Secure Livelihoods Research Consortium

Researching livelihoods and services affected by conflict

Tracking change in livelihoods, service delivery and governance:

Evidence from a 2012–2015 panel survey in Nepal

Working Paper 53

Georgina Sturge, Jessica Hagen-Zanker, Gopikesh Acharya, Suman Babu Paudel, Annal Tandukar, Bishnu Upreti and Richard Mallett March 2017







About us

Secure Livelihoods Research Consortium (SLRC) aims to generate a stronger evidence base on how people make a living, educate their children, deal with illness and access other basic services in conflict-affected situations. Providing better access to basic services, social protection and support to livelihoods matters for the human welfare of people affected by conflict, the achievement of development targets such as the Sustainable Development Goals and international efforts at peace-and state-building.

At the centre of SLRC's research are three core themes, developed over the course of an intensive oneyear inception phase:

- State legitimacy: experiences, perceptions and expectations of the state and local governance in conflict-affected situations
- State capacity: building effective states that deliver services and social protection in conflictaffected situations
- Livelihood trajectories and economic activity under conflict

The Overseas Development Institute (ODI) is the lead organisation. SLRC partners include the Centre for Poverty Analysis (CEPA) in Sri Lanka, Feinstein International Center (FIC, Tufts University), the Afghanistan Research and Evaluation Unit (AREU), the Sustainable Development Policy Institute (SDPI) in Pakistan, Disaster Studies of Wageningen University (WUR) in the Netherlands, the Nepal Centre for Contemporary Research (NCCR), and the Food and Agriculture Organization (FAO).

Secure Livelihoods Research Consortium Overseas Development Institute 203 Blackfriars Road London SE1 8NJ United Kingdom

- T +44 (0)20 3817 0031
- E slrc@odi.org.uk
- W www.securelivelihoods.org

SLRC Working Papers present information, analysis and key policy recommendations on issues relating to livelihoods, basic services and social protection in conflict affected situations.

This and other SLRC reports are available from <u>www.securelivelihoods.org</u>. Funded by UK aid from the UK government, Irish Aid and the EC.

Disclaimer: The views presented in this report are those of the author(s) and do not necessarily reflect the UK government's official policies or represent the views of Irish Aid, the EC, SLRC or our partners. © SLRC 2017

Readers are encouraged to quote or reproduce material from SLRC Working Papers for their own publications. As copyright holder, SLRC requests due acknowledgement and a copy of the publication.

Contents

 Preface Acknowledgements Acronyms and abbreviations Executive summary 1 Introduction 2 Background, objectives and analytical frameworks 2.1 Situating the survey within the research programme 2.2 How the papel survey fits into this research aronde 	5 6 7 8 10 11 11 12 12 16 16 18 19 20
 Acknowledgements Acronyms and abbreviations Executive summary 1 Introduction 2 Background, objectives and analytical frameworks 2.1 Situating the survey within the research programme 2.2 How the papel survey fits into this research arounds 	6 7 8 10 11 11 12 12 12 16 16 18 19 20
 Acronyms and abbreviations Executive summary 1 Introduction 2 Background, objectives and analytical frameworks 2.1 Situating the survey within the research programme 2.2 How the papel survey fits into this research arounds 	 7 8 10 11 12 12 16 18 19 20
 Executive summary 1 Introduction 2 Background, objectives and analytical frameworks 2.1 Situating the survey within the research programme 2.2 How the papel survey fits into this research arounds 	 8 10 11 12 12 16 16 18 19 20
 Introduction Background, objectives and analytical frameworks 2.1 Situating the survey within the research programme 2.2 How the papel survey fits into this research arounds 	 10 11 12 12 16 18 19 20
 2 Background, objectives and analytical frameworks 2.1 Situating the survey within the research programme 2.2 How the papel survey fits into this research agenda 	 11 12 12 16 18 19 20
2.1 Situating the survey within the research programme	11 12 12 16 18 19 20
2.2. How the penal survey fits into this research agonda	12 12 16 16 18 19 20
2.2 now the panel survey hts into this research agenda	12 16 18 19 20
2.3 Analytical frameworks	16 16 18 19 20
3 Methodology	16 18 19 20
3.1 Design process	18 19 20
3.2 Data collection	19 20
3.3 Sampling and weighting for non-response	20
3.4 Analytical methods	20
3.5 Outline of key variables	21
4 Description of sampled locations and changes in context	22
4.1 Shocks	22
4.2 Political changes and concerns	24
4.3 Migration of respondents	25
5 Changing livelihoods and wellbeing	26
5.1 Livelihood activities	26
5.2 Food security	27
5.3 Asset wealth	30
5.4 Debt/loans	31
5.5 Migration, remittances and displacement	32
6. Changes in basic convices coolid protection and livelihood assistance	33 25
6 1 Changes in passes	30 25
6.1 Changes in access	35
6.2 Key findings on changes in basic services, social protection and	42
livelihood assistance	45
7 Changes in perceptions of government	47
7.1 Civic participation	47
7.2 Changes in perceptions of local government	48
7.3 Changes in perceptions of central government	50
7.4 Key findings on changes in perception of government	52

8	Sum	mary of findings and conclusion	55
	8.1	Changes in people's livelihoods and wellbeing	55
	8.2	Changes in basic services, social protection and livelihood assistance	56
	8.3	Changes in perceptions of government	56
9	Refe	rences	58
Арј	bendi	x 1: Full sampling and weighting methods	63
	Wav	e 1	63
	Wav	e 2	63
Арј	bendi	x 2: Full analytical methods	65
	Fixe	d and Random Effects models	65
	Deci	ding which model to use	67
Арј	pendi	x 3: List of social protection and livelihood assistance programmes	69

Tables

Table 1: Composition of coping strategies index, from survey instrument.	13
Table 2: Attrition by VDC	19
Table 3: Summary of outcome variables	21
Table 4: Changes in Coping Strategies Index and Food Consumption Score	28
Table 5: Migration at the household level	32
Table 6: Changes in service and service provider	35
Table 7: Change in access to basic services	36
Table 8: Access to social protection or livelihood assistance across the two waves	37
Table 9: Receiving social protection transfers by sex of household head	37
Table 10: Change in journey time to the school, by VDC	39
Table 11: Payment of school fees over time, by school provider	40
Table 12: School attendance over time, by school provider	40
Table 13: Changes in satisfaction with basic services over time	43
Table 14: Problems and knowledge of participatory procedures	47
Table 15: Changes in perceptions of local government	49
Table 16: Changes in perceptions of central government	51
Table 17: Perceptions of government by sex of respondent	51
Table 18: Perceptions of central government, by wave and respondent ethnicity	52
Table 19: Social protection	69
Table 20: Livelihood assistance	70

Figures

Figure 1: Shocks experienced by the household between 2012 and 2015	24
Figure 2: Households engaging in particular livelihood activities, by wave	26
Figure 3: Changes in average wealth (MSI score) over time, by ethnic group	31
Figure 4: Average journey time and changes in journey time by service sector	
(+/- 5 minutes counted as 'no change')	36
Figure 5: Perceptions of local government by wave	49
Figure 6: Perceptions of central government by wave	50
Figure 7: An illustrated example of the difference between FE and RE models.	67

Preface

As a multi-year, cross-country research programme, one of the overarching aims of the Secure Livelihoods Research Consortium (SLRC) is to contribute towards a better understanding of what processes of livelihood recovery and state-building look like following periods of conflict and how positive outcomes are achieved. Understanding socioeconomic change of this nature is possible only when appropriate evidence exists. This, in turn, requires the availability of reliable longitudinal data that are able to measure shifts, fluctuations and consistencies in the performance of a given unit of analysis (e.g., an individual, a household, an economy) against a set of outcome indicators between at least two points in time. With a six-year timeframe, SLRC is well placed to contribute to understanding how livelihood recovery and state-building unfold over time. To this end, the Consortium has conducted original panel surveys in five countries: the Democratic Republic of Congo (DRC), Nepal, Pakistan, Sri Lanka and Uganda. In two other countries, Afghanistan and South Sudan, we are following a slightly different process by tagging on to planned or existing panel surveys.

Two rounds of data collection took place between 2012 and 2015. Despite the difficult circumstances in which the survey teams worked – all of them either fragile or conflict-affected – the research teams in all countries managed to find six out of every seven people they sought to re-interview in 2015. Out of a total of 9,767 respondents interviewed in the cross-country programme in the first round, 8,404 were re-interviewed in the second. The initial sample sizes were inflated to allow for attrition so that, even with some respondents not interviewed, the sample remains representative at a specific administrative or geographical level in each country at the time of the first round and is statistically significant.

All told, the SLRC panel presents an opportunity to go beyond cross-sectional analysis, generating information about changes in the sample over time and the specific trajectories that individuals and their households have followed. More specifically, the surveys are designed to generate information about changes over time in:

- People's livelihoods (income-generating activities, asset portfolios, food security, constraining and enabling factors within the broader institutional and geographical context)
- Their access to and satisfaction with basic services (education, health, water), social protection and livelihoods assistance
- Their relationships with governance processes and actors (participation in public meetings, experience with grievance mechanisms, perceptions of major political actors).

Undertaking a cross-country, comparative panel survey at the individual level in difficult environments is not a straightforward exercise. This means that such research has limitations. In our case there are two major limitations that we highlight below. The first was raised in the original baseline reports: In conducting a survey there is a trade-off between collecting information that is comparable across countries and rephrasing each survey question entirely to fit the country context.

The second limitation is specifically related to the longitudinal nature of our analysis this time around. Panel analysis requires that a substantial number of respondents changes responses between rounds (for example, from a negative to a positive view of a particular government actor). This is necessary to allow us insight into why these responses have changed—or in other words, to identify the drivers of change. In some cases, there was simply not enough change to run a full analysis on these variables.

These limitations signal the complexities of panel data collection analysis. On the whole, however, the survey makes an analytical contribution to our understanding of how livelihoods and wellbeing, access to and satisfaction with services, and perceptions of government actors change over time in fragile and conflict-affected situations.

