok
Mr. Sukuman Dangol	Supervisor	Rasuwa+Nuwakot
Mr. Jyoti Gurung	Supervisor	Rasuwa+Nuwakot
Ms. Sonika Thapaliya	Enumerator	Rasuwa+Nuwakot
Ms. Pramila Pathak	Enumerator	Rasuwa+Nuwakot
Mr. Pradip Raj Tiwari	Supervisor	Dhading
Ms. Bizindra Gurung	Enumerator	Dhading
Ms. Maha Laxmi Panta	Enumerator	Dhading
Mr. Govinda Adhikari	Supervisor	Lalitpur
Ms. Urmila Gole	Enumerator	Lalitpur
Ms. Menaka Adhikari	Enumerator	Lalitpur
Mr. Bijay Mani Devkota	Supervisor	Bhaktapur
Ms. Radha Dhakal	Enumerator	Bhaktapur
Ms. Durga Lamichhane	Enumerator	Bhaktapur
Ms. Rajani Maharjan	Supervisor	Kathmandu
Ms. Basanta Rai	Enumerator	Kathmandu
Ms. Indrakala Tumbahamphe	Enumerator	Kathmandu
Ms. Sadhana Chemjong	Enumerator	Kathmandu
Mr. Debendra Kunwar	Supervisor	Kathmandu
Ms. Asita Gole	Enumerator	Kathmandu
Ms. Shubhecchha Ghimire	Enumerator	Kathmandu

Field Monitors from the then Ministry of Health and Population, Government of Nepal

Mr. Jhabindra Prasad Pandey	Director, PD/MOHP
Mr. Surendra Prasad Adhikari	Statistical Officer
Mr. Arun Gautam	Director, PD/MOHP
Mr. Laxman Raj Khanal	Computer Operator
Mr. Keshav Raj Pandit	Sr. Public Health Officer
Ms. Gita Adhikari	Library Officer
Mr. Shiva Lal Sharma	Statistical Officer
Mr. Samsher Karki	Nayab Subba
Mr. Prakash Paudel	Statistical Officer
Mr. Krishna Prasad Duwal	Section Officer

Annex VII: List of participants in Key Informant Interview

SN	Name	Districts	Age	Sex	Occupation
1.	Chamar Singh Tamang	Kavre	52	Male	Agri. and Social worker
2.	Krishna Prasad Nepal	Kavre	40	Male	Agri. and Coordinator, *Ward Nagarik Manch*
3.	Bhimsen Ghimire	Kavre	55	Male	Chairman of ward and member of Nagarik Samaj of Kusadevi VDC
4.	Shanta Nepal	Kavre	40	Female	
5.	Kedar Nath Nepal	Kavre	57	Male	Veterinary
6.	Ram Prasad Gudagai	Kavre	66	Male	Agri., Social Worker
7.	Bal Krishna Daha	Gorkha		Male	Coordinator, *Ward Nagarik Manch*
8.	Taspani Gurung	Gorkha			Coordinator, *Ward Nagarik Manch (Gumda-9)*
9.	Bir Bahadur Thapa Chhetri	Gorkha		Male	Coordinator, *Ward Nagarik Manch (Gorkha Mun.-15)*
10.	Hira Khatiwada	Okhaldhunga		Male	Local Politician and Community Leader
11.	Dhurba Sherpa	Okhaldhunga	39	Male	Teacher
12.	Ganga Sunuwar	Okhaldhunga		Male	Teacher
13.	Prakash Thami	Dolakha	35	Male	Teacher
14.	Jamuna Maharjan	Lalitpur	47	Female	Social Worker
15.	Ramhari Thapa	Lalitpur	53	Male	Poultry Farm
16.	Naba Raj Dahal	Lalitpur	50	Male	Teacher
17.	Pragati Acherya Dangol	Lalitpur	42	Female	Religious leader in local Church
18.	Bahdur Ghale (Tamang)	Dhading	58	Male	Farmer/ Social Worker
19.	Krishna Parsad Lamsal	Dhading		Male	Teacher
20.	Geeta Dhakal	Kathmandu	41	Female	Health Person
21.	Babu Ram Maharjan	Kathmandu	54	Male	Agriculture
22.	Ram Sharan KC	Kathmandu	62	Male	Agriculture
23.	Dhurba Mahat	Kathmandu	63	Male	Social Worker (Ex. Army) and Member, Relief Distribution Committee
24.	Rupesh Budhathoki	Kathmandu	44	Male	Social Worker and Coordinator, Relief Distribution Committee
25.	Nanda Kumari Maharjan	Kathmandu	54	Female	Teacher
26.	Mira Karki Maharjan	Kathmandu	42	Female	Politician, Social Worker
27.	Ram Kumar Karki	Ramechhap	35	Male	Business
28.	Gyan BahadurKhadka	Ramechhap	53	Male	Teacher
29.	Kalu Singh Vlown	Makawanpur	45	Male	Farmer, Politician
30.	Jasman Singh Syangjang	Makawanpur	56	Male	Social Worker
31.	Jaya Bahadur Bomjan	Makawanpur	31	Male	VDC Secretary
32.	Shree Krishna Thapa	Bhaktapur	16	Male	Student (Member, Child Club Network)
33.	Saroj Thing	Bhaktapur, Nagarkot	24	Male	Farmer
34.	Narayan Duwal	Bhaktapur	52	Male	Teacher
35.	Rajan Karki	Bhaktapur, Madhyapur Thimi	35	Male	Politician and Social worker
36.	Dev Kumari Tamang	Sindhuli	37	Female	Teacher
37.	Uddav Sapkota	Nuwakot	39	Male	Social Mobilizer
38.	Deepak Raj Silwal	Nuwakot		Male	
39.	Mukunda Acharya	Nuwakot	43	Male	Ex. VDC president, Social worker
40.	Dhan Bahadur Tamang	Nuwakot	57	Male	
41.	Bharat Kumar Nepal	Sindhupalchowk	35	Male	Farmer
42.	Ram Bahadur Karki	Sindhupalchowk	33	Male	Farmer
43.	Ram Raj Giri	Sindhupalchowk	55	Male	Teacher

Annex VIII: List of Focus Group Discussion

SN	Districts	PSU no.	Community	No. of participants	Location
1.	Ramechhap	84	Hayu	13	Ramechhap NP-8, Mugan
2.	Ramechhap		Majhi	13	Handichaur-2, Manthali
3.	Dolakha	6	Thami	15	Alampu-5, Topara Danda
4.	Dolakha	11	Surel	23	Suri Gaun, Bhumethan
5.	Dolakha	8	Jirel	15	Skuldanda, Jugu
6.	Sindhupalchowk	13	Tamang	8	Bhotsipa
7.	Sindhupalchowk	17	Mixed	8	Mankha Khadichaur
8.	Sindhupalchowk	86	Danuwar	6	Melamchi-11 Fataksila, Danuwartol
9.	Nuwakot	27	Bhahmain	10	Thansingh Ward 3
10.	Nuwakot	23	Sanyasi	11	Ganesthan Ward 4
11.	Nuwakot	24	Chhetri	11	Jagaran Sahakari Bhawan Kalyanpur ward ward 6
12.	Rasuwa	29	Tamang	11	Yarsa Ward 9
13.	Dhading	87	Kami	13	Nigalpani, Kamidanda, Nilkhatha Municipality-10
14.	Dhading	33	Sibir(Tamang)	12	Dhansharpakha, Earthquakes Victims Camp, Nilkhatha, Municipality
15.	Dhading	87	Damai	11	Kafalpani Nilkhatha, Municipality
16.	Gorkha		Magar	13	Gorkha Municipality-4, Paslang
17.	Gorkha	32	Gurung	11	Gumdi
18.	Gorkha	90	Kumal	15	Palungtar Municipality Ward 3
19.	Okhaldhunga	49	Sherpa	11	Rageni Ward 9, Lamje Boudha
20.	Okhaldhunga		Sunuwar	12	Rageni Ward 3, Dandagaun
21.	Okhaldhunga	44	Rai	10	Baksa
22.	Sindhuli	54	Chhetri	9	Chanaute Ward 6, Kholagaun
23.	Sindhuli	92	Bhujel	6	Kamalamai Ward 6
24.	Kavrepalanchowk	64	Brahman	10	Mahadevsthan-2
25.	Kavrepalanchowk	100	Danuwar	11	Panchkhal Municipality Ward 10
26.	Kavrepalanchowk	59	Majhi	21	Dolalghat Ward 3
27.	Kavrepalanchowk	99	Tamang	11	Panchkhal Municipality-3
28.	Makawanpur	77	Female	11	Sisneri-6
29.	Makawanpur	105	Tamang	12	Hetauda Municipality-28, Wasamadi
30.	Makawanpur	73	Female	10	Faparbari-7
31.	Lalitpur	110	Newar	18	Bungmati
32.	Lalitpur	108	Pahari	23	Godavari Municipality-9
33.	Lalitpur	83	Mixed	19	Thecho
34.	Bhaktapur	124	Newar	13	Suryavinayak
35.	Kathmandu	131	Newar Jyapu	9	Kirtipur
36.	Kathmandu	128	Newar Marchant	14	Jhochhen, Basantapur
37.	Kathmandu	139	Mixed	12	Gokaneshwar

Annex IX: Questionnaire

Central Department of Population Studies
Tribhuvan University

HOUSEHOLD SCHEDULE

Nepal Earthquake 2015: A Socio-demographic Impact Study

Namaskar, my name is …… It has been many years since the last major earthquake in Nepal, that of 1934, but this year a major earthquake occurred on 25 April and was followed by major aftershocks on 26 April and May 12. The epicenters of these tremors were in Barpak, Tatopani, and Sunkhani respectively and they, along with more minor aftershocks caused great damage in Nepal. Approximately nine thousand people died and about 22 thousand people were injured. In addition, about 600 thousand houses and 2,700 government buildings were completely damaged and it was estimated that nearly 3,800 buildings were partially damaged. This unimaginable human and physical damage had a massive socio-demographic impact on the nation. The Central Department of Population Studies at Tribhuvan University is going to conduct a study of this impact for the Ministry of Health and Population of the Government of Nepal. For this reason, I would like to ask you some questions related to the impact of the earthquake on you. This survey will take about an hour to complete. Accurate information from you can play a valuable role in helping the government make an accurate evaluation of the situation. Your support can help to decrease the impact on earthquake survivors as well as help return the country back to normal or build it back better if possible. I would like to request you to help us in this study by answering some questions related to your household. All the answers you give will be confidential, as is provided for in the Statistics Act of 2015 B.S. The information you provide, will be used for statistical purposes.