Acknowledgements

This study was made possible by the Wave 2 enumerator team, without whose extraordinary effort we would simply not have the high response rate that we do: Ashok Aryal, Bhuwan Baduwal, Milan Baral, Shova Bimali, Anjana Dahal, Sudip Gautam, Dev Bad. Ghimire, Raju Sharma Ghimire, Madhu Kala Gurung, Krishna Gyawali, Pramod Raj Kafle, Santosh, K. Karki, Tej B. Kathayat, Tej Bahadur Khadka, Madan Khatri, Bima Maharjan, Rajendra Maharjan, Reshma Maharjan, Manisha Maharjan, Badri pd Mainali, Harka Bahadur Patali, Prabhu Ram Phuyal, Goma Pradhan, Shashi Paudel, Hemlata Rijal, Sarita Rijal, Pradeep K. Rokaya, Pratipada Sharma, Pankaj Sharma, Yadav Raj Subedi, Nima Tamang, Tika Bahadur Thakuri, Sudarshan Thapa, Anita Kumari Yadav, and Vijay Kumar Yadav.

The additional supervisors Jeewanshali Ghimire, Suresh Prashai, temporary supervisor Prawin Subba Limbu, and the tracking manager Suwas Devkota are also thanked for their diligence and attention to detail.

We are also grateful to Raj Kumar Rai for generously providing us with extensive security advice before and during fieldwork. Our thanks also go to the staff at the NCCR secretariat – Siddhi Prasad Manandhar, Apsara KC, and Amit Maharjan – for supporting the logistics of fieldwork in ever-changing conditions.

We extend our thanks to the peer reviewers of this report – Dr Kylie Fisk, Dr Sagar Raj Sharma, Dr George Varughese, Anam Anwar Khan and one anonymous reviewer – and to Dr Rachel Slater for comments on earlier drafts and Paulina Pankowska for peer review of the analysis. Thanks also to Dr Anita Ghimire for advice during the preparation for data collection and to Dr Bandita Sijapati for contributions to the writing of the report. We are also grateful to Joanna Fottrell for thorough copyediting and Garth Stewart for formatting.

Finally, we acknowledge most of all the respondents to this survey who gave us their time, allowed us insight into their lives and to whom we are accountable. We extend our sincerest gratitude not only for their participation but for the warm hospitality shown to our field team.

Acronyms and abbreviations

CA	Constituent Assembly
CPN-UML	Communist Party of Nepal (Unified Marxist-Leninist)
CSI	Coping Strategies Index
DDC	District Development Committee
DRC	Democratic Republic of Congo
DWP	Drinking water point
FCS	Food Consumption Score
FE	Fixed Effects model
GDP	Gross domestic product
GPS	Global Positioning Survey
MSI	Morris Score Index
NC	Nepali Congress
NCCR	Nepal Centre for Contemporary Research
NGO	Non-governmental organisation
NPR	Nepali Rupees
OECD	Organisation for Economic Cooperation and Development
RE	Random effects model
SLC	School Leaving Certificate
SLRC	Secure Livelihoods Research Consortium
UCPN-M	Unified Communist Party of Nepal (Maoist)
VDC	Village Development Committee

Executive summary

Between 1996 and 2006, civil war in Nepal resulted in tens of thousands of casualties and widespread damage to people's livelihoods. Following the signing of the Comprehensive Peace Agreement in 2006, the country has seen a decade of fragile peace in which efforts to agree on a path to state-building have frequently collapsed and been renewed. The end of conflict also coincided with Nepal's transition from a constitutional monarchy to a democratic republic. This context, alongside many other fragile and conflict-affected situations in the world today, inspired this piece of research, which seeks to understand what people's everyday lives look like amid these developments.

We first conducted this survey in 2012, since which time Nepal has seen major change. In April 2015, the country suffered its deadliest earthquake since 1934, killing more than 8,000 people and injuring a further 21,000. The economy was shaken too, with estimated losses of up to \$6 billion, equivalent to roughly one-third of national gross domestic product (GDP). Just months later in September 2015, and following almost a decade of slow-moving political deadlock, a new Constitution was finally signed into law. Although the period of promulgation was marked by both violent protest and rapid inflation, the signing was received by many as cause for hope and (cautious) optimism.

Against this backdrop of significant environmental and political change, this paper asks what has been happening in the lives of ordinary citizens during that time? What kind of change and progress has the population seen on the ground? To answer these questions, we draw on the findings of a two-wave longitudinal panel survey, administered to nearly 3,000 people at two different points in time: first in 2012, and again with the same respondents in 2015.

Although the survey is not nationally representative, based as it is on village-level samples from three separate districts (Bardiya, Ilam and Rolpa), the panel approach allows us to a) directly observe changes in people's lives over a three-year period, and b) identify factors that share an underlying association with those changes. The survey data help us build a multidimensional picture of development and change over time, generating information on three broad themes, namely:

- people's livelihoods (household wealth, food security, income-generating activities);
- their access to and experience with basic services (health, education, water) and transfers (social protection, livelihoods assistance);
- and their relationships with government (perceptions of local and central actors, levels of civic participation).

That which unfolds from the longitudinal analysis is good news, tempered by ongoing challenges. A large share of households in our sample have become wealthier over time, people are on average more satisfied with their services relative to 2012, and negative attitudes towards government are in decline. These positive changes appear to be driven by various factors.

Taking **livelihoods**, we see that two clusters of variables come out strongly: the first concerns the changing economic circumstances of the household, with remittance receipt and shifts in incomegenerating activity associated with better food security and greater asset ownership. There is also a lot of economic mobility at play here, with just under half of all households in our sample switching their main income source between waves. The second cluster of variables relates to risk, safety and security: when respondents feel their local environments have become safer – a subjective rather than material indicator of the local security situation – they also become more food secure. In contrast, where households have started seeing fighting in their local area or have experienced health shocks, the opposite is true. We find that changing levels of satisfaction with **service delivery** are, broadly speaking, linked to the everyday, frontline experience of using a service as opposed to factors concerning physical access and convenience. With health, for example, greater overall satisfaction is associated with an improvement in respondents' assessments of specific aspects of the facility: the number of qualified personnel, availability of medicine and waiting times all prove influential. And while evaluations of a school's equivalent aspects do not seem to shape overall satisfaction with education services, a positive link emerges where people have started paying official fees to the provider. In contrast to these positive associations, satisfaction falls when problems have been experienced in the preceding year – this is the case for both health and water services.

Capturing snapshots of people's **attitudes towards government** at two distinct moments in time – one of mounting political deadlock (2012), the other following the passing of the new Constitution (2015) – the survey data show our respondents became more positive on average. This was the case for all ethnic groups, and in relation to both local as well as central government. Gender appears closely linked with perception change, as women are far less likely than men to think more positively about central government. And while many aspects of service delivery do not appear to matter when it comes to influencing attitudes – this is generally true for both access to and satisfaction with basic services/transfers – factors more associated with the *process* of provision do. For example, increased knowledge about grievance mechanisms (should a problem be experienced) or having been consulted about a service are positively associated with better perceptions.

Taken together, these shifts suggest that people's lives are, on average, broadly moving in the right direction. But it is not all good news. Underpinning this general picture of positive change, we find several limits to transformation:

- A suggestion of widening inequalities. Although people's livelihoods are generally improving, rates of progress are not equal. We see that members of the highest caste group in our sample (Brahmin/Chhetri) are accumulating assets faster than all others, pointing towards a widening of underlying inequalities in this respect (at least between our two survey waves).
- Shaky livelihood support. Although nearly half of the sample received a social protection transfer (e.g. old-age allowance or child grant) at some point during the study period, only half of these recipients received it in *both* waves. This transience is even more striking when we consider livelihood assistance such as agricultural inputs and micro finance, with just 5% of households having received this type of support in both waves, compared with around a quarter of the sample who received one-off assistance.
- Distrust is still the norm. People's perceptions of government may be getting marginally better, but views remain overwhelmingly negative. We still find that the majority of people in our sample do not feel the government is working in their interests. This applies to perceptions of both local and central government, although the latter continues to come out worse than the former.

Against this general backdrop of positive yet caveated change in people's lives, policies in the post-Constitution period should seek to consolidate the gains whilst addressing these underlying problems and continuing inequalities.

1 Introduction

In 2012/13, the Secure Livelihoods Research Consortium (SLRC) designed and implemented the first round of a panel survey in five fragile and conflict-affected countries – the Democratic Republic of Congo (DRC), Nepal, Pakistan, Sri Lanka and Uganda. The survey generated cross-country data on livelihoods, access to and experience of basic services, social protection and livelihood assistance, exposure to shocks and coping strategies, and people's perceptions of governance.

In 2015, 2,855 of the original 3,176 respondents in the Nepal sample were re-interviewed, providing a second wave of data for longitudinal analysis. The survey covered three districts that differ in terms of geography, accessibility and service provision – Bardiya, Ilam and Rolpa – and was conducted in the months of September, October and November.¹ Between the two waves of the panel survey there were several key changes to the broader political context of Nepal, notably the promulgation of the Constitution accompanied by political discontent and extensive strikes and road blocks. Nepal was also struck by a major earthquake in 2015, with devastating costs in terms of human lives, infrastructure and service provision (though less so in the districts covered by this survey).

This paper presents the findings and analysis of the two waves of the panel survey and, together with the four other country papers, informs the SLRC survey synthesis report (SLRC, forthcoming). It should be noted that these findings are not representative at the national level, since our selection of districts for this study was purposive. Instead, our focus is on how individuals and households fare over time in contrasting circumstances, rather than identifying patterns at the national level.

Section 2 provides background to the survey, situating the panel survey in relation to the overarching themes of SLRC's research programme, outlining the objectives of the survey and presenting the analytical frameworks used to guide analysis of the data. Section 3 presents the survey methodology for Nepal in greater detail, discussing the specific sampling methods used and describing basic characteristics of the final sample. Section 4 gives some background on the sampled locations and contextual changes between the two waves. Sections 5-7 constitute the analytical foundation of the paper, respectively exploring: changes in livelihoods and wellbeing; changes in people's access to and experience with basic services, social protection and livelihoods assistance; and changes in people's perceptions of government actors. Section 8 sums up the main findings and presents suggestions for additional research.

¹ This time of year is the end of the harvest season and also revolves around two of Nepal's main Hindu festivals, Dashain and Tihar.

2 Background, objectives and analytical frameworks

2.1 Situating the survey within the research programme

The cross-country panel survey is directly relevant to particular themes from SLRC's six-year global research programme:

- 1 *Livelihood trajectories.* What do livelihood trajectories in conflict-affected situations tell us about the role of governments, aid agencies, markets and the private sector in enabling people to make a secure living?
- 2 *Legitimacy.* What are people's perceptions, expectations and experiences of the state and of local-level governance? How does the way services are delivered and livelihoods are supported affect people's views on the legitimacy of the state?

Livelihood trajectories: tracking change and identifying determinants

Literature reviews carried out during SLRC's inception year identified a key evidence gap regarding empirical and longitudinal research on livelihoods in conflict-affected situations. Although good in-depth case studies on livelihood strategies in particular contexts can sometimes be found, these are usually just snapshots. Qualitative case study approaches are also insufficiently linked to or substantiated by quantitative survey data, and there is a significant gap in any comparative analysis of the effectiveness and impact of interventions to support livelihoods (see, in particular, Mallett and Slater, 2012). There is some evaluation and academic literature that examines the impact of particular projects or programmes, but very little that looks at the overall significance of aid to people's livelihoods and compares the impact of different approaches.

The SLRC survey aims to fill some of these gaps by building a picture of how people make a living in particular contexts, and tracking changes over time. It also considers the role of the support provided by governments and aid agencies, but due to the nature of the survey does not explicitly consider the role of markets and the private sector.

Legitimacy: people's perceptions of governance and the role of service delivery

Establishing, building or strengthening state legitimacy is a major element of state-building. The Organisation for Economic Co-operation and Development (OECD, 2010: 3), for example, notes that, 'State legitimacy matters because it provides the basis for rule by consent rather than by coercion'. Indeed, a lack of state legitimacy is seen as a major contributor to state fragility because it undermines state authority. While the steps that donors can take to influence state legitimacy are few, they do have an interest in developing a clearer understanding of the following: What leads to legitimacy? What, if anything, can they do to strengthen state-society relations? And, what might be the (unintended) positive and negative impacts of their programming on state legitimacy if they, for example, route development funding via bodies other than the formal organs of the state?

SLRC's inception phase reviews found very little evidence for the frequent assertion that improving access to services and social protection in conflict-affected situations contributes to state-building (see, in particular, Carpenter et al., 2012). The relationship between delivering services and state-society relations remains poorly understood. Given the cited importance of legitimacy in state-building processes – as the European Report on Development (2009: 93) notes, 'State-building efforts are bound to fail if, in

strengthening institutional capacities, the legitimacy of the state is not restored' – it is both surprising and concerning that we have so little robust knowledge about what leads to state legitimacy.

Despite these gaps, state-building – encompassing both legitimacy and capacity – provides the organising framework for much international engagement in conflict-affected situations. In tackling this question, we are thus taking up the OECD's (2010: 55) call for donors to 'seek a much better understanding – through perception surveys, research and local networking – of local people's perceptions and beliefs about what constitutes legitimate political authority and acceptable behaviour'.

2.2 How the panel survey fits into this research agenda

To examine *livelihood trajectories*, we use this survey to undertake rigorous longitudinal livelihoods research. Our aim is to make sense of how people make a living, to track how this changes over time, and to shed light on what causes such change. We want to know whether people are recovering or starting to build stronger and more secure livelihoods, are stuck in a bad situation, or are sliding into destitution. Further, how does the broader political, economic and security environment affect these trajectories? The SLRC panel survey, capturing both the dynamics and the determinants of people's livelihoods, allows us this insight. To collect the information we need, our survey design combines elements of perception and livelihoods surveys. This enables a dual focus on governance and legitimacy as well as livelihood trajectories.

For the research on *legitimacy*, our approach documents and analyses people's views of governance actors in conflict-affected situations. Conducting a cross-country panel survey incorporating perception-based questions allows us to investigate subjective issues that are difficult to measure, such as trust and satisfaction, and to provide both a comparative snapshot and a longitudinal perspective.

It should be noted that a two-wave panel with a three-year interval has limitations as to what it can tell us about changes over time. Three years is a relatively short time, in which several critical events have occurred in Nepal. Future waves of the same panel would be needed to look beyond the short-term response to particular changes towards a more nuanced understanding of the non-linearity of livelihood trajectories.

2.3 Analytical frameworks

Three basic analytical frameworks emerged from the survey design process, outlined below (and in greater depth in the synthesis paper (Mallett et al., 2015)).

2.3.1 Livelihood and wellbeing status

In order to examine and 'track' people's livelihoods, we look primarily at wellbeing (this is in addition to generating information on the kinds of activities households are pursuing). Wellbeing is a broad concept and cannot be meaningfully captured by a single indicator. We have chosen to measure it in two different ways, by looking at:

- Food security (using the Coping Strategies Index (CSI) and Food Consumption Score (FCS))
- Household asset ownership as a proxy for wealth (using the Morris Score Index (MSI))

A recent analysis of five food security indicators using 21 representative data sets spanning ten countries has shown that the CSI and FCS are orthogonal to each other, meaning that they both capture different aspects of food security and are hence ideal to consider together (Vaitla et al., 2015).

The CSI is a tool for measuring current food access and quantity: the higher the CSI, the more foodinsecure and hence worse-off the household (Maxwell and Caldwell, 2008). Five coping strategies and their relative severity (see Table 1) have been identified to be generally internationally applicable and can be seen as proxies for food insecurity. The overall score of the insecurity index for each household is calculated by multiplying the number of times in the past month that each coping strategy or behaviour was used by its weight, and then adding together these values. The final index score is a weighted sum reflecting the frequency with which households have adopted particular behaviours over the past 30 days.

Table 1: Composition of coping strategies index, from survey instrument.

In the past 30 days, if there have been times when you did not have enough food or money to buy food, how often has your household had to:	 e Only one response allowed: 1. Never 2. Rarely (once or twice in the past 30 days) 3. Sometimes (three to ten times in the past 30 days) 4. Often (more than ten times in the past 30 days) 		
a. Rely on less preferred and less expensive foods?			
b. Borrow food, or rely on help from a friend or relative?			
c. Limit portion size at mealtimes?			
d. Restrict consumption by adults in order for small children to eat?			
e. Reduce number of meals eaten in a day?			

The FCS is a measure of food quality. It measures diet diversity based on food groups consumed, with more nutrient-dense food groups weighted more heavily (Vaitla et al., 2015). More specifically, the FCS is a composite score based on how often in the last 30 days particular food groups were consumed, weighted by the nutritional importance of each food group (according to a pre-determined weighting system).

To build the third outcome indicator – household wealth – we use the assets owned by the household, measured using the **Morris Score Index (MSI)** (Morris et al., 1999). The MSI is a weighted asset indicator that weights each durable asset owned by the household by the share of households owning that asset. This means that households are considered better off when they own assets not owned by most households in the sample. The MSI includes all productive household and livestock assets included in the survey. The index has been shown to be a good proxy of household wealth in rural Africa (ibid) and has been used in many other settings too, for example in transition countries like Albania (Hagen-Zanker and Azzarri, 2010). Of course, it is also likely that relationships may exist between asset ownership and food security. For example, Tschirley and Weber (1994) find that in previously waraffected parts of Mozambique, landholdings constituted a key determinant of a household's calorie consumption; while across the border in southern Zimbabwe, Scoones (1995) reports strong correlations between wealth rankings and livestock ownership, farm asset holdings and crop harvests.

Having been through a lengthy process of expert consultation and thorough deliberation, we propose that changes in livelihoods and wellbeing can be explained, at least in part, by the sets of factors outlined below.

In the baseline synthesis report (Mallett et al., 2015), we draw on existing evidence to argue that changes in livelihood status can be explained by changes in a number of different factors, including:

- Household factors: household-level demographic, religious, ethnic and educational characteristics as well as histories of migration.
- Contextual factors: location, experience of fighting in the area, and perceptions of safety in the neighbourhood and in travel (i.e. moving to work), as well as other indicators of livelihood opportunities/constraints.
- Shock factors: natural hazards and economic shocks, as well as crime and conflict as experienced by households.

 Service access and quality factors: different levels of access to basic services, social protection and livelihood assistance, and the quality of these services or transfers.

2.3.2 Access to and satisfaction with services, social protection and livelihood assistance

Because the survey covered a large range of services, we made use of simple – and relatively blunt – proxies for access. In the case of health, education and water, we considered return journey times (in minutes) to the health centres or hospital, primary school and main water source. Despite capturing only one aspect of access, namely the time/distance aspect, journey time to a service has been found by Brinkerhoff et al. (2016) to be a relatively good indicator of both access in a more general sense as well as the quality of a service. For social protection and livelihood assistance, we considered whether households had received any form of support in the past year.

Variations in access to services can be explained by a number of different factors, including:

- Individual and household factors (as specified above).
- Contextual factors (as specified above).
- Shock factors (as specified above).
- Service access and quality factors: implementation and performance (e.g. regularity of provision or who provides the service) may affect access to basic services, social protection and livelihood assistance. We expect that the length of time taken to reach basic services is likely to affect experience of services.
- Service implementation and performance features: the provider of a service, problems experienced with the service, and the respondent's knowledge of grievance mechanisms and community meetings related to the service.

2.3.3 People's perceptions of governance and the role of service delivery

Although governance refers to the full range of public authorities in a given setting, in Nepal we focus on government. More specifically, we asked respondents about their attitudes towards two levels of the government.

The first is central, which refers to the national Government of Nepal and is where the overarching executive branches of the state sit, and where major technical and budgetary decisions get made by various ministries.

The second is local, which captures Village Development Committees (VDCs), municipalities and District Development Committees (DDCs). Under the Local Self Governance Act of 1999, these two structures are considered to constitute the apparatus of local government in Nepal (Asia Foundation, 2013). While there is some variation in the specific functions they each play, there is also a lot of overlap: their responsibilities are generally related to socio-economic development, including service delivery and local mediation (ibid.). However, because in some parts of Nepal there have been no local elections since 1997, and no elected councils present since 2002, these local structures are often staffed by centrally-appointed government officials. It is also widely understood that, in practice, these bodies have very little autonomy from the centre.

In order to capture people's views of these two levels of government, respondents were asked two sets of perception-based questions:

 To what extent do you feel that the decisions of those in power at the local/central government reflect your own priorities?²

² It is certainly possible that citizens might not know which decisions get made by which parts of government specifically. But this question is not about measuring how much people know about the allocation of decision-making power. Rather, we are using this phrasing as an entry point into asking about performance and trustworthiness.

 Do you agree with the following statement: 'The local/central government cares about my opinions?'.