SECTION 1: SURVEY INFORMATION & HOUSEHOLD IDENTIFICATION

101. PSU No.: [ ][ ][ ] 102. Household serial no.: [ ][ ][ ] 103. Selected household serial no.: [ ][ ]

104. Date of interview (B.S): Day [ ][ ] Month [ ][ ] Year [ ][ ][ ][ ]

105. Name of surveyed district and code (see code on page **20**) ..... [ ][ ]

106. VDC/Municipality (Code) ..... [ ][ ][ ]

107. Ward number ..... [ ][ ]

108. Name of settlement area (Tole/Settlement/Village) _____

109. Result of the interview
- Completed in first attempt 1
- Completed in second or more attempts 2
- Not completed, refused to give interview 3

[ ]

110. Name of respondent and ID number (Copy from SECTION 2: HOUSEHOLD ROSTER)
Name of respondent _____ ID CODE [ ][ ]

111. Name of household head: .....

112. What type of household is yours?
- Nuclear family 1
- Joint family 2
- Extended family 3

[ ]

113. Do you have any type of earthquake-affected identification card?
- Yes, completely damaged 1
- Yes, partially damaged 2
- No 3

[ ]

114. Name of enumerator and code: ..... [ ][ ] Signature: .....

115. Name of supervisor and code: ..... [ ][ ] Signature & date (B.S.): .....

116. Name of editor and code: ..... [ ][ ] Signature & date (B.S.): .....

117. Name of data entry operator and code: ..... [ ][ ]

118. Date of data entry: ..... [ ][ ] [ ][ ] [ ][ ][ ][ ]

SECTION 2: HOUSEHOLD ROSTER

(Information about the household should be asked to the household head or a person who knows the family, include missing and displaced persons too in the roster)

ID CODE	**201.** List the names of members who were living in the household during the earthquake in April 25, and who joined after it and share common kitchen. **(Start with the household head)**	**202.** What is the relationship of the [name] with the household head? HH head..... 01 Spouse..... 02 Son/daughter-in-law .. 03 Daughter/son-in-law.. 04 Father/mother..... 05 Father-/mother-in-law06 Brother/sister ..... 07 Grandchild ..... 08 Domestic worker.. 09 Other (specify)_____	**203.** Sex of the [name]? Male..... 1 Female..2 Third sex..... 3	**204.** Age of the [name]? (Write completed age in years) If less than one year, write **00**	**205.** Caste/ ethnicity of the [name]? (See caste/ ethnicity related code on page **20**)	**205a.** Mother tongue of the [name]? (See mother tongue related code on page **20**)	**206.** Religion of the [name]? (See religion related code on page **21**)	Ask only for **10** years old and above				Ask only for **5** years old and above		Ask only for **5** years old and below	Ask only for **16** years old and above	Ask only for **18** years old and above	**214.** Is [name] currently living in this household? Yes.....1 No.....2	**215.** Did [name] experience any types of psycho-social problems after the earthquake? Yes .... 1 No 2	**216.** Does [name] have any types of disabilities? Yes .... 1 No..... 2
								207. Marital status of the [name]? Unmarried.... 1 Single marriage ..... 2 Multiple marriage ..... 3 Remarried..... 4 Widow/er..... 5 Divorced ..... 6 Separated..... 7		**208.** Major occupation of the [name]? (See occupation related code on page **21**)		**209.** Can [name] read & write in any language? Only can read.....1 Can read & write..... 2 Can't read & write... 3 ↓ **Q211**	**210.** Highest level of education comleted by the [name]? (See education related code on page **21**)	**211.** Does [name] have birth registration certificate? Yes ..... 1 No..... 2 DK 8	**212.** Does [name] have Nepali citizenship certificate? Yes ..... 1 No..... 2 DK 8	**213.** Does [name] have voter's ID card? Yes ..... 1 No..... 2 DK..... 8			
								Earthquake											
								A. Before	**B.** After	**A.** Befor	**B.** After								
01																			
02																			
03																			
04																			
05																			
06																			
07																			
08																			
09																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			

SECTION 3: DAMAGE, RESCUE, RELIEF, REHABILITATION AND LIVELIHOOD

3.1: Damage

301. Before the 25 April earthquake did you know anything about safety measures during earhquake, rescue and relief materials?

Yes 1
No ..... 2 →**Q303** ☐

302. If yes, how did you get this information? *(Mention any one major source)*

Hearing about the 1934 and later earthquakes 1
From an earthquake risk reduction training 2
Reading newspapers/pamphlets, listening to the radio, watching TV .. 3 ☐
Reading textbook 4
From earthquake-related awareness posters 5
Other (specify) _____

302a. Was this information or knowledge useful during the earthquake?

Yes 1
No ..... 2 ☐

303. Please provide information about damage of your house

303.1 Information about damage/loss in the house	**303.2** Damage of assets	**A.** Damage/loss ...1 No damage /loss .....2 ↓ *Next asset*	**B.** Extent of damage Complete..... 1 Partial..... 2 Slight ..... 3 Not applicable..... 8			**303.3** Unit Kg.....1 *Pathi* ....2 *Muri*.....3	**303.4** Total	**303.5** Estimated amount (NPR)
			First	Second	Third			
Damage of assets only . 1 Loss of human only..... 2 →**Q307** Both..... 3	1. House							
	2. Cattleshed							
	3. Cereal (paddy, maize, wheat, millet)							
	4. Cattle (4-legged)							
	5. Two-legged livestock							
	6. Cash, jewellary							
	7. HH facility equipments							
	8. Important documents							

304. What was the material of outer wall of your damaged house? *(Specify any major type of structure)*

Baked brick and mud bonded 1
Stone and mud bonded 2
Woodplanks 3
Baked brick and cement bonded ..... 4 ☐
Stone and cement bonded 5
Pillar system 6
Other (specify) _____

305. What was the material of roof of your damaged house? *(Specify any major type of structure)*

Thatch 1
Stone, slate, tile 2
Galvanized iron sheet 3
Rod, brick & cement bonded ..... 4 ☐
Rod, concrete & cement bonded 5
Wood 6
Woodplanks 7
Other (specify) _____

306. What was the material of floor of your damaged house?

Mud 1
Woodplanks 2
Stone/brick ..... 3 ☐
Cement 4
Other (specify) _____

307. Given the damage to and situation of house/cattleshed after the earthquake, what are the important measures needed to minimize the loss?

Measures	Yes	No	Don't know
1. Use techniques to minimize earthquake- related loss while constructing houses	1	2	8
2. Construct safe places for livestock	1	2	8
3. Select safe places in the house to save food grains and other assets	1	2	8
4. Provide awareness and education about earthquakes induced damage/loss and safety measures	1	2	8
5. Other (specify)_____	1		

3.2 Rescue, Relief and Rehabilitation

308. Who was involved mainly in the rescue efforts in your household immediately after the earthquake from your community?

Family member (including oneself)..... 1
Neighbour/community..... 2
Both..... 3
No need for rescue or search..... 4 **→Q310**

309. Please provide information about time taken to start and complete the rescue operation in your household

Rescue and search	**309.1** Yes ..... 1 No..... 2 ↓ *Next*	**309.2** How long after earthquake was the rescue effort started?			**309.3** How long did it take to complete the rescue activities?		
		Minute	Hour	Day	Minute	Hour	Day
1. Person							
2. Livestock							
3. Utensils							
4. Food grains							
5. Cash, jewellary							
6. HH facility equipments							
7. Important documents							

310. Did any one other than the members of your community, came to help in the rescue activity in your house?

Yes.....1 No.....2**→Q317**

311. If yes, who were the first rescuers?

Security personnel..... 1
Volunteers..... 2 **→Q313a**
NGOs..... 3
INGOs..... 4 **Q315**
Other (specify)_____

312. What is the nationality of security force rescuers?

National security personnel..... 1
International security personnel..... 2 **→Q314**
Both national & international security personnel..... 3

313. Who were the forces of national security personnel? *(Multiple responses possible)*

Nepal Police Force..... 1
Armed Police Force..... 2
Nepal Army..... 3
Don't know..... 4

Q315, Q314 if Q312=3

313a. Who were the volunteer rescuers?