Of course, these questions cannot be taken as direct indicators of state legitimacy, underpinned as they are by a series of assumptions. At the same time, however, they do tell us something. Drawing on Levi et al.'s (2009) influential theoretical work, these questions are designed to capture aspects of government *trustworthiness*, which is in turn considered a 'component' of value-based legitimacy (distinct yet intimately connected to behavioural legitimacy). For more on the justification of these proxy variables, as well as discussion of their underlying assumptions, please refer to SLRC's second-round synthesis report (SLRC, forthcoming).

In line with SLRC's generic analytical framework for the panel survey, we hypothesise that changes in the following factors (all specified above) may determine changes in people's perceptions of government:

- Individual and household factors
- Contextual factors
- Shock factors
- Service access and quality factors
- Service implementation and performance features.

The aim of the quantitative analysis is to estimate if and to what extent the above factors – and in particular those relating to services – determine the main outcome (perceptions of government).

3 Methodology

Cross-sectional surveys provide a snapshot of a situation at a particular point in time. Longitudinal surveys provide information on changes and trajectories over time. The SLRC survey is a panel survey, which is a particular type of longitudinal survey where the same individuals are followed over a succession of survey rounds, in our case two waves in 2012 and 2015. An advantage of panel surveys is that they allow for the direct study of change within, for example, a household or an individual. This is substantially different to observing an event and people's situation only at a single point in time. This survey captured only quantitative data, with no qualitative data collected systematically for this particular report.³

Panel surveys present their own set of particular methodological challenges, however. Attrition, meaning drop-out from the sample, is perhaps the most major threat, as is non-response to some of the questions within a survey. But others exist too. In this section, we discuss these challenges and disclose how we dealt with them. The section is split into five parts, focusing respectively on: survey design; data collection; sampling and weighting; analytical models; and outline of key variables of interest.

3.1 Design process

The first wave of the SLRC panel survey was conducted in 2012. Details on the methods can be found in the SLRC process paper and baseline synthesis report (SLRC, 2015; Mallett et al., 2015). In planning the second wave of the survey, we tried to stay as true to wave 1 as possible. Nonetheless, we still faced a number of methodological challenges, which are described in detail in this section.

Deciding who to track

The SLRC survey incorporates elements of both a livelihoods and a perception survey, which raises a methodological issue: while the ideal unit of analysis for the livelihoods survey is at the household level (e.g. how much land does *your household* own?), for the perception survey it is at the individual level (e.g. do *you* agree that the local government cares about your opinion?). Both types of questions were asked to one individual within each household. It should be noted that this individual was randomly selected within the household, meaning that they were not necessarily the household head.

In the baseline analysis, roughly half of the analysis focused on household-level indicators and the other half on individual-level data. In planning for the second wave, a key question was whether to reinterview the exact same respondent as in wave 1, or whether it would be sufficient to interview anyone else from that original household. It is much harder to find the exact same individuals than it is to find *anyone* from their household, three years later. We therefore expected high attrition rates, partly as a result of labour migration and displacement due to natural disasters and instability. However, to interview someone other than the respondent would mean we would not have a panel dataset for the important individual-level characteristics (for example, satisfaction with services; perceptions of government). Even the reliability of household-level questions, for example about food security or asset ownership, are rarely what we might call objective (Bardasi et al., 2010; Coates et al., 2010; Demombynes, 2013). After extensive deliberation and consultation, we concluded that our research questions would be best answered by tracking the exact same respondent within households. In this way, we can be more certain that any changes over time are 'true' changes rather than the result of surveying a respondent with a different perspective.

³ In parallel, qualitative research took place as part of the Nepal SLRC programme however these studies should be seen as independent from the survey (see, for example Acharya et al. (2016), Paudel et al. (2015) and Tandukar et al. (2015).

Changes to the survey instrument

The SLRC panel survey instrument was designed to generate data on a wide range of topics, including livelihoods, access to and experience of basic services, civic engagement and perceptions of government. Details on the construction of the survey instrument and the choice of questions can be found in the baseline synthesis paper (Mallett et al., 2015), while justification for questions specific to the Nepal survey instrument can be found in the Nepal baseline report (Upreti et al., 2014).

Doing a panel survey implies asking the same questions so that changes can be measured over time. Some adaptations were made to the survey instrument between waves, which were minimal and mostly consisted of adding questions to capture changes in context or circumstances.⁴

Finally, we should note that, in the second wave instrument, modules and questions were sequenced in the same order. We felt this was important because ordering can affect the way in which people report against particular questions (van de Walle and van Ryzin, 2011). Thus, maintaining the original sequencing was another step we took to ensure that the research design itself – or rather changes to the design – is not what is driving changes in the variables.

Timing of survey

The baseline survey was conducted from late September to early November 2012, while fieldwork for the second wave began in mid-September and did not conclude until late December (although the bulk of it was completed by early December). The change in timing in 2015 was due to several factors:

- Fieldwork began earlier so as to remain consistent with the first wave in working around the festivals of Dashain and Tihar.
- Two of our sample districts (Bardiya and Ilam) were not accessible initially due to the partial closure of the East-West highway as a result of political protests.
- There was a generalised security threat in parts of Bardiya and Ilam and also the imposition of curfews in certain places.
- Tracking down respondents is time-consuming.

The timing of data collection between waves differed the most in Bardiya (See Box 1 for the implications of this).

Box 1: Festivals and the timing of the survey

In 2012, the districts of Rolpa and Bardiya were enumerated between 25 September and 18 October, before the festival Dashain. The district of Ilam was enumerated from 29 October to 7 November, in the period between Dashain and Tihar.

In 2015, Rolpa was enumerated before Dashain, between 16 September and 4 October. Bardiya, by contrast, was enumerated 20 November to 18 December after both Dashain and Tihar, due to security-related travel restrictions. Ilam was split, with two VDCs being enumerated 28 October to 9 November before Tihar, and one VDC afterwards from 19 November to 13 December. As part of the tracking process, missing respondents were tracked in Jhapa, Morang, Sunsari, Banke, Chitwan, Dang and the Kathmandu valley from mid-December onwards, with fieldwork finally concluding on 22 December 2015.

⁴ An example of this is that we asked whether the household was still using the same health centre as three years ago. This helps us identify which changes in access to the health centre are due to a switch in health centre, as opposed to a road improvement or some other explanation.

One cause for concern in the second wave is that the indicators for food insecurity – the CSI and the FCS – have a 30-day recall period, and in some cases this would contain a festival period. While there are a great many festivals in Nepal, Dashain is the largest and features unusual patterns of food consumption. In our 2015 sample, most respondents in Bardiya had a recall period containing Dashain and/or Tihar where previously they had neither (this applies to llam to a lesser extent). In the analysis we control for the possible effect of having been interviewed at a different time, to rule out this as a predictor of changes in food insecurity and consumption.

3.2 Data collection

One of the main challenges we faced with second-wave data collection was the likelihood of attrition – the loss of at least some of our original sample population. Attrition poses a threat to the internal validity of a panel survey, so there is a need to keep it as low as possible. To this end, we were able to use some useful information collected in the baseline to track down respondents.⁵ In order to get a sense of how much attrition to expect, a pre-fieldwork test was conducted in August 2015 in selected sites in which an attempt was made to establish the whereabouts of all respondents there. At the same time, an earthquake damage assessment was carried out in each of the three districts (see Box 2, Section 4).

In 2012, a team of 36 enumerators and 11 supervisors (including 6 from NCCR) had been employed to carry out the interviews. The enumerators were selected to provide diversity in terms of caste and geographical origin, as well as on the basis of prior research experience. In 2015, a larger team of 40 enumerators and 4 supervisors was chosen.⁶ Unlike in 2012, household surveys in the second wave were recorded using electronic tablets. Preparation for the data collection consisted of a five-day training to familiarise enumerators with the objective of the survey, the content of the survey instrument, and the use of electronic tablets for administration. The survey instrument was programmed to run on the application ODK Collect (designed by the Open Data Kit initiative),⁷ which allows data to be collected while offline and then uploaded via internet connection to the server – in this case we hosted the data on the ONA platform.⁸

In the end, there were very few problems with the performance of the tablets. In fact, they provided some major advantages, such as the data being uploaded in the field and checked in real time by the central SLRC team in London. Feedback was then given back to the survey team on enumeration quality, discrepancies in household identification numbers between waves and other inconsistencies, which greatly improved data quality. The use of tablets also removed the need for the transcription of paper surveys, thus eliminating one step at which human error could creep into the dataset.⁹

⁸ https://ona.io

⁵ This included their address, phone number (for some respondents), the household roster (in order to describe the household to others living in the same community), and their global positioning survey (GPS) coordinates. GPS coordinates were also plotted on a map, in advance of fieldwork, in order to locate respondents and organise the data collection.

⁶ Of these, 12 were female. Although the recruitment of enumerators was aimed at all ethnic groups, in the end all enumerators were either Brahmin, Chhetri, Janajati, or Madhesi.

⁷ https://opendatakit.org/

⁹ This is not to say that tablets are 'fool-proof' in terms of minimising the chance of human error. In our case however, we can claim that errors were reduced by the fact that incoming data was monitored in 'real time', so we could rule out the possibility that an error had been introduced during transcription and also try to resolve the error while the case was still fresh in the enumerator's mind.



A shopkeeper is interviewed using a tablet, during the pilot of the Wave 2 survey. Photo: G. Sturge.

Given the expectation of high attrition established by the pre-test, a tracking strategy was devised where a first phase of data collection would involve trying to locate every respondent in his or her original village, followed by a second phase where missing respondents would be tracked based on their ease of access. Ideally, when not all missing respondents can be intensively tracked due to resource constraints, a random selection of respondents would be tracked, so as to minimise the risk of bias from convenience sampling. In practice, the tracking team had to purposively sample areas in which to track based on accessibility, since some areas were inaccessible due to road closures and security threats, and others too costly to access due to Nepal's mountainous terrain.

3.3 Sampling and weighting for non-response

At the baseline in 2012 there were 3,176 completed surveys. In the second wave in 2015 we were able to complete 2,852 surveys (3 additional respondents were found but did not consent to be interviewed). Attrition overall was 10% and non-random, partly since it had not been possible to randomise the tracking of respondents who had moved house between waves. Our attrition rate is similar to that of a recent, smaller panel study in the districts of Mustang, Kaski and Chitwan, which experienced attrition of 12% in three years between its first two waves (Walelign et al., 2016). As Table 2 illustrates, the attrition level differed by VDC, which is the level at which the sample is representative.