From national organizations..... 1
Of political parties..... 2
Other (specify)_____

Q317

314. What is the nationality of international security force rescuers? *(Name up to 3 countries)*

1. _____ 2. _____ 3. _____ Don't know the country.....8

315. How was the work of rescuer?

Excellent 1
Good 2
Okay 3
Not effective 4

Q317 ☐

316. If rescue work was not effective, what was the reason for not being effective? *(Multiple responses possible)*

Lack of equipments for rescue work 1
Negligence in rescue 2
Lack of collective efforts in rescue work 3
Lack of technical knowledge in rescue work 4
Other (specify)_____

Based on preferred answers, write codes from left to right

☐☐☐☐☐

317. Please, provide information about relief materials that your household received after the earrthquake

Relief materials	**317.1** Whether received relief Yes..... 1 No ..... 2 Not accepted .. 3 ↓ *Next material*	**317.2** After how many days did you receive relief materials?	**317.3** Received items: Unit	**317.3** Received items: Volume (Mention after summing relief items receiving from more than 1 source)	**317.4** Usefullness: Useful..... 1 Not useful..... 2	**317.5** Agency of relief provider: Government (Nepal Govt. ..... 1 Foreign Govt..... 2 Both ..... 3 No ..... 4 Don't know..... 8)	**317.5** Agency of relief provider: Organization (Nepali orgn. .... 1 Foreign orgn.... 2 Both ..... 3 No..... 4 Don't know..... 8)	**317.5** Agency of relief provider: Individual (Nepali indiv ..... 1 Foreign indiv..... 2 Both ..... 3 No ..... 4 Don't know ..... 8)
1. Cash (except received for death)			NPR					
2. Tent			Number					
3. Tarpaulin			Number					
4. Mattress			Number					
5. Galvanized iron sheet			Bundle					
6. Rice, flattened rice, lentil			Kilogram					
7. Oil			Litre					
8. Niidles, biscuits			Packet					
9. Blankets			Number					
10. Clothes			Number					
11. Dignity kits			Number					

318. *(Note: Ask only if household did not receive money in question **317**.)* What was major reason for not receiving relief (particularly money from the government)?

Staying together in one family even after division of property 1
Not having land ownership paper of damaged house 2
Not having land ownership paper of damaged house in own name 3
Other (specify)_____

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319. Whether relief is still coming or not?

Relief still coming 1
Relief still coming but reduced in quantity 2
Relief not coming 3
Don't know 8

☐

3.3 Impact of Earthquake on Livelihood

320. How did you manage the food at the evening/night on the day of earthquake hit?

Did not take food 1
Did not have due to no food..... 2
Collected cereals from debris... 3
Borrowed from others 4
Bought foods in nearby shop..... 5
Borrowed from shop..... 6
Searched naturally grown vegetable..... 7
Taken together in group 8
Other (specify).....

321. Where are you living currently?

Same place (same district, VDC, ward, village) 1
Other place (but same district, VDC, ward) 2
Other place (but same district, VDC) 3
Other place (but same district, VDC) 4
Other place (Other district) 5

322. In whose dwelling is your family currently living?

Living in a temporary shelter on our own land ..... 1 } **Q324**
Living in a permanent house on own land ..... 2 }
Living in other's house 3
Living in a temporary shelter on other's land 4
Living in a temporary shelter on occupied/barren (govt.) land 5
Other (specify)_____

323. If living in other's place, what was mode of staying there?

Requesting and securing permission from others 1
In condition to pay rent/crops 2
Stayed haphazardly in emergency, but no idea about what to do now ..3
Other (specify)_____

324. What is the type of current dwelling?

Public place (school, hospital, public place for taking rest, etc.) 1
Temporary shelter (truss, tent, tarpaulin or camp) 2
Temporary house (repairing cracked/damaged portion of house) 3
Permanent house (not damaged and suitable to stay) 4
Other (specify)_____

325. Does your household possess any land owned or rented-in?

Yes 1
No ..... 2 **→Q338**

326. If yes, how much land either owned or rented-in possessed by your household?

Own: **A.** Ropani		Aana		Paisa		*Rented-in:* **A.** Ropani		Aana		Paisa	
B. Bigha		Kattha		Dhur		**B.** Bigha		Kattha		Dhur	

327. Did the earthquake damage your land?

Yes 1
No ..... 2 **→Q330**

328. If yes, what type of damage was occurred?

Landslide 1
Cracked/dipped down and is useless 2
Water sources dried up 3
Other (specify)_____

329. How much land was damaged?

Own: **A.** Ropani		Aana		Paisa		*Rented-in:* **A.** Ropani		Aana		Paisa	
B. Bigha		Kattha		Dhur		**B.** Bigha		Kattha		Dhur	

330. Did you plant any crops in this season?

Yes 1
No ..... 2 **→Q334**
Not enough land for farming ..... 3 **→Q338**

331. Which crops did you planted? *(Multiple responses possible)*

Paddy 1
Maize 2
Millet 3
Potato 4
Other (specify)_____

332. How was the harvest?

Good ..... 1 } **Q335**
Moderate ..... 2 }
Not good ..... 3 [ ]

333. What was the main reason for harvest not being good?

Being late in cutivation 1
Being not able to nurturing 2
Land dried/cracked/dipped down after the earthquake ..... 3 } **Q335** [ ]
Unfavourable weather 4
Other (specify)_____

334. If not planted any crop, why did you not do so? Give answers based on preferences *(Multiple responses possible)*

Cultivation time had passed by 1
Was staying in camp, so could not cultivate 2
Land was cracked 3
Water sources had dried up 4
Was depressed after the earthquake 5
Other (specify)_____

Based on preferred answers, write codes from left to right [ ][ ][ ][ ][ ]

335. In general, for how many months are foods sufficient from own production? [ ][ ] If answer is **12 →Q338**

336. If not sufficient for **12** months, please say which are months not sufficient for? *(Circle in codes of months)*

Mangsir..... 08	Paush..... 09	Magh..... 10	Falgun..... 11	Chaitra..... 12	Baishakh..... 01
Jeshth..... 02	Ashadh..... 03	Shrawan..... 04	Bhadra..... 05	Ashwin..... 06	Kartik..... 07

337. Please mention, how would you manage food during months of insufficiency? *(Circle in write answer)*

337.1 How do you manage foods during insufficient months?	**337.2** How do you manage to get money to buy foods?	**337.3** Did the problem of buying food decrease or increase after the earthquake?	**337.4** If it decrease, how did it do so?
Buying ..... 1 Borrowing ..... 2 Labour ..... 3 } **Q338** Payable ..... 4 Other (specify)_____	Livestock ..... 1 Business ..... 2 Foreign labour ..... 3 Job/pension/labour ..... 4 Other (specify)_____	Increased ..... 1 } **Q338** Remained the same ... 2 } Decreased 3	Received foods in relief ..... 1 Received financial support ..... 2 Other (specify)_____

Note: Ask questions 338 to 344 only to those households living in a camp.

338. Why did you leave your place/village? *(Multiple responses possible)*

Land was cracked in village and no longer suitable for living 1
Neighbours suggested leaving 2
Government's decision 3
Geologists recommended it 4
Family member died 5
Other (specify)_____

Based on preferred answers, write codes from left to right [ ][ ][ ][ ][ ]

339. How do you feel about camp life?

Good ..... 1 **→Q341** [ ]
Not good 2

340. If it is not good, what are you thinking about doing? *(Give one major answer)*

Willing to leave immeditely 1
Hoping to be resettled elsewhere by the government ..... 2 [ ]
Other (specify)_____

341. What are the conditions of food and living arrangements in the camp? *(Circle in write answer)*

Arrangements	Yes	No
1. Ration	1	2
2. Employment	1	2
3. Medicine/treatment	1	2
4. Drinking water supply	1	2
5. Toilet facility	1	2
6. Sanitation facilities	1	2
7. School	1	2
8. Security (for females)	1	2

342. Who manages the camp? *(Multiple responses possible)*

Government.....1
Foreign government.....2
NGOs.....3
INGOs.....4
Other (specify)_____

343. Is anyone vulnerable living in the camp in need of psychological or psycho-social support?

Yes.....1
No.....2

344. Would you like to return to your own place/village or not?

Yes.....1
No.....2

345. Do you have any plan of building a new house or not?

Yes.....1
No.....2 **→Q349**

346. If yes, how do you plan to build a new house?

From own resources.....1
Taking loan.....2
Others will help.....3
Government will help.....4
Will build if government helps.....5
Will build if government provides soft loan.....6
Other (specify)_____

347. Where do you plan to build a new house?

In previous place.....1 **→Q349**
In a new place (elsewhere).....2

348. If it is in a new place, what sort of place is that for building a new house?

Place with availability of facilities of different services.....1
Place suitable for cultivation, livestock and culture.....2
Place where a built house is provided by others.....3
Other (specify)_____

349. Have you talked about rebuilding damaged house with NGO/INGO staff/government officials/other individuals?

Yes.....1
No.....2 **→Q350.4**

350. Please mention about rebuilding conversation of damaged house. *(Circle in the right answer)*

350.1 If yes, whom did you talk to?	**350.2** After the talk, was your house rebuilt?	**350.3** Who built your house?	**350.4** How could reconstruction be better?
Government officials.....1 NGO.....2 INGO.....3 Benefactor.....4 *(Multiple responses possible)*	Yes, built.....1 Being made.....2 Planning to build.....3 Not built.....4 ↓ **Q350.4**	Government.....1 NGO.....2 INGO.....3 Benefactor.....4	Discussing in detail with us.....1 Good if built providing all kinds of facilities.....2 Good if we have been displaced because there are many difficulties in our origin place.....3 Let us build a house providing construction materials.....4

351. How did/do you manage money for festivities, weddings and funerals? *(Circle the right answer)*

351.1 What is your main festival?	**351.2** How are you planning to celebrate/did you celebrate the festivals which you observe?	**351.3** How do/did you manage money for marriages, *Bratabandh* ceremonies, funerals, etc.?
Dashain/Tihar ..... 1 Mhapuja ..... 2 Local feast ..... 3 Lhosar ..... 4 Eed ..... 5 Christmas ..... 6 Other (specify)_____	Earthquake brought suffering, so will/did not celebrate ..... 1 For formality's sake only ..... 2 Celebrated/will celebrate festivals even taking loan ..... 3 Celebrated/will celebrate as usual with own resources 4	Earthquake brought suffering, so will/did not celebrate ..... 1 For formality's sake only ..... 2 Celebrated/will celebrate festivals even taking loan ..... 3 Celebrated/will celebrate as usual with own resources ..... 4 No plan 5

Note: If there is no female member in the household, skip to question 355.