District	VDC	Wave 1	Wave 2	Attrition (%)
Rolpa	Budagaun	211	183	13.3
	Liwang	321	279	13.1
	Thawang	185	167	9.7
Bardiya	Belwa	341	310	9.1
	Gulariya	549	506	7.8
	Rajapur	323	285	11.8
llam	Pasupatinagar	296	272	8.1
	llam	496	449	9.5
	Chulachuli	454	404	11.0
	Total	3,176	2,855	10.1

Table 2: Attrition by VDC

The sampling strategy at baseline consisted of purposively selecting districts and VDCs on the basis of geographical representation, conflict affectedness, service delivery, caste/ethnic variation, land and asset issues, and other considerations (see Appendix 1). In the second wave, it was necessary to calculate weights to account for attrition and the details of how this was done are found in Appendix 1. The main reason for some of the respondents not being found in wave 2 was that they had moved for work, followed by marriage, family reasons and for medical treatment.

It is important to note that our sample is not representative at the national level although, for the sake of brevity, we refer to it using the country name. As such, when we refer to Nepal, we are using this as short-hand for 'the sample drawn for our study from Nepal', which is in fact representative only of nine VDCs in the country. The same is true when we refer to districts by name: for example, if we say, 'in Rolpa', we mean 'our sample in Rolpa'.

3.4 Analytical methods

The complexity of the dataset can pose a serious challenge when it comes to analysis. There are now up to two observations for each respondent, and it is likely that their responses to some questions will be correlated over time. Even if we control for everything that we can observe about that individual, there are still likely to be unmeasured factors that have an influence on an individual's outcomes over time.

To put it in different terms, when a respondent answers whether or not they believe that the government cares about their opinion, their answer will be based on their personal beliefs, opinions, preferences, expectations, lived experience, personality and mood. Some of these we can attempt to capture (for example, we can control for the fact that people displaced by conflict are likely to have had a different experience to those who remained, and this may also affect our variables of interest), but most of these factors remain unobserved. When it comes to modelling such a relationship, there are ways of addressing this bias. One approach is to assume that the individual-level effects are 'randomly' distributed across individuals and uncorrelated with everything else in the model. This is known as the Random Effects model (RE). An alternative model, the Fixed Effects model (FE), assumes that there is a correlation between the individual level effects and the regressors.

Ultimately, the FE model was chosen since it is highly doubtful whether the assumptions implied in the RE model can be met in our case. However, deciding on the FE model still leaves us with the problem of how to estimate the effect of time-invariant factors, such as gender of respondent or displacement in a conflict prior to baseline (and these are some of our most important variables of interest). In the end, it was decided that the RE model would be run alongside the FE model, but used only to estimate the effect of time-invariant variables. A full description of the analytical method and models used is found in Appendix 2.

It should be noted that our analysis does not enable us to identify cause and effect. In our analysis we therefore refer to causal inference rather than proof of causality. Causal inference means to examine under what conditions an effect occurred to then infer whether the conditions were the cause, in our case through testing conditional correlations between variables. But it does not prove causality beyond doubt. In order to prove a causal relationship one would need data from an experiment (such as a Randomised Controlled Trial) or a quasi-experiment (for example, where comparison groups can be matched on baseline or 'pre-treatment' characteristics, or where natural variations between clearly identifiable groups occur).

3.5 Outline of key variables

In each of the regressions, the same core control variables were included: gender, age and education level (of the household head for household-level outcomes or of the respondent for individual-level outcomes), ethnicity of the household, location at baseline, and whether the location is urban or rural. These controls are fixed at baseline, meaning that they only appear in the random effects (RE) regression: they tell us something about the influence of conditions that pre-existed any changes in the outcome variable. However, since we are testing so many hypotheses about how our outcome variables change, each regression contains a vector of independent variables which we anticipate will be linked to changes in the outcome.

A limitation of our analysis design is that many of these independent variables are also outcome variables. As such, we have a situation where, firstly, some independent variables may be influenced by changes in the outcome variable (in short, a problem of reverse causality) and, secondly, some independent variables are also determinants of one another (a problem of selection bias).¹⁰ What results from this is that, firstly, we cannot claim that our results confirm the *direction* of causal effects and, secondly, some of the coefficients may be under-estimated (in other words, more subject to 'Type-II errors or 'false negatives').

In addition to the regressions, extensive descriptive statistics were produced and drawn on in the analysis, which show, for all variables of interest, the cross-sectional mean or distribution in both waves and the number of 'switchers and stayers' between waves. This terminology (ours) refers to the differentiation between respondents who kept their answer to a given question the same between waves, and those who switched their answer. We often further disaggregate switching into an 'upward' or 'downward' switch, or similar. The outcome variables of interest are broadly the same as in the baseline analysis (Upreti et al., 2014) and are shown below.

	Outcome area	Outcome indicator(s)	Explanation of indicator(s)
1	Livelihoods and wellbeing	Coping Strategies Index (CSI) and Food Consumption Score (FCS)	Indexes capturing 1) the level of household food insecurity and 2) the quantity and to an extent quality of food (see Mallett et al., 2015 and Maxwell and Caldwell, 2008).
2		Morris Score Index (MSI)	An index measuring household asset wealth (see Mallett et al., 2015 and Morris et al., 1999).
3	Access to basic services	Access to health centre	Journey time (in minutes) to reach the health centre that the respondent typically uses.
4	_	Access to school (boys/ girls)	Journey time to reach the primary school that children attend.
5		Access to principal water source	Time (in minutes) taken for a return journey to the household's main source of drinking water.
6		Access to social protection	Has anyone in the household received a social protection transfer in the past year?
7		Access to livelihood assistance	Has anyone in the household received a livelihood assistance transfer in the past year?
8	Experience of	Satisfaction with health centre	Overall satisfaction with the health centre.
9	basic services	Satisfaction with school (boys/ girls)	Overall satisfaction with the school.
10		Perception of water quality	Is your drinking water clean and safe? (yes/ no)
11	Perceptions of government	Perception of local government actors	 Do you agree with the statement: The local government is concerned about my opinion? (yes/ no) To what extent do decisions of those in power at local government reflect own priorities?
12	_	Perception of central government actors	 Do you agree with the statement: The central government is concerned about my opinion? (yes/ no) To what extent do decisions of those in power at central government reflect own priorities?

Table 3: Summary of outcome variables

¹⁰ These limitations are clearly elaborated on in Angrist and Pischke (2008: 47-51).

4 Description of sampled locations and changes in context

Three districts were sampled for this survey: Bardiya in the Western Terai (plains), Rolpa in the Midwestern hills, and llam in the Eastern hills (although one of the VDCs sampled in llam, Chulachuli, is on the Terai). Rolpa was selected for being remote and the district where the civil conflict originated, llam is the most prosperous district with the greatest provision of services, and Bardiya is a Terai district selected for its diversity of people and livelihoods.

4.1 Shocks

In the three years between surveys (2012-2015) households reported having experienced a range of environmental and economic shocks. Out of the 12 shocks that were asked about in the survey, respondents reported an average of 3 shocks in wave 2, compared to 1.5 shocks in wave 1 (with 75% of the sample reporting more shocks than they had previously). For the most part, this rise in the number of shocks reported was accounted for by three major clusters of events, which are described below.

4.1.1 Severe earthquakes in 2015

Earthquakes are a frequent occurrence in Nepal but were only reported by 6% of our sample in Wave 1 of the survey. In April and May 2015, Nepal experienced two severe earthquakes that caused massive devastation to dwellings and huge loss of life. The total impact on the economy following these earthquakes has been estimated at up to 800 billion Nepali Rupees (NPR) or around US\$6 billion, equivalent to one third of the country's gross domestic product (GDP) for 2014/15 (*Himalayan Times*, 2016; Nepal Rastra Bank, 2015; National Planning Commission, 2015). The tourism industry, which accounts for around 4% of Nepal's GDP and 3.2% of total employment, was especially badly affected (Nepal Rastra Bank, 2015; World Travel and Tourism Council, 2014).

The nine VDCs sampled for this survey sustained relatively minimal physical damage or no damage at all from the earthquakes, instead suffering mainly from the negative spill-over effects on a range of different industries and aspects of life. An earthquake damage assessment was carried out prior to fieldwork, the findings of which are summarised in Box 2.

Box 2. Earthquake damage assessment

On 25 April 2015, Nepal suffered its deadliest earthquake since 1934, which killed more than 8,000 people and injured a further 21,000. Its epicentre was in Gorkha district, so the majority of damage was concentrated in the Central-North of the country and the Kathmandu valley. In Ilam Bazar and Pasupatinagar, official records indicate that 372 buildings were damaged (76 fully destroyed) including 6 schools, and 10 people were injured. No damage was reported in Chulachuli, our other VDC in Ilam. In Rolpa, 227 dwellings were damaged (62 fully destroyed), 2 people were injured and 1 person killed. In Bardiya, 40 dwellings were damaged and 2 people injured. The SLRC earthquake assessment in August 2015 suggested that the occupants of these districts had for the most part been mildly affected by the earthquake and its aftershocks.

Sources: http://www.inseconline.org/earthquake/map/

http://data.opennepal.net/content/disbursement-relief-material-earthquake-affected-districts-rolpa

4.1.2 Anti-constitution protests and border blockade

Following the ceasefire of 2006 and the transition from a monarchy to a parliamentary democracy in 2007, it was acknowledged that a Nepali Constitution should be codified in law. In May 2012, shortly before the first wave of the SLRC survey, the Constituent Assembly (CA) had been dissolved over its failure to agree on the draft Constitution and a new general election was not held until November 2013. Protests began in earnest at the start of 2015 over the proposed Constitution, scheduled for promulgation that year. The focus of the Constitution's most outspoken opponents was the proposal to federalise Nepal into seven provinces, which they claimed would diminish the power of Terai-based ethnic groups. From August onwards the protests intensified, with road blocks, *bandh* (general strikes) and demonstrations, coordinated mainly by Madhesi and other Terai-based political parties, and resulting in the deaths of at least 40 people. Of our survey sites, Bardiya was the most directly affected, with curfews being in place for several weeks in urban centres including Gulariya town.