352. *(Note: Check in Household Rester, ask this question **352** only if household head is female)*
How secured did you feel before and after the earthquake? *(Circle the right answer)*

A. Before the earthquake	**B.** After the earthquake
No feeling of insecurity ..... 1 Feeling of some insecurity and fear ..... 2 Feeling of high insecurity 3	No feeling of insecurity ..... 1 Feeling of some insecurity and fear ..... 2 Feeling of high insecurity 3

*Note: Ask questions **353** & **354** only to female household member.*

353. Did women feel any uncomfortable during taking meals, sleeping and living while staying in temporary shelter, camp, or cracked own house?

Yes 1
No ..... 2 ☐

354. What are the situations of problems related to women before and after the earthquake?

Problems	**A.** Before Yes ..... 1 No ..... 2 Inappro-priate 3	**B.** After Yes ..... 1 No ..... 2 Inappro-priate 3	**C.** If there were problems, how did you cope with them? (Mention any two coping strategies)
1. Living & sleepling for unmarried daughters/sisters			
2. During menstruation			
3. Changing clothes			
4. Going to the toilets			
5. Talking with peers in phone			
6. Living, sleepling & resting for pregnant women			
7. Other (specify)_____			

355. Were you aware of following incidences in your community before and after the earthquake? *(Circle the right answer)*

Incidences	**A.** Before earthquake			**B.** After earthquake		
	Yes	No	Don't know	Yes	No	Don't know
1. Gender and sexual violence against women	1	2	8	1	2	8
2. Child trafficking	1	2	8	1	2	8
3. Girl child trafficking for selling	1	2	8	1	2	8
4. Government initiation on rehabilitation of trafficked children	1	2	8	1	2	8
5. Punishment given to those involved in child trafficking	1	2	8	1	2	8
6. Other (specify)_____	1			1		

356. Were any programs carried out in your community to minimize the above mentioned incidences? *(Circle the right answer)*

Programs	**A.** Before earthquake			**B.** After earthquake		
	Yes	No	Don't know	Yes	No	Don't know
1. Awareness program in relation to protection of children & women	1	2	8	1	2	8
2. Awareness program on trafficking & security of children & women	1	2	8	1	2	8
3. Other (specify)_____	1			1		

357. Have you expereienced any caste-based discrimination or untouchability during earthquake crisis?

No discrimination at the beginning but as time has passed, felt discrimination as earlier.....1
No discrimination right from the beginning.....2
Discrimination existed right from the beginning.....3
Earlier there was discrimination but not now.....4

358. Was there equality for all in the rescue work?

Yes.....1
No.....2

359. Was there equality for all in the relief distribution?

Yes.....1
No.....2

360. Does your community have its own traditional social institutions? Yes.....1 No.....2→**Q360a**

If yes, what are they?

1. _____ 2. _____ 3. _____

360a. Are there any clubs, cooperatives, or consumer groups? Yes.....1 No.....2→**Q361**

360b. If yes, what are they *(Multiple responses possible)*

Youth club.....1
Cooperative.....2
User's Group.....3
Other (specify)_____

360c. Were any local organizations involved in rescue or relief distribution?

Yes.....1
No.....2
Don't know.....3

361. Whose help do you get to get governmental work accomplished in your VDC/municipality?

VDC Secretary.....1
Office/Technical Assistant.....2
Local political leader.....3
Local knowledgeable person (but not political leader).....4

362. Generally where do you find your VDC/municipality secretary when you need him or her?

In VDC/ward of municipality.....1
At district headquarters.....2
Elsewhere.....3

363. What is your household's current status with regard to the following services/facilities?

SN	**363.1** Services/facilities	Yes, before but no, after the EQ.....1 Yes, both before & after the EQ.....2 No, both before & after the EQ.....3 No, before but yes, after the EQ.....4	SN	**363.2** Have you done the following activities for the betterment of your family after the earthquake?	Yes.....1 No.....2
1	Electricity		1	Cash deposited in bank/cooperative	
2	Drinking water		2	Selling or buying of land	
3	Toilet		3	Selling or buying of cattle	
4	Telephone (landline)		4	Drop out of children from school	
5	Mobile phone		5	Lessened food consuming behaviour	
6	Gas stove		6	Decision for migration	
7	Motorcycle		7	Reduced workload	
8	Cycle		8	Insurance	
9	Car, jeep, van		9	Loan	
10	Sewing machine		10		
11	Computer/laptop		11		

SECTION 4: EMPLOYMENT, EDUCATION AND HEALTH

4.1 Impact of Earthquake on Employment

Note: This section is related to the impact of the earthquake on occupation/employment. The questions are to be asked for members of the family aged 10 years or older and currently staying at home.

Check: Ask only if there were changes in the occupation/employment status (Question 208) of family members after the earthquake.

ID Code	**401.1** Copy earlier occupation/ employment from Household Roster (Q. No. 208)	**401.2** Copy currect occupation/ employment from Household Roster (Q. No. 208)	**401.3** What was the reason for the change in occupation? Due toearthquake ..... 1 Other reason 2	**401.4** Which occupation is more satisfying to you? Previous ..... 1 Current ..... 2 Don't know 8

402. Did the earthquake cause any effects in the main traditional occupation/business of your family?
Yes 1
No ..... 2 → **Q404** ☐

403. Is there any chance that your family will return to its previous traditional occupation/business?
Yes 1
No ..... 2 ☐

404. Have the family members involved in any work of your family gone outside in search of employment after the earthquake?
Yes 1
No ..... 2 → **Q406** ☐

405. If your family members have gone outside in search of employment after the earthquake, please tell us about it.

ID Code	**405.1** Current place of destination (See code on page **20**)	**405.2** Reason behind going Confirmed earlier ..... 1 EQ affected employment here ..... 2 Unemployment ..... 3 Other (specify)_____	**405.3** Type of work at destination Service/daily wage earning ..... 1 Self-employed agri. & livestock ..... 2 Self-employed non-agriculture ..... 3 Other (specify)_____	**405.4** Did he/her send any remittance? Yes ..... 1 No 2

406. Is/was there any member in your family who was outside home during 25 April earthquake and had returned afterwards?
Yes 1
Yes, but not retuned ..... 2 } **Q408** ☐
No ..... 3 }

407. If yes, please tell us about it.

D Code	**407.1** Status of return Returned and still living here ..... 1 Returned, styed for some time, and went back 2	**407.2** District or country of destination (place of work) (See code on page **20**)	**407.3** Whether the returnee left the work or his/her work there is continuing Job still exists .. 1 Left the job .... 2 ↓ **Q407.5**	**407.4** Whether returnee gets salary during stay over here, if his/her work there still exists Gets full salary .. 1 Gets salary partially ..... 2 Does not get salary 3	Ask only if **Q407.1** is **1** **407.5** If still at home, whether willing to go again for labour migration Yes ..... 1 No ..... 2 Don't know 8	Ask only if **Q407.1** is **2** **407.6** If already returned, whether doing the same job or working on new one Same job ..... 1 New job 2	**407.7** If they had brought any money for the emergency crisis management of the family, how much had they brought? (If no, write '00')
							NPR_____
							NPR_____
							NPR_____

4.2 Impact of Earthquake on Education

Note: This section is related to the impact of the earthquake on education. Question should be asked for all children and adolescents aged 5-19 years currently staying at home. If there is no member of this age group, skip to → Q420.

408. Are there any children/adolescents in family who have been deprived of going to school due to the earthquake?
   - Yes 1
   - No ..... 2 **→Q410**
   - Did not attend school even before the earthquake ..... 3 **→Q420**

   ☐

409. If yes, what was the major reason for being deprived of going to school?
   - Scare of aftershocks 1
   - Damaged school building 2
   - Economic hardship after earthquake 3
   - Injury or sickness 4
   - Parents did not send to school 5
   - Lost parents in earthquake 6
   - Other (specify)_____

   ☐

410. Overall, what was the major educational effect that the earthquake had on children and adolescents?
   - School building damaged 1
   - House damaged ..... 2 **→Q413**
   - Both school building and house damaged 3
   - No any problem ..... 4 **→Q417**
   - Other (specify)_____

   ☐

411. If school building damaged, what major arrangements were made for children and adolescents to resume study?
   - Resumed in temporary learning centre (TLC) 1
   - Resumed under the open sky 2
   - Resumed in the damaged school building 3
   - Dropped out of school ..... 4 **→Q417**
   - Changed school ..... 5 **→Q414**
   - Did not drop out of school but currently resumed study at home 6
   - Other (specify)_____ **Q417**

   ☐

412. What are the problems with holding regular classes in damaged school buildings? *(Multiple response possible)*
   - Coming noise during study due to no separate classroom 1
   - Leakage of water from rooftop 2
   - Lack of playing ground 3
   - Problem of drinking water 4
   - Problem of toilet facility 5
   - Other (specify)_____

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413. What are the major arrangements made for the children and adolescents to study in damaged house?
   - Study where they live 1
   - Made separate arrangements for studying 2 **Q417**
   - Other (specify)_____

   ☐

414. Where did you send your children or adolescents to study?
   - Nearby city or place where there is accommodation facility 1
   - District headquarters 2
   - Other (specify)_____

   ☐

415. Whom do you send to study?
   - Son(s) only 1
   - Daughter(s) only 2
   - Both son(s) & daughter(s) 3

   ☐

416. With whom chilren/adolescents stay while studying outside?
   - Relatives 1
   - Hostel 2
   - Rented room 3
   - Other (specify)_____

   ☐

417. Are there any child-friendly classes in this area?

Yes, even before the earthquake.....1
Yes, after the earthquake.....2
No.....3 →**Q420** ☐

418. Do any children from your household go to child-friendly classes?

Yes.....1
No.....2 →**Q420** ☐

419. If yes, have you noticed any positive changes in their learning, verbal communication, and/or social behaviour?

Yes.....1
No.....2 ☐

4.3 Impact of Earthquake on Health

Note: This section focuses on the impact of the earthquake on health. Questions are related to the impact of the earthquake on the health statuses of family members.