Following the signing into law of the Constitution in September 2015, a border blockade was imposed at the Nepali-India border, as a result of which the supply of vital commodities such as petroleum gas and oil, and medicines all but stopped. The cost of fuel inflated by three to four times its previous value with detrimental consequences for many industries, and burdening households with more of their time being taken up to collect firewood or queue for fuel. Nepal relies heavily on the import of raw materials from India, causing some agricultural and construction industries to grind to a halt (Nepal Rastra Bank, 2016). In our data we notice a substantial spike in the reporting of inflation; however it should be noted that inflation and price hikes occur frequently in Nepal for a variety of reasons so this cannot be entirely attributed to the effects of the blockade.

4.1.3 Flooding, landslides and drought

In 2014 the Western region experienced severe flooding and landslides as a result of above-average rainfall. Bardiya was very badly affected, in particular the urban/peri-urban VDC of Gulariya. Research conducted in preparation for the second wave of the survey found that almost 1,700 houses in Gulariya had been fully destroyed and almost 6,000 partly damaged, meaning that a population of almost 40,000 individuals had experienced a profound disruption to their living conditions. In Rajapur and Belwa the damage was less extensive, with around 4,000 and 400 individuals affected in each VDC, respectively. Official estimates identified over 21,000 households that had been displaced due to these floods in the Western and Far-Western regions (UN Nepal Information Platform, 2014), however our survey did not identify any households that were still displaced in 2015.

Winter drought is another natural hazard that affects parts of Nepal, and which has affected parts of the country particularly badly in recent years. The last major drought was in 2008/2009 however it is a perennial risk that is considered to be worsening partly as a result of climate change (Wang et al., 2013).

The scale at which these three clusters of shocks affected our sample is evident in their increased reporting of certain shocks in 2015, namely earthquakes, inflation and floods and droughts (see Figure 1). Respondents were asked whether their household had experienced any of these shocks in the past three years (answering 'yes' or 'no'). Another shock that households experienced more frequently is health problems – which could also be a result of the major shocks experienced.



Figure 1: Shocks experienced by the household between 2012 and 2015

Note: Statistical significance of the difference between the percentage of respondents reporting a shock over time (calculated by a two-sided T-test) is indicated by asterisks where *** p<0.01, ** p<0.05 * p<0.1

4.2 Political changes and concerns

The period between the two survey waves was marked by important political events. At the time of the first wave in 2012, the Unified Communist Party of Nepal (Maoist) (UCPN-M) had returned to power after a period of more than two years. Between the two survey waves, in March 2013, the Constituent Assembly (CA) was dissolved following its failure to draft a new Constitution after its tenure had been extended for two years.

In November 2013 Nepal held an election for the new CA, returning the Nepali Congress (NC) as the party with the largest number of seats. A coalition government – led by the NC with the Communist Party of Nepal (Unified Marxist–Leninist) (CPN-UML) as a major partner – came to office and saw through the promulgation of the Constitution on the 20 September 2015. Almost immediately afterwards, in keeping with a previous agreement, the Prime Minister resigned. Around the same time, the CA elected a new President, Bidhya Devi Bhandari, who is a senior leader of the CPN-UML. These latter events were taking place as our survey data were being collected.

These events are of significance to our study at the regional level. The UCPN-M had won the largest number of seats to the CA elected in 2008, and there were high expectations that it would deliver improvements. This was particularly pronounced in constituencies that had suffered the most during the civil war, which includes our survey site Rolpa (A. Adhikari, 2012; Jha, 2014). The rejection of the UCPN-M in the second CA elections held in 2013 is often attributed to their failure to strike a convincing position as both 'proper' politicians playing by establishment rules and ideological opponents to the status quo (A. Adhikari, 2012, 2014; Byrne and Klem, 2014; Byrne and Shrestha, 2014).

A consequence of the Maoists' inferior performance in government was that marginalised social and ethnic groups began to splinter away from the party (A. Adhikari, 2014). Unlike Rolpa where the Magar ethnic group is in majority, Bardiya and Ilam are comparatively more ethnically diverse and see a mixture of support for the NC and CPN-UML among other parties (some constituencies in Bardiya also returned a Maoist CA member in the 2013 election) (Reliefweb, 2013). There are many small ethnicity-based political parties and pressure groups in these two districts, many of which protested against the federal structure proposed in the Constitution.

There are long-standing movements for ethnic representation in our sample districts, of which many of these small parties form a part. In Ilam, the Limbuwan movement (involving for example, the Limbuwan Joint Struggle Committee) believes in autonomy for nine districts in Eastern Nepal. Bardiya is the site of the Tharuhat movement which campaigns for greater representation of Tharus at the national level and a federal province encompassing the Western, Mid-Western and the two Far-Western districts of the Terai. In the period covered by our survey, Bardiya also witnessed the rise of the Undivided Far-west movement which lasted for 32 days in 2013. The harbinger to the movement was UCPN-M's proposal to include the two Terai districts of the Far-Western Region as part of the Tharuwat province. As a reaction, the movement stood against the idea of separating the two Terai districts from the hill and mountain districts of the region in a federal structure. The movement received support from senior leaders of all major political parties, including Nepali Congress, CPN-UML and UCPN-M.

Our survey has captured snapshots at two points in time of attitudes towards the central government: the first at a time of mounting political deadlock; the second at the moment when the deadlock had been broken and the Constitution delivered. Crucially, however, we also tracked the same respondents over time, so can test whether confidence and trust in the state changed in an equal manner for different groups of people. We also measured whether changes in trust and confidence in *local* government are the same or not across all respondents, which may to some extent be linked to changes in local political representation.

4.3 Migration of respondents

Of the 3,176 respondents interviewed in the first wave in 2012, 2,815 were re-interviewed in the second wave in 2015, representing a retention rate of 90%.

Among those who were re-interviewed, 85% still lived in the exact same dwelling as three years prior, while 96% still lived in the same *village*. Of those who had moved village, one third (33%) had moved to another village within the same district, and the remainder (74 respondents in total) had moved to other districts that were outside our original sample but we were able to locate.¹¹

Of those who were *not* re-interviewed in 2015, 47% had migrated within Nepal and 53% had migrated abroad. Migration trajectory was split by gender, with the large majority of female respondents having migrated within Nepal for marriage or family reasons, and the large majority of male respondents having migrated abroad for work. International migration was mostly to India (45%), the Gulf states (Kuwait, United Arab Emirates, Qatar and Saudi Arabia combined took 31%) or Malaysia (21%). These migration statistics are consistent with known patterns of labour and marriage migration from Nepal (NIDS et al., 2013; Hagen-Zanker et al., 2014). Around 30% of the *internal* migrants had relocated to Kathmandu, and the remainder mostly to urban areas of a district near their original location.

¹¹ These districts are (number of respondents in parentheses): Banke (11), Bhaktapur (2), Chitwan (3), Dang (9), Jhapa (33), Kathmandu (8), Lalitpur (1), Morang (4), and Sunsari (3).

5 Changing livelihoods and wellbeing

Which factors influence changes in people's livelihoods and wellbeing? Here, we present a broad range of descriptive statistics showing changes in food insecurity and asset wealth, before summarising the regression analysis conducted. For the regression analysis we focus on the Coping Strategies Index, Food Consumption Score and Morris Score Index (see Section 2.3.1 for a discussion of the indexes and the independent variables used in the regressions). Before describing changes in these main indicators, we present some descriptive statistics depicting changes in terms of households' main livelihood activities.

5.1 Livelihood activities

On average, the households in our sample increased their number of livelihood activities between 2012 and 2015 from a mean of 2 different livelihood activities to 2.5. Forty-seven percent of households reported more livelihood activities in the second wave, while 20% reported fewer and 33% reported the same number as before. Looking at the type of livelihood activities that households engage in, the most common by far in both waves is '**own cultivation**, **livestock or fishing**'. As Figure 2 illustrates, there has been a significant increase in the percentage of households with a member engaged in 'casual labour in agriculture' and in 'selling goods' (respectively by 12% and 22%).



Figure 2: Households engaging in particular livelihood activities, by wave

Note: Statistical significance of the difference between percentages engaging in an activity over time (calculated by a two-sided T-test) is indicated by asterisks where *** p<0.01, ** p<0.05 * p<0.1

The question that follows is whether it is the same households engaged in each of these activities in both waves. For 'own cultivation', 75% of all households engaged in this activity *in both waves* (Table 11 in Annex 2), however there was much more movement in and out of other categories of employment. For example, only a third of the households who ever reported casual labour reported it in both waves, and for 'selling goods' this figure was less than a quarter.

Even for those households in which a member owned a business, the majority only reported this in one wave. Following on from this, even though the overall average suggests that business ownership is on

the rise, one third of households reporting a business in wave 1 no longer reported it in the second wave. This high level of shifting is consistent with other studies that find that households commonly shift livelihood strategy through time (Walelign et al., 2016). That the majority of households can be classified as small-scale farmers with a frequent and high level of diversification into other activities is also reflective of what is understood about Nepali livelihood strategies in general (Nielsen et al., 2013; Rahut et al., 2014; Larsen et al., 2014).

The most-reported main income source in both waves was 'own cultivation', which for the most part captures home food production rather than an activity that generates cash income. Again, there was considerable switching, with only 55% reporting the same main income source in both waves. After 'own cultivation', the most common main income sources were 'own business', 'casual labour (non-agriculture)' and remittances.

5.2 Food security

Nepal was a largely food-secure country until the 1980s (R. K. Adhikari, 2010),¹² but with the increase in population and low agricultural production in the 1990s (Tiwari, 2007), levels of food insecurity began to rise. Given the variation in geography, however, different regions and districts experienced different forms of food insecurity.

Our surveys were conducted at the most food-secure time of the year; moreover, at a time when major festivals are celebrated, which could mean that our estimates of food insecurity are downward-biased (relative to the year as a whole). Reports from the Nepal Food Security Monitoring System indicate that during the period of the survey in 2012, all three of our sample districts were generally food secure and the same was true in 2015 (NeKSAP, 2013, 2016). However, in 2015 the price and scarcity of certain essential goods, most notably fuel, spiked during our survey period as a result of the blockade of the Indian-Nepal border. Some reports suggest that farmers were also adversely affected, in that demand for their produce decreased due to the increase in transport costs for buyers.¹³



People queue for cooking gas in Lalitpur with supplies diminished by the border blockade. Photo: G Sturge.

¹² R. K. Adhikari (2010: 6) cites Central Bureau of Statistics data indicating that Nepal had an annual surplus of grain and cereal production until 2003.