420. Has anyone in your family been injured or suffered a serious impact on his or her health due to the earthquake?

Yes.....1
No.....2 →**Q422** ☐

421. Provide information about family members who were injured or seriously affected from the earthquake

ID Code	**421.1** What is the major problem of the persons who have been injured or undergone a serious impact on their health? Physical disability/ disfigurement.....1 Mental disorder.....2 Still unconscious.....3 Other (specify)_____	**421.2** Was [name] treated? Yes.....1 No.....2 ↓ **Q421.5**	**421.3** Where was [name] treated? In the same district..1 Elsewhere (specify)___	**421.4** Who provided financial support for the medical treatment of [name]? Self.....1 Goverment.....2 Organizations.....3 Relatives.....4 Other (specify)_____ →**Next Q421.1**	**421.5** What is the reason for [name] not receiving treatment? Not access of health service facility.....1 Economic hardship.....2 Other (specify)_____

422. Has anyone in your family shown any of the following signs aftermath of the earthquake?

Signs	Yes	No
1. Vomiting	1	2
2. Fainting	1	2
3. Toes being twisted	1	2
4. Muscles cramping	1	2
5. Crying	1	2
6. Fainting after crying	1	2
7. Looking physically fit but stressed mentally	1	2
8. Low or high blood pressure	1	2

423. Please provide information about family members having physical disabilities

ID Code	**423.1** Was the physical disablity of [name] occured even before or after the earthquake? Before the earthquake ... 1 After the earthquake 2	**423.2** What type of disability does [name] have? Physical disability ..... 1 Defect of eye-sight ..... 2 Defect of hearing ..... 3 Defect of hearing & eye-sight ..... 4 Defect of verbal ..... 5 Mental defects ..... 6 Defect of brain ..... 7 Multiple disabilities 8	**423.3** Did [name] experience any kind of discrimination in rescue operations or in relief distribution due to disability? Yes ..... 1 No ..... 2 ↓ **Next Q423.1**	**423.4** If yes, who discriminated to you? Family member ..... 1 Community/neighbour ..... 2 National security force ..... 3 International security force ..... 4 Other (specify)_____

424. Please provide information about elderly member aged 60 years or over

ID Code	**424.1** Where was [name] staying at the time of earth-quake? Inside the house ..... 1 Outside the house 2	**424.2** Was [name] injured from the earthquake? No injury ..... 1 ↓ **Q424.4** Injury in hands/legs . 2 Injury in head ..... 3 Injury in other parts of the body 4	**424.3** Was [name] received any treatment? No need of treatment ..... 1 Did oneself ..... 2 Family did ..... 3 Government did at free of cost ..... 4 Organizations did .... 5 Other (specify)_____	**424.4** How did [name] feel after the earthquake? Scare even now... 1 Neighter scared earlier & nor now ..... 2 Scared earlier but not now ..... 3 Not scared earlier but scare now ... 4	**424.5** What/who was the thing/person [name] most worried about during earthquake? Son/daughter ..... 1 Grandchildren .... 2 Cereal/property .. 3 Livestock ..... 4 Other (specify)__	**424.6** What is the main source of [name]'s personal income? Social security allowance.. 1 Products of agriculture ... 2 Business ..... 3 Share/investment ..... 4 Economic support from family member ..... 5 Donation ..... 6 Pension ..... 7 Other (specify)_____ ↓ **Next Q424.1**	**424.7** Does [name] receive social security allowance even after the earthquake? Yes ..... 1 No 2

425. Status of vaccinations received by children below five years of age

(Note: BCG is given on the first day of birth; DPT/Polio/Hepatitis 1st, 2nd & 3rd on the 30th, 60th and 90th days respectively, and measles in the 9th month).

ID Code	**425.1** Has [name] received regular vaccination?		**425.2** Which are the following vaccinations received by [name]?															
	A. Before earthquake	**B.** After earthquake	**A.** Before earthquake								**B.** After earthquake							
	Yes ..... 1 No ..... 2 If 'No' in both→ **Q426**	Yes ..... 1 No 2	BCG Yes .. 1 No ... 2	DPT/ Polio **1st** Yes .. 1 No ... 2	Hepa-titis **1st** Yes .. 1 No .. 2	DPT/ Polio **2nd** Yes .. 1 No ... 2	Hepa-titis **2nd** Yes .. 1 No .. 2	DPT/ Polio **3rd** Yes ... 1 No ... 2	Hepa-titis **3rd** Yes .. 1 No ... 2	Meas-les Yes .. 1 No .. 2	BCG Yes .. 1 No ... 2	DPT/ Polio **1st** Yes .. 1 No ... 2	Hepa-titis **1st** Yes .. 1 No .. 2	DPT/ Polio **2nd** Yes .. 1 No ... 2	Hepa-titis **2nd** Yes .. 1 No .. 2	DPT/ Polio **3rd** Yes .. 1 No .. 2	Hepa-titis **3rd** Yes .. 1 No ... 2	Meas-les Yes .. 1 No .. 2

426. Do any family members have the following diseses?

SN	**426.1** Patients with	Yes..... 1 No ..... 2 ↓ **Next**	ID Code	**426.2** Received treatment Yes ..... 1 No ..... 2 ↓ **Next Q426.1**		**426.3** How are you managing medicine? Received government aid ..... 1 Received NGOs aid..... 2 Self management ..... 3 Other (specify)_____	
				A. Before EQ	**B.** After EQ	**A.** Before earthquake	**B.** After earthquake
1	HIV infected						
2	Kedney disease						
3	Cancer						
4	Mental disorder						
5	Respiratory problem						
6	Other (specify)_____						

SECTION 5: POPULATION DYNAMICS

5.1 Impact of Earthquake on Fertility and Mortality

501. Did anybody in your family die in the earthquake?
Yes.....1 No.....2→**Q503** ☐

502. Please provide the details about family member's deaths caused by the earthquake

SN	**502.1** Name	**502.2** Sex Male..... 1 Female..... 2 Third sex.. 3	**502.3** Age (write completed age in years)	**502.4** Types of death Spot death..... 1 Died during rescue operation..... 2 Died during medical treatment ..... 3 Died after treatment 4	If death was of female		**502.7** Received compensation from the government? Yes..... 1 No..... 2 ↓ **Q502.10**	If received compensation		**502.10** If not received compensation, what is the reason for not receiving? Not having a death certificate..... 1 Not having a citizenship certificate..... 2 Don't know ..... 3 Other (specify)____
					502.5 Was she pregnant at the time of death? Yes..... 1 No 2	**502.6** Did she die within 42 days of delivery? Yes..... 1 No 2		**502.8** How much money did you receive for the funeral? (NPR)	**502.9** How much money did you receive as compensation? (NPR)	
1										
2										
3										
4										
5										
6										
7										
8										

Note: The following sections are related to the impact of the earthquake on reproduction and mortality. Each question asks about the situation before and after the earthquake. With regard to the period before the earthquake, past 12 months is considered. Married women aged 15-49 years, currently staying at home in the selected household should be asked about questions 503 to 519. If there is more than one such woman in the selected household, the respondent should be select by lottery.

503. Please give information about family planning

ID Code (Married women aged 15-49)	**503.1** Are health service providers available in the locality after the earthquake? Yes ..... 1 No..... 2→**Q503.3**	**503.2** Do they give advice or discuss with you about family planning, reproductive health & women's health regularly even after earthquake? Yes ..... 1 No..... 2

ID Code (Married women aged 15-49)	**503.3** Has [name] used any family planning method?		**503.4** Which major family planning method has used by [name]?	
	A. Before EQ	**B.** After EQ	**A.** Before earthquake	**B.** After earthquake
	Yes.....1 No .....2 If 'No' in both ➔ **Q504**	Yes.....1 No.....2	F. sterilization ..1 Implant..... 5 Diaphragm..... 9 F. sterilization ..2 Pill ..... 6 Foam/jelly ..... 10 IUCD .....3 Condom..... 7 Natural method.. 11 Depo-Provera..4 F. Condom..... 8 Other (spec.)___	F. sterilization ..1 Implant..... 5 Diaphragm..... 9 F. sterilization ..2 Pill ..... 6 Foam/jelly ..... 10 IUCD .....3 Condom..... 7 Natural method.. 11 Depo-Provera..4 F. Condom..... 8 Other (spec.)___

503a. Did you use FP method to avoid pregnancy during exceptional situation of post-earthquake?

Yes.....1
No.....2 ☐

504. Please provide pregnancy-related information

ID Code (Married women aged 15-49)	**504.1** Is [name] pregnant?		**504.2** Did [name] regularly visit for health check ups during pregnancy?		**504.3** What is the main reason for [name] not visiting for health check ups during pregnancy?	
	A. Before EQ	**B.** After EQ	**A.** Before EQ	**B.** After EQ	**A.** Before earthquake	**B.** After earthquake
	Yes ... 1➔**Q504.2** No.....2 If 'No' in both ➔ **Q505**	Yes.....1 No.....2	Yes.....1 No.....2 If 'Yes' in both ➔ **Q507**	Yes.....1 No 2	No access of health service facility .....1 Lack of knowledge.....2 Fear .....3 Did not send by family member ..4 Other (specify)_____	No access of health service facility.....1 Lack of knowledge.....2 Fear .....3 Did not send by family member ..4 Other (specify)_____
						➔ **Q507**

505. Please provide child delivery-related information

ID Code (Married women aged 15-49)	**505.1** Has [name] given birth to a child?		**505.2** Where [name] had given birth to a child?		**505.3** What is the reason for [name] giving birth to a child at home/cattleshed or other places?	
	A. Before EQ	**B.** After EQ	**A.** Before EQ	**B.** After EQ	**A.** Before earthquake	**B.** After earthquake
	Yes... 1➔**Q505.2** No.....2 If 'No' in both ➔ **Q507**	Yes.....1 No.....2	Birthing centre.....1 Home .....2 Cattleshed.....3 Other (specify)___	Birthing centre .....1 Home.....2 Cattleshed .....3 Other (specify)___	No access of health service facility .....1 Lack of knowledge.....2 Fear .....3 Economic hardship .....4 Lack of skilled birth attendant..5 Forced to give birth at home ...6 Other (specify)_____	No access of health service facility.....1 Lack of knowledge.....2 Fear .....3 Economic hardship .....4 Lack of skilled birth attendant..5 Forced to give birth at home....6 Other (specify)_____

506. If you delivered a baby during the earthquake, did you receive a transportation allowence?

Yes.....1
No.....2 ☐

Note: Ask questions 507-512 only if the respondent has child aged 2 years or below

ID Code (Married women aged 15-49)	**507.** Has [name] breastfeeding regularly to her child?		**508.** If [name] did not breastfeed to her child after the earthquake, what is the main reason for this?	**509.** What is the age of latest child of [name] at the time of weaning? (write age in months)	**510.** Whether [name] had fed milk to baby that received in relief?
	A. Before EQ	**B.** After EQ			
	Yes.....1 No.....2	Yes..1➔**Q510** No.....2	Death of infant child .....1 Inappropriate due to earthquake.....2 Being injured/sick oneself.....3 Other (specify)_____	☐☐	Yes.....1 No.....2 Not received milk in relief 3

ID Code (Latest chiid of 2 years or below)	**511.** What did you feed to your baby in the last 24 hours?	Fed	Did not feed	**512.** Number of times fed
	1. Breastfeeding	1	2→**Next**	
	2. Liquid items (milk, pulses, lacto, juice, etc.)	1	2→**Next**	
	3. Solid food items (rice, Lito, fruits, etc.)	1	2→**Q513**	

513. Please provide information about infant and child (under 5-years of age) mortality

ID Code (Married women aged 15-49)	**513.1** Had [name] any dead child who was born alive?		**513.2** Nunber of dead son(s) of [name]?		**513.3** Nunber of dead daughter(s) of [name]?	
	A. Before earthquake	**B.** After earthquake	**A.** Before earthquake	**B.** After earthquake	**A.** Before earthquake	**B.** After earthquake
	Yes ..... 1 No ..... 2 If 'No' in both → **Q514**	Yes ..... 1 No 2	Write '**00**' if no dead son		Write '**00**' if no dead daughter	

514. What is the total number of children ever born to you (including dead children who were born alive)? If not given any birth to a child, write '00'. ☐☐ If '00' →**Q516**

515. What was the date of birth of your latest child?

Year ☐☐☐☐ Month ☐☐ Day ☐☐

516. Do you have desire to give birth to another child?

Yes 1
No ..... 2 →**Q519** ☐

517. If yes, when (years later) do you want to do so? If within one year write '**00**'.

☐☐ If '**00**' →**Q519**

518. Why do you plan to postpone giving birth?

Due to earthquake 1
Latest child is still too young 2
Spouse currently not living together 3
Othe (specify)_____ ☐

519. Please provide information on spontaneous abortions and stillbirths

ID Code (Married women aged 15-49)	**519.1** *All pregnancies do not end in a successful birth, which is known as a "pregnancy loss" and a still birth, i.e. a baby born dead, may also occur.* Has [name] ever experienced such an incidence?		**519.2** How many of [name]'s pregnancies were not successful?		**519.3** In your opinion, what are the reasons for pregnancy loss and still birth?	
	A. Before earthquake	**B.** After earthquake	**A.** Before earthquake	**B.** After earthquake	**A.** Before EQ	**B.** After EQ
	Yes ..... 1 No ..... 2 If 'No' in both → **Q519a**	Yes ..... 1 No 2	If there is no pregnancy loss or still birth, write '**00**'			
			☐☐	☐☐		

519a. An earthquake might result in a difficult situation as people may face problems for "sleeping, living, conceiving a child, delivery, and caring for a new mother and newborns, so families try their best to postpone the birth of a child." What do you say about this statement?

Completely agree 1
Partially agree 2
Indifference 3
Completely disagree 4
Partially disagree 5

520. Is there any incidence of postponement of marriage in your household due to earthquake?

Yes 1
No 2

521. Did anyone in your household get married after the earthquake?

Yes 1
No ..... 2 →**Q601**

522. If yes, what was the age at marriage? ☐☐ If **18** years or above →**Q601**

523. If married at below 18 years, what is the reason for early marriage?

Due to problem caused by earthquake 1
Married themselves 2
Following tradition 3
Due to school dropout/obstruction in study 4
Feeling insecurity from middle-persons 5
Other (specify)_____

6. Impact of Earthquake on Population Mobility

601. Is anyone in your family missing due to the earthquake?

Yes 1
No ..... 2 →**Q603**

602. Please provide information about family members missing due to the earthquake

SN	**602.1** How/when did they go gmissing?	**602.2** Was Initiated for searching them?	**602.3** Who was mainly involved in searching them?
	Was living at home together but missing since the day of earthquake ..... 1 Was living outside home but missing since the day of earthquake ..... 2 Was with us even after the earthquake but disappeared later ..... 3 Other (specify)_____	Yes ..... 1 No ..... 2 ↓ **Next Q602.1**	Government agent ..... 1 Agents from NGO ..... 2 Family members themselves ..... 3 Neighbour/friends ..... 4 Other (specify)_____

603. Was anyone displaced from household due to earthquake?

Yes 1
No ..... 2 →**Q605**

604. Please provide information about family members displaced due to the earthquake

SN	**604.1** What was the main reason for displacement? Completely damaged house..... 1 All of family members died..... 2 Landslide caused unsuitable to live in..... 3 Government declared dangerous to live in.. 4 Other (specify)_____	**604.2** Where is their place of displacement? Same place/village ..... 1→**next Q604.1** Different place, but same district ..... 2 Different district & place..... 3 Foreign country 4	**604.3** Who initiated mainly for them returning back? Government agent..... 1 Agents from NGOs..... 2 Family members ithemselves ..... 3 Neighbour/friends..... 4 Not initiated ..... 5 Other (specify)_____

605. Was there anybody from the household who out-migrated/emigrated within one-year period before the earthquake?

Yes 1
No ..... 2 →**END** ☐

606. If yes, please provide information about the migration

SN	**606.1** Give names of household members who out-migrated/emigrated	**606.2** Sex of [name] Male..... 1 Female .... 2 Third sex.. 3	**606.3** Age of [name] (write completed age in years) If less than one year, write '**00**'	**606.4** Where is the place of destination of [name]? Other VDC of same district..... 1 Municipality of same district..... 2 VDC of other district..... 3 Municipality of other district..... 4 Foreign country..... ....Use code of country (See codes on page **20**)	**606.5** What is the reason for migration of [name]? Natural disaster..... 1 Other reasons.. 2 ↓ **Q606.7**	**606.6** What type of natural disaster caused [name] for leaving the household? Earthquake..... 1 Flood..... 2 Landslide..... 3 Fire..... 4 Snowfall..... 5 Draught..... 6 Other (specify)___	**606.7** What is the other reason for [name] leaving the household? Employed in agri. ..... 1 Employed in non-agri.. 2 Self employed in agri... 3 Self employed in non-agriculture ..... 4 Seeking job ..... 5 Study ..... 6 Other (specify)_____

607. Did any household member, who was living outside/abroad and did not return, send any amount of cash for managing crisis after the earthquake?

Yes 1
No ..... 2 → **END** ☐

608. If yes, how much it was? Total amount NPR _____

Thank you very much for providing your valuable time to adminster this questionnaire!

CODES FOR DISTRICT, COUNTRY, CASTE/ETHNICITY AND MOTHER TONGUE/LANGUAGE

DISTRICT/ COUNTRY

TAPLEJUNG 01
PANCHTHAR 02
ILAM 03
JHAPA 04
MORANG 05
SUNSARI 06
DHANKUTA 07
TEHRATHUM 08
SANKHUWASABHA 09
BHOJPUR 10
SOLUKHUMBU 11
OKHALDHUNGA 12
KHOTANG 13
UDAYAPUR 14
SAPTARI 15
SIRAHA 16
DHANUSHA 17
MAHOTTARI 18
SARLAHI 19
SINDHULI 20
RAMECHHAP 21
DOLAKHA 22
SINDHUPALCHOK 23
KAVREPALANCHOK 24
LALITPUR 25
BHAKTAPUR 26
KATHMANDU 27
NUWAKOT 28
RASUWA 29
DHADING 30
MAKWANPUR 31
RAUTAHAT 32
BARA 33
PARSA 34
CHITWAN 35
GORKHA 36
LAMJUNG 37
TANAHUN 38
SYANGJA 39
KASKI 40
MANANG 41
MUSTANG 42
MYAGDI 43
PARBAT 44
BAGLUNG 45
GULMI 46
PALPA 47
NAWALPARASI 48
RUPANDEHI 49
KAPILBASTU 50
ARGHAKHANCHI 51
PYUTHAN 52
ROLPA 53
RUKUM 54
SALYAN 55
DANG 56
BANKE 57
BARDIYA 58
SURKHET 59
DAILEKH 60
JAJARKOT 61
DOLPA 62
JUMLA 63
KALIKOT 64
MUGU 65
HUMLA 66
BAJURA 67
BAJHANG 68
ACHHAM 69
DOTI 70
KAILALI 71
KANCHANPUR 72
DANDHELDHURA 73
BAITADI 74
DARCHULA 75
INDIA 81
BHUTAN 82
CHINA 83
BANGLADESH 84
HONG KONG 85
MALAYASIA 86
JAPAN 87
KOREA 88
SINGAPORE 89
ARABIAN COUNTRIES 90
UNITED KINGDOM 91
EUROPE 92
USA/CANADA 93
AUSTRALIA 94
AFRICA 95
LATIN AMERICA 96
OTHER COUNTRY 97