¹³ See, for example this media report from Bardiya http://admin.myrepublica.com/society/story/31278/blockade-hits-paddy-sales-in-bardiya.html

Across the VDCs sampled here, the majority of the sample experienced some kind of change in food insecurity, as measured by CSI, between waves, with **most changes representing an improvement in food security**. However, 45% of the sample had the same score in both waves, which is mostly accounted for by the fact that a large proportion of the sample had a score of 0 (i.e. low food insecurity) in both waves. Rolpa saw the largest percentage of improvers in CSI, and llam the smallest. The other measurement of food security, the FCS, shows that most households (58%) improved their food consumption between waves. There were small differences across districts, with Bardiya seeing the most improvers in FCS and llam the least.

Change in Coping Strategies Index (CSI)	Percent	Average (mean) change in CSI
Improved (lower)	37.67	-6.76
Worsened (higher)	19.08	4.10
No change	45.25	n/a
Change in Food Consumption Score (FCS)	Percent	Average (mean) change in CSI
Improved (higher)	57.66	9.85
Worsened (lower)	39.71	-7.75
No change	2.63	n/a

Table 4: Changes in Coping Strategies Index and Food Consumption Score

Note: The CSI measured food *in*security therefore a higher value is a worse outcome,

while the FCS measures frequency of consumption therefore a higher value is a better outcome.

Changes in CSI and FCS were weakly correlated (0.39), but still one quarter of the sample (25%) experienced an improvement in both and 8% of the sample experienced a worsening in both. It should be noted that our sample districts are comparatively very food secure compared with others, and yet this positive result is still notable. As suggested by the average size of change in Table 4, most changes were fairly substantial for both indicators. Looking at 'large' changes (meaning changes of more than one standard deviation), only 6% of the sample (187 households) experienced a large improvement in both.

When it came to the consumption of individual food groups, there was on the whole a lot of change between waves (the exception being for grain, which includes rice and shows little difference in consumption). The principle food groups that were being consumed more frequently by households were vegetables, fruit, roots and tubers, sugar or honey, and pulses.

5.2.1 What explains changes in food insecurity over time?

The results presented here are conditional correlations, meaning that they apply when all other factors are held constant. In the interest of brevity this point is not made again throughout the remainder of the paper; however, although it should be considered to apply to all regression results presented in the report.

Most respondents experienced some changes in food security, and regression analysis helps us understand which factors are associated with improvements. The results of the fixed effects regression reveal several clusters of variables that are linked with changes in food security. Only the statistically significant results are discussed here, unless specified otherwise.

The first cluster can be categorised as **economic factors** or 'inputs' to household production. Starting with the CSI, households that increased their asset wealth (the proxy being MSI) saw a reduction in food insecurity, as did households that began receiving livelihood assistance between waves. Households that did not receive remittances at baseline but started to receive them between waves also saw a reduction in

food insecurity. Households that added one more livelihood activity to their baseline livelihood portfolio¹⁴ also experienced an improvement in food security (CSI), holding all other factors constant.¹⁵ Turning to the FCS regression, an increase in MSI is also linked to a rise in food consumption and, although changes in number of livelihood activities did not make a difference, households that had a member start either 'selling goods' or private-sector work¹⁶ also saw an improvement in FCS.

Diversification here could either have provided the additional means to make a household more food secure *or* a household's successful farming activities could be driving both increased food security and movements into other livelihood strategies. In discussing different perspectives on this relationship, Ellis (2000) terms this an 'asset strategy' or the purchasing of assets as a means to diversify livelihoods. Indeed, later in this section we observe that livelihood diversification is linked to an increase in MSI (our measure of asset wealth).

Certain economic changes also predicted a worsening of food insecurity. For the CSI and the FCS, a household that did not have a member in casual labour at baseline but saw someone start casual labour between waves on average experienced a worsening of food insecurity. Households that took a loan between waves (but didn't have any debts at baseline) saw a worsening of food insecurity in both the CSI and FCS regression. This is a different picture to that observed at the baseline, where households with access to credit had better food security (Upreti et al., 2014): the cross-section could have picked up the effect of having additional funds to buy food, while the panel analysis may show the adverse relationship between food shortages and having to borrow.

The second cluster contains variables relating to **risks**, **safety and security**. Where the respondent changed from not perceiving their village or wider area to be safe at baseline to perceiving it as safe in wave 2, their food security (CSI) improved. Furthermore, households that experienced a health shock between waves or experienced more crimes in wave 2 compared to wave 1 also increased their food *insecurity* on average, as measured by the CSI. The same story was observed in the FCS regressions, where an improvement in perception of village safety was associated with an improvement in FCS, and experiencing a health shock in wave 2 but not at baseline was linked to a decrease in FCS. In both the CSI and FCS regressions, households that had not reported fighting in their area at baseline but did report it in the wave 2 interview saw a worsening of the outcome variable. In this case, fighting mainly refers to verbal or occasional physical disputes with neighbours or extended family members. Such disputes are often about land ownership and water access, but our data cannot tell us if this in turn affects food insecurity.

A third cluster of factors is **household characteristics** or 'time-invariant' factors (gender, education at baseline, ethnicity, location etc.). Drawing on the RE results, we observe broadly consistent results to the baseline cross-section (see Upreti et al., 2014), in that the more highly educated the household on average, the lower its food insecurity by both the CSI and FCS measurements. Education is likely to affect the CSI/ FCS because it is closely correlated with income, with better educated households able to earn more and hence improve their food security. Similarly, the Brahmin/Chhetri ethnic group have much lower CSI scores and higher FCS scores than other ethnicities (consistent with the baseline). One notable difference to the baseline is that female-headed households are no longer more food secure than their male-headed counterparts and that now there is no difference.

¹⁴ Sensitivity analysis found that the statistical significance of this result for number of livelihood activities, casual labour, natural and health shocks, and location are sensitive to model specification.

¹⁵ These changes were of different magnitudes, for example starting to receive remittances was linked to roughly a 1-point reduction in CSI, while to obtain the equivalent reduction a household would have had to increase its MSI by 300%, on average.

¹⁶ The results for selling goods, private-sector work, casual labour, fighting in the area, and urban location are sensitive to model specification.

5.3 Asset wealth

Based on the work of Morris et al. (1999) we use a weighted asset index (Morris Score Index (MSI)) to approximate household wealth, with goods that few people own having a higher weight. The scores among households in our sample range from 0 (no reported ownership of any of the assets listed) to around 900. The points on the index are not meaningful in their own right however: to provide some sense of scale, the mean score across both waves is 38. As with any wealth indicator, the distribution of scores is heavily skewed towards the higher end, meaning that a small number of households have extremely high scores.

Only four households, or 0.1% of the sample, had the exact same score in both waves, however 13% of households had scores within 2 points of each other and 16% had scores within 10% of each other across waves. Using a 'cut-off' point where changes within 10% of the baseline score are not counted as a change, 16% had no change, 31% had a lower score, and 53% had a higher score in wave 2.

Looking at cross-sectional averages, ownership levels of certain large household assets increased with a statistically significant difference, notably fridges, televisions, fan/air-conditioning units, computers and mobile phones. Ownership levels of other productive assets rose slightly too, notably large livestock and petrol-powered vehicles.

5.3.1 What explains changes in asset wealth over time?

Turning to the FE regressions, we can identify certain groups of variables that are linked with changes in MSI to a statistically significant extent. Since changes in terms of points on the MSI are hard to interpret, they are discussed here in terms of percentages. Beginning with **economic factors**, households that had a member start either 'selling goods' or their own business saw a change in MSI between waves of up to 16%. Households in which a household member started 'own cultivation' saw an even larger increase in MSI (21%). Our survey does not tell us which direction causality goes in. For any of these changes in livelihood portfolio, it is possible that it was an increase in asset wealth that enabled the household member to start working in this sector since many of the assets in our questionnaire have a specific productive use. More revealing, however, is that households that started receiving remittances between waves saw an increase in MSI of around 6%, and those that started receiving social protection saw an increase of roughly 4%.¹⁷

Other economic variables give some suggestion as to why certain households experienced a reduction in asset wealth between waves. Households in which someone took a loan between waves (without having any debts at baseline) experienced a 4% reduction in MSI, and households whose CSI score (indicating food insecurity) increased also saw a reduction in MSI. No statistically significant link was found between changes in MSI and shocks, crimes, safety or fighting in the area between waves.

None of these changes, however, had as large an effect on MSI as **household characteristics** (education level or ethnicity) at baseline. Using the RE model to test the effect of these time-invariant characteristics, we find that Janajati, Dalit, Madhesi and Muslim households¹⁸,¹⁹ have MSI scores between 20% and 44% lower than Brahmin/Chhetri households. Despite caste discrimination being outlawed since 1962, caste and ethnicity remain strongly tied to financial, social and political exclusion

¹⁷ The result for remittances, as for own business, CSI, ethnicity (other), and location are sensitive to model specification.

¹⁸ Ethnicity and caste are intertwined in Nepal. In very general terms, the 'high caste' consists of Brahman and Chhetri in the hills and Brahman, Rajput, Bhumihar in Terai. Newar (also an ethnicity) are usually considered to be the 'middle caste'. There are 59 Adivasi/Janajati (indigenous groups) who are not part of the caste system, however they are usually considered middle caste. The majority of Madhesi, like Yadav, Teli, are also in the middle category. The 'low caste' category consists of Dalits of the hill and Terai, both of which consist of more than 30 sub-categories. Muslims, the religious minority, do not come under caste system but are considered an excluded group on the basis of religion (T. Adhikari et al., 2014).

¹⁹ Ethnicity was determined through the question, 'What ethnic group does the household belong to? = Brahmin/Chhetri, Janjati/Indigenous group, Dalit, Mixed, Other'. The Madhesi group used in this analysis were self-identified by having selected 'Other' and specified this. There were no other distinct groups identified in the 'Other' category.

(ADB, 2010). For instance, the Dalit, Hill Janajati and Muslim groups experienced the lowest decline in poverty between 1995/96 and 2003/04 (ADB, 2009). Our regression findings clearly confirm this: these differences are strong enough to stand out even when holding a long list of other factors constant. Furthermore, when we consider changes in wealth between the two waves, we also see that inequalities between the wealthiest caste/ethnic group and others have actually widened (Figure 3).