CASTE/ ETHNICITY

Hill Groups

BRAHMAN (HILL) 01
CHHETRI 02
THAKURI 03
SANYASI (DASNAMI) 04

Hill Adibasi/Janajati

MAGAR 05
TAMANG 06
NEWAR 07
RAI 08
GURUNG 09
LIMBU 10
KUMAL 11
GHARTI/ BHUJEL 12
MAJHI 13
SHERPA 14
DANUWAR 15
SUNUWAR 16
CHEPANG/PRAJA 17
THAMI 18
KULUNG 19
YAKKHA 20
GHALE 21
KHAWAS 22
DARAI 23
PAHARI 24
THAKALI 25
BHOTE 26
CHANTYAL/CHHANTEL 27
HYOLMO 28
BOTE 29
BRAHMU/BARAMO 30
NACHHRING 31
YAMPHU 32
CHAMLING 33
ATHPAHARIYA 34
JIREL 35
DURA 36
BANTAWA 37
RAJI 38
DOLPO 39
BYANSI/SAUKA 40
THULUNG 41
LEPCHA 42
MEWAHANG BALA 43
BAHING 44
HAYU 45
LHOPA 46
SAMPANG 47
LHOMI 48
KHALING 49
TOPKEGOLA 50
WALUNG 51
LOHORUNG 52
RAUTE 53
KUSUNDA 54

Hill Dalit

KAMI 55
DAMAIN/DHOLI 56
SARKI 57
BADI 58
GAINE 59

Madhesi Groups-1

BRAHMAN (TARAI) 60
RAJPUT 61
KAYASTHA 62

Madhesi Groups-2

YADAV 63
TELI 64
KOIRI/KUSHHAWA 65
KURMI 66
DHANUK 67
MALLAHA 68
KEWAT 69
KATHBANIYA 70
KALWAR 71
KANU 72
HAJAM/THAKUR 73
LOHAR 74
SUDHI 75
HALWAI 76
BARAEE 77
BIN 78
SONAR 79
NUNIYA 80
KUMHAR 81
KAHAR 82
LODH 83
BADAHEE 84
GADERI /BHEDIYAR 85
MALI 86
DHUNIYA 87
RAJDHOB 88
RAJBHAR 89
AMAT 90
DEV 91
KAMAR 92
NURANG 93

Madhesi Adibasi/Janajati

THARU 94
RAJBANSI 95
SATAR /SANTHAL 96
JHANGAD/DHAJAR 97
GANGAI 98
DHIMAL 99
TAJPURIYA 100
MECHE 101
PATHAKATTA/ KUSHWADIYA 102
MUNDA 103
KISAN 104
KOCHE 105
CHIDIMAR 106

Madhesi Dalit

CHAMAR/ HARIJAN/ RAM 107
MUSAHAR 108
DUSHAD/ PASWAN/ PASI 109
DHOBI 110
TATMA/TATWA 111
KHATWE 112
BANTAR/SARDAR 113
DOM 114
KORI 115
SARABARIA 116
HALKHOR 117
NATUWA 118
DHANKAR/DHARIKAR 119
DHANDI 120
KALAR 121

Cultural Groups

MARWADI 122
BANGALI 123
PUNJABI/SIKH 124
FOREIGNER 125
MUSLIM 126

Other Groups

JANAJATI OTHERS 127
DALIT OTHERS 128
TARAI OTHERS 129
UNIDENTIFIED OTHERS .. 130

MOTHER TONGUE/ LANGUAGE

Indo-European

NEPALI 01
MAITHILI 02
BHOJPURI 03
THARU 04
BAJJIKA 05
DOTELI 06
URDU 07
AVADHI 08
BAITADELI 09
ACHHAMI 10
RAJBANSI 11
HINDI 12
BAJHANGI 13
DANUWAR 14
MAGAHI (BIHARI HINDI) ... 15
RAJASTHANI 16
MAJHI 17
BANGLA 18
TAJPURIJA 19
ANGIKA (BIHARI HINDI) ... 20
KUMAL 21
DARAI 22
BAJURELI 23
BOTE 24
DARCHULELI 25
GANGAI 26
DAILEKHI 27
ENGLISH 28
KHAS 29
SANSKRIT 30
DOLPALI 31
KISAN 32
MUSALBAN 33
HARIYANI 34
JUMLI 35
PUNJABI 36
ORIYA 37
SONAHA 38
SINDHI 39
DADELDHURI 40
ASSAMESE 41
DHULELI 42
MALPANDE 43
KHARIYA (S. MUNDA) 44
KURMALI 45
SADHANI (BHOJPURI) 46
GADHAWALI 47
ARABIC 48

Sino-Tibetan

TAMANG 49
NEWARI 50
MAGAR 51
LIMBU 52
GURUNG 53
RAI 54
BANTAWA 55
SHERPA (TIBETAN) 56
CHAMLING 57
CHEPANG 58
SUNUWAR 59
KULUNG 60
KHAM (MAGAR) 61
THANGMI 62
BHUJEL 63
THULUNG 64
YAKHKHA 65
DHIMAL 66
SAMPANG 67
KHALING 68
WAMBULE/UMBULE 69
BAHING 70
YHOLMO (TIBETAN) 71
NACHHERING 72
YAMPHU/YAMPHE 73
GHALE 74
DUMI 75
LAPCHA/LEPCHA 76
PUMA 77
DUNGMALI 78
ATHPARIYA 79
THAKALI 80
JIREL 81
MEWAHANG 82
TIBETAN 83
MECHE 84
CHHANTYAL 85
RAJI 86
LOHORUNG 87
CHHINTANG 88
PAHARI 89
LHOPA 90
DURA 91
KOCHE 92
CHHILING 93
JERUNG/JERO 94
HAYU 95
TILUNG 96
KOI/KOYU 97
WALING 98
LHOMI (TIBETAN) 99
BELHARE 100
BYANGSHI 101
RAUTE 102
SAM 103
MANANGE 104
PHANGDUALI 105
SUREL 106
CHINESE 107
BARAM 108
LINGKHIM 109
KAGATE (TIBETAN) 110
DZONKHA 111
BANKARIYA 112
KAIKE 113
MIZO (NAGA) 114
KUKI (NAGA) 115
NAGAMESE 116

Austro-Asiatic

SANTHALI 117

Dravidian

URANW 118

Language Isolated

KUSUNDA 119

Others

FOREIGN LANGUAGE 120
SIGN LANGUAGE 121

UNKNOWN LANGUAGE .. 122

RELIGION CODES (Q206)

HINDU	1
BOUDDHA	2
ISLAM	3
KIRANT	4
JAIN	5
CHRISTIAN	6
SHIKH	7
BAHAI	8
OTHER RELIGION	9

MONTH CODES (Q336)

BAISHAKH	01
JETH	02
ASAR	03
SAUN	04
BHADAU	05
ASOJ	06
KATTIK	07
MANGSIR	08
PUSH	09
MAGH	10
FAGUN	11
CHAIT	12

EDUCATION CODES (Q210)

PRE-SCHOOL/KINDERGARTEN	00
CLASS 1	01
CLASS 2	02
CLASS 3	03
CLASS 4	04
CLASS 5	05
CLASS 6	06
CLASS 7	07
CLASS 8	08
CLASS 9	09
CLASS 10	10
SLC	11
CLASS 11	12
CLASS 12 OR INTERMEDIATE	13
BACHELOR LEVEL	14
MASTER LEVEL/PH.D.	15
NON-FORMAL EDUCATION	97
ILLITERATE	98
DON'T KNOW.	99

OCCUPATION CODES (Q208)

OWN AGRICULTURE	01
OWN LIVESTOCK	02
OTHER'S AGRICULTURE (SHARE CROPPING)	03
OWN AND OTHER'S AGRICULTURE	04
SELF-EMPLOYED IN NON-AGRI. (TRADE/SERVICES)	05
SELF-EMPLOYED IN NON-AGRI. (SMALL INDUSTRY)	06
SELF-EMPLOYED IN NON-AGRI. (LARGE AND MEDIUM INDUSTRY)	07
SELF-EMPLOYED IN NON-AGRI. (CONSTRUCTION)	08
SELF-EMPLOYED IN NON-AGRI. (TRANSPORTATION)	09
SELF-EMPLOYED IN NON-AGRI. (OTHER, SPECIFY)	10
AGRI. LABOUR	11
NON-AGRI. SKILLED LABOUR (CONSTRUCTION)	12
NON-AGRI. UNSKILLED LABOUR (CONSTRUCTION)	13
NON-AGRI. SKILLED LABOUR (INDUSTRY)	14
NON-AGRI. UNSKILLED LABOUR (INDUSTRY)	15
NON-AGRI. SKILLED LABOUR (SERVICE)	16
NON-AGRI. UNSKILLED LABOUR (SERVICE)	17
NON-AGRI. SKILLED LABOUR (OTHER)	18
NON-AGRI. UNSKILLED LABOUR (OTHER)	19
NON-AGRI. LABOUR (TRANSPORTATION)	20
GOVERNMENT SERVICE (CIVIL)	21
ARMED FORCES (ARMY/POLICE)	22
WORKER OF CORPORATION & FINANCIAL INSTITUTION	23
TEACHER AND EMPLOYEE OF EDUCATION SECTOR	24
MEDICAL PROFESSIONAL	25
LEGAL PRACTITIONER	26
NGO AND COMMUNITY INSTUTION WORKER	27
FOREIGN LABOUR	28
OLD/RETIRED	29
DISABLED BUT WORKING	30
DISABLED AND NOT WORKING	31
HOUSEHOLD WORK	32
STUDENT	33
UNEMPLOYED/SEARCHING WORK	34
TOO YOUNG	35
OTHER (SPECIFY)	

Annex X: Checklist for collecting qualitative information

Checklist for Focus Group Discussions

Time: 1 hour 30 minutes

Preliminary Steps:

Introductions: Introduce the study team and ask the participants their name, caste or ethnic groups, ages, genders, and occupations

Explanation: Explain that the purpose of the FGD is to study the socio-demgraphic impact of the earthquake

Permission: Secure permission to conduct the FGD

Final Step:

The person who takes notes on the FDG should write a summary of what was said immediately after the discussion if possible.

Name of settlement: Name of village:

Permanent building for residence or other purpose	Number	Percentage
Total number of structure		
Completely damaged (not suitable to live in)		
Partially damaged (can live in temporarily)		
Total, completely or partially damaged		
Current settlement	Immediately after the earthquake (%)	Still existing (%)
Emergency shelter (public place like schools and inn)		
Temporary shelter (tent, makeshift huts, etc.)		
Temporary house (partially damaged house which have been braced or whose damaged parts have been vacated)		
Permanent house (newly made)		

1. What was your experience during the earthquake on 25 April (epicentre: Barpak, Gorkha) as well as during the aftershocks on 26 April (epicentre: Tatoani, Sindhupalchowk) and 12 May (epicentre: Sunkhani, Dolakha). What was the condition of the community people from the day of ewarthquake till one week later?
2. What is your opinion of natural calamities? How can individuals, communities and entire societies fight against an unimaginable disaster?
3. How were you involved in rescue work as an individual, family and community? Did you benefit from rescue efforts? Did you rescue people and property?
4. Was the rescue process effective? If not, what were the reasons for being ineffective? List the causes. Who was responsible for the rescue effort – this community or another community?
5. Did you receive external support for the rescue effort? Was it national or international? Technical, physical or both? How many people were there?
6. Did anyone provide you with information about knowledge and techniques to minimize the destruction of earthquake? Who provided? When did they do so? How many people were informed?
7. How did you use the information you already know during the earthquake?
8. Did your village need relief materials? Were you supplied with enough relief materials of the right types to meet the demand?
9. Which government and non-government organizations distributed relief materials? What activities did they engage in?
10. How did providers behave towards children, youth, females and elderly people? Did they use any offensive language or behave rudely?
11. Were there any cases of child trafficking? If there were, what happened?
12. What changes occurred in the community due to the earthquake? What roles did traditional organizations, women's group and youth clubs assume?
13. What do you think about the destruction caused by earthquake? To what extent do you think it is possible to restore the nation through reconstruction?
14. Please mention the effect due to the earthquake in this community, such as, did people migrated migrate in search of foreign employment? What do you think of the national situation of unemployment?

15. What do you think regarding the levels of caring, rearing and education provided to children, elderly during aftermath of the earthquake?
16. What was the condition of pregnant women did they have a place to sleep and to rest comfortably? Did they have enough food? Did they get any special treatment? What was its nature? Were they provided with any facility? What were they? What were the differences in the levels and nature of care and awareness-building before and after the earthquake?
17. What were the differences in children's education before and after the earthquake? How did school infrastructure, study materials, teacher-student ratios and extra-curricular activities change? What has happened to children who stopped attending school?
18. What were the differences in the diseases suffered and their mode of treatment before and after the earthquake? Were there any changes in the health sector? Did any new problems arise? Were there any new improvements in the health services provided by health posts? Were any facilities closed and for what reasons? Were any new facilities established or service introduced? What were they? Was medicine available in sufficient types and quantities?
19. What problems did adolescent females and males face?
20. What changes occurred in the mental state of the villagers after the earthquake?
21. What problems did physically challenged people face?
22. Is the government trying to reconstruct your district, village development committee, community (ward)? Is it trying to make these different administrative units better than or the same as they were before the earthquake?
23. How accessible are the various natural resources needed to renovate houses?
24. How prevalent is the chopping down of trees to repair or renovate houses?
25. What did the district disaster rescue committee do to promote the management of affairs during the post-earthquake period?
26. Overall, with respect to a variety of factors, including agriculture, festivals, disease and its treatment, migration, birth and death, problems and missing loved ones, what have living conditions been like in the last six months?
27. What natural problems such as rain, cold and snowfall did you face after the earthquake?
28. How well have you been able to manage problems as they appeared one after another?

Date	2072/07/..... (B.S.)				
Place of FGD		Caste/ethnic group	Sex	Age	Occupation
Participants	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.				
Type of group:					
Moderator:					
Recorder:					
Note taker:					

Opinions of participant on question:
Question: .....
Answer: .....

Participant	Quotations
1. 2. 3.	

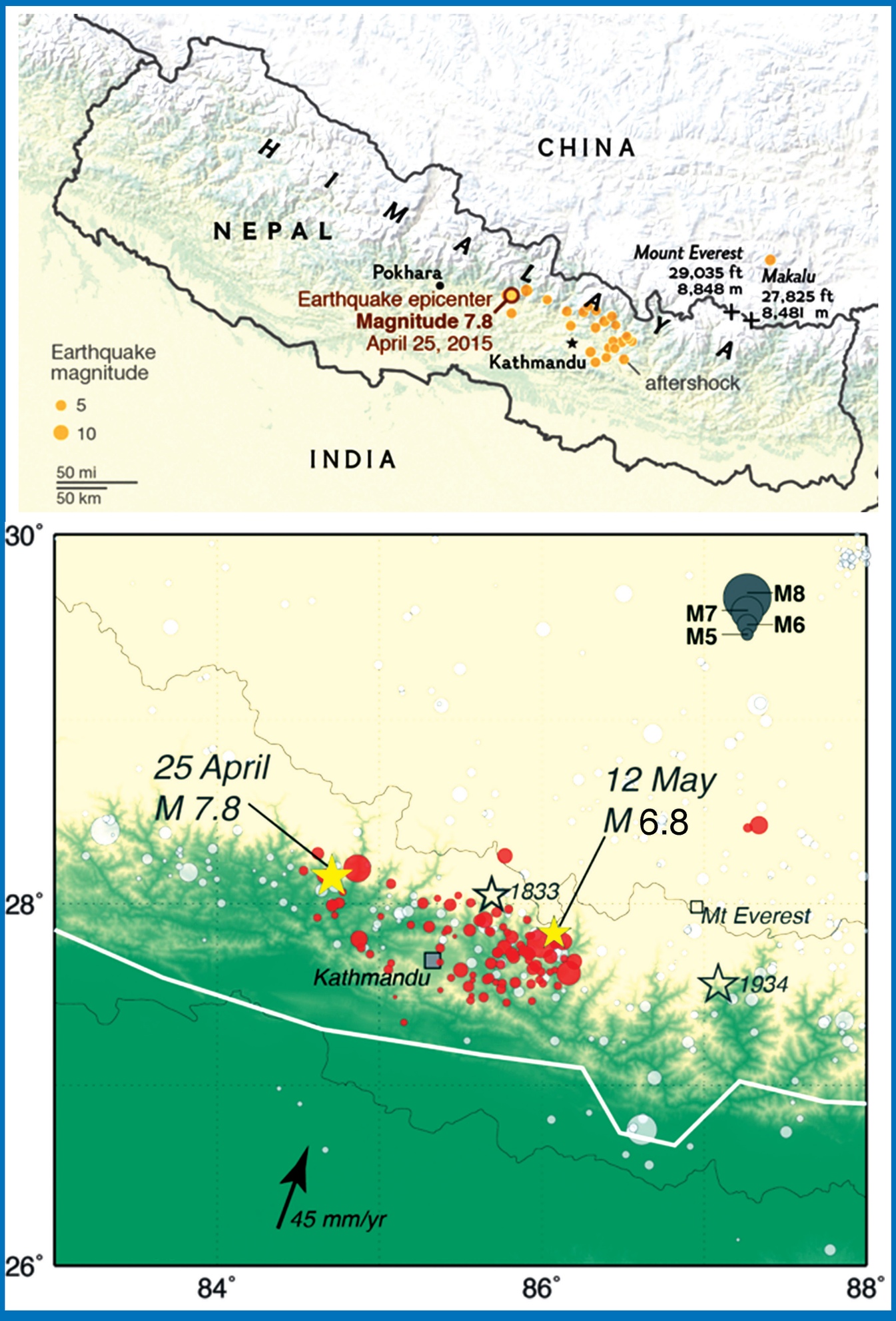
Checklist for Key Informant Interview

1. Please mention the situation during the earthquake occurred in this locality.
2. Please mention the attempts and expectations made for the rescue operation by the individuals, families, and communities in this locality. What reaction do you have regarding the assistance made by the outsiders (that is by the government and non-government sectors as well as international communities).
3. Did the relief package come to this locality? If yes, within how many days? What quantity? Was it usable and need-based?
4. Please share with us the effect made by the earthquake particularly on the social structure, relation and cultural sector.
5. The natural disaster occurs for a short time but has a long-term effect especially on health, livelihood, etc. What effect do you see particularly on the population, birth, marriage, death, and migration?

Observation Tool

Note to the surveyors:
Please observe the following during your field work and make a separate note of them.

- Loss due to earthquake: human, physical property, crops like paddy, millet that are unattended and have been turned into germination, or covered by the debris.
- Places where the death occurred.
- The artifacts of the destroyed houses, huts, the temporary locations of the settlements, livestock, and other properties.
- The affected persons in a traumatic condition, or those affected by the psycho-social problems.
- Residences for the temporary management. Please also observe the houses with two or more stories where the affected families making their settlements by removing the debris.
- The senior citizens, children: try to understand their psychology by making relation with them, talking to them and getting information on the effect of the earthquake. Do informal communication with them.


CHINA
NEPAL
INDIA
HIMALAYA
Pokhara
Earthquake epicenter
Magnitude 7.8
April 25, 2015
Kathmandu
aftershock
Mount Everest
29,035 ft
8,848 m
Makalu
27,825 ft
8,481 m
Earthquake magnitude
5
10
50 mi
50 km
30°
28°
26°
84°
86°
88°
M8
M7
M6
M5
25 April
M 7.8
12 May
M 6.8
1833
1934
Mt Everest
Kathmandu
45 mm/yr