Average household education level shows a clear ascending pattern in terms of wealth, whereby primary-educated households have a 7% higher MSI across the waves compared to households where no education is the average. The corresponding figures for secondary and tertiary are 13% and 36% respectively.

From the regression analysis, two additional livelihood-related themes came out strongly – debt and remittances/migration. We now look in greater detail at the data on these livelihood strategies before concluding the section.

5.4 Debt/loans

From the regression analysis we know that if a household took a loan between waves but had no debts at baseline then their food insecurity worsened. Borrowing levels are high in our sample, with 80% of the sample reporting debt in any wave and 46% reporting debt in *both* waves. Household members were most likely to borrow money from family and friends (around half of borrowers), and a substantial proportion (around one third) had debts to a landlord or employer. Borrowing from a formal lender or bank was relatively common (roughly one quarter of borrowers had debts to these lenders), while borrowing from informal money lenders was rare, decreasing from 15% to just 5% of borrowers between waves (Table 12 in Annex 2). Borrowing from savings groups rose substantially, and by wave 2 almost 40% of borrowers had debts to these.

The most common reasons for borrowing were for 'productive uses' or to meet immediate basic needs. Between waves more respondents began reporting borrowing for 'other' purposes, the most frequent of these being weddings, to build a house, migration and to buy a vehicle (Table 13 in Annex 2).

5.5 Migration, remittances and displacement

Migration is a relatively well-established phenomenon in Nepal, with some estimates suggesting that 1 in 5 people are temporarily or permanently away from their home at any given time (CBS and NPCS, 2011). Given that our survey covers districts with lower migration rates than other parts of the country, our results show a slightly different picture. At the individual level only 3% of working-age household members were reported to have migrated either internally or internationally in the last 3 years (the percentages are slightly higher in wave 2 than in wave 1). Looking at the household level, this corresponds to 27% of households having reported any internal or international migrant member in at least one of the waves (see Table 5).²⁰ There was little difference between the level of internal and international migration, with both hovering around 5% of households in wave 1 and 10% in wave 2. Levels of remittance receipt were much higher, with 40% of households members in the last three years and only those migrating for work, the higher remittance receipt levels may give a more accurate estimate of the percentage of households with a history of out-migration. The modest rise in remittance-receipt is consistent with the rising importance of remittances as a rural livelihood strategy (World Bank data bank, 2016; Walelign et al., 2016).

	Wave 1	Wave 2	In either or both waves
Internal migrant in household (%)	5.0	10.5	14.8
International migrant in household (%)	6.8	10.3	15.4
Either kind of migrant in household (%)	11.3	18.1	26.5
Household received remittances in past three years (%)	24.8	31.9	39.0

Table 5: Migration at the household level

For most households in these parts of Nepal, international migration is costly and hence not possible without access to a loan (Hagen-Zanker et al., 2014). In our survey, the number of households reporting that someone took a loan in order to migrate are higher than the numbers reporting an international migrant in the household roster: this suggests that migrants migrate for long periods of time. The average value of a loan, adjusted for inflation, was equivalent to around US\$1,800 in 2012 and US\$1,500 in 2015. We do not find, however, that households with a recent migrant (international or internal) are worse off than non-migrant households in terms of their asset wealth and, if anything, these households saw the largest gains in wealth between the survey waves (Table 10 in Annex 2). This suggests that either selling assets is not a common way to finance migration while taking a loan is, or that the benefits of migration begin to accrue very quickly through remittances.

The slightly higher migration levels found in the wave 2 data, along with the somewhat diminishing cost of migration, reflect the growing prevalence of migration as a livelihood strategy in Nepal. It has been noted that in the most earthquake-affected parts of Nepal, migration levels are expected to rise and, although our study areas are not among these, the higher migration levels may reflect a similar strategy to escape a lack of livelihood opportunities (Sijapati, 2015).

In the second wave of the survey we asked whether a household had been displaced due to conflict between 1996 and 2006. Just over 100 households (4% of the sample) reported having been displaced and half of these were in Rolpa – at the centre of the Maoist uprising, which remained a hotspot during the conflict. Of the displaced, almost one third had fled to the district capital during displacement and a

²⁰ We do not capture information on the destination country of international migrants. We do, however, capture information on respondents who attrited from our sample due to overseas migration, and find that the most frequent destinations are India (45%), Malaysia (21%) and the Gulf States (31%) – this gives us a clue as to the likely whereabouts of other migrants from our sampled households. These destinations are consistent with a recent study of labour migration from Sunsari district by Sunam and McCarthy (2016).

²¹ This is fairly close to other estimates that show that around 55% of households receive remittances (CBS and NPCS, 2011).

larger proportion had crossed over into a different district. A small percentage (16%) had crossed over into India at some point during displacement. The RE regression analysis shows that the formerly displaced had higher CSI scores (worse food insecurity) but also higher FCS scores (better quantity and quality of food consumption), however they were no different to the non-displaced in terms of asset wealth (MSI). Since the recall period for the food security indicators is only 30 days, and potentially more than 10 years have passed since people's return, we conclude that there is insubstantial evidence to say whether long-term livelihoods and wellbeing are affected by past displacement.

5.6 Key findings on changes in livelihoods and wellbeing

Livelihood diversification over time is the norm.

In the three years between panels, there was a considerable amount of change in most households' livelihood portfolios, with 45% switching their main income source. The majority of households added an activity to their portfolio rather than reduced it, and overall the biggest increases were in selling goods and non-agricultural casual labour. A recent panel study with some similarities to our own also identified livelihood diversification over time in households engaged in all livelihood strategies, most notably among 'small-scale farmers' (Walelign et al., 2016).

Accumulating assets is an important aspect of building a secure livelihood.

Switches into particular types of livelihood activities, particularly entrepreneurial or home-based industries, sometimes require productive assets, so it is no surprise to see levels of asset wealth rise with a household's entrance into a new livelihood activity (Ellis, 2000; Davis, 2003; Nagler and Naudé, 2014). The exception to this positive trend is for entrance into casual labour, which is linked to a worsening of both indicators of food security (CSI and FCS). Our analytical method does not allow us to determine the direction of causality between a rise in assets and entrance into a new livelihood activity, however there is an abundance of studies demonstrating the need for assets as a prerequisite for moving to more remunerative livelihood strategies (Nielsen et al., 2013; Khatun and Roy, 2012; Reardon et al., 2000).

If this is the case, then the question remains: how do some households become wealthier in the first place? It is tricky to disentangle the causal relationship between starting a new livelihood activity and experiencing a rise in asset wealth, and, in short, we need to understand more about the cash and credit economies of these locations.

Most households are in debt, for short periods of time, but it is not clear what the long-term potential of borrowing is for livelihood strategies.

Borrowing money to invest in asset-building is unlikely to be the explanation for a rise in asset wealth, since going into debt between waves is linked to a decline in wealth and a worsening of food insecurity. However, levels of borrowing are high in both waves (around 60% of households have debts), and it is possible the long-term benefits of borrowing (to invest) are being captured by these entrances into new household livelihood activities.

A limitation of our survey is that it did not ask about bank savings, so we do not know if households that did not have to borrow money used savings instead to purchase assets. It stands to reason, however, and is confirmed by empirical evidence, that the ability to save money is directly correlated with a household's net income in a given period of time (Walelign et al., 2016). Increasing asset wealth and decreasing food security are correlated in our regressions, however the role that cash savings could play in these processes requires further untangling.

Migration is a common livelihood strategy but has high start-up costs.

We do know from our data that households typically take out loans both for productive uses and immediate needs, and around one in five households had taken a loan to finance migration. These migration loans are typically of a high value although there is some evidence here that the cost of migration has decreased marginally over time. Our results suggest some level of migration dividend, in that remittance-receiving households are slightly better off in terms of asset wealth.

This finding connects with another recent study of migration from Sunsari district in the Eastern Terai, which found that households tended to spend remittances on consumption, land speculation or outside agriculture and, crucially, not on entrepreneurial investments in farming activities (Sunam and McCarthy, 2016: 57). Another recent study conducted in different locations across Western Nepal found that remittances are important in enabling switches to more remunerative household livelihood strategies (Walelign et al., 2016). This would appear to contradict Sunam and McCarthy's findings, however in the Walelign study a 'more remunerative livelihood strategy' is not necessarily one that requires the expansion of farming activities or other asset-reliant livelihoods. Our study establishes a link between remittances and the purchasing of assets, but more investigation is needed into whether these investments are of a productive type or more classifiable as consumption.

Socio-economic inequalities persist.

Inequalities persist in the livelihood and wellbeing outcomes of different ethnic and caste groups, even when the household has experienced the same general pattern of change between waves. The higher the household's average education level, the better their livelihood and wellbeing outcomes across waves. Higher caste/ethnic groups also consistently fare better on these outcomes.

The subjective security of an area appears linked to food security.

Overall there is no consistency in how experiencing shocks and fighting affects these livelihood and wellbeing indicators. Perceptions of safety are linked to a household's short-term food security but not to its asset wealth.

6 Changes in basic services, social protection and livelihood assistance

In this section we focus on basic services (health, education, drinking water) and social protection and livelihood assistance. For each service we describe changes in access to the service and satisfaction with the service, and identify possible explanatory factors behind the changes, as outlined in section 2.3.2.

It is worth noting, first of all, that there was very little change in terms of the service being used by the respondent in each wave, with around 90% using the same health centre, school or water source in both waves (Table 6). However, while the physical structure itself may have remained the same, there was a considerable amount of change with regard to *who was perceived to run the service*. No clear patterns emerge in terms of direction of perceived change. Regarding health care and education, people tended to switch between the government and a private company or vice versa (with a handful of exceptions). In the case of drinking water, in addition to the government and private providers, other actors reported as running the service included the household itself or the community.

	Still using same se	rvice as in wave 1?	Provider of service (as in waves	dentified by respondent in 1 and 2)
Service	Yes (%)	No (%)	Same provider (%)	Different provider (%)
Health centre	90.6	9.5	66.0	34.0
Girls' school	87.3	12.7	83.7	16.3
Boys' school	89.4	10.6	83.5	16.5
Water point	92.9	7.1	62.1	37.9

Table 6: Changes in service and service provider

There are a few possible explanations for the changes in perceived provider, among them the possibility that the respondent misidentified the provider in one of the waves. Of course, it is also possible that in some cases the service was taken over by another provider, but our qualitative context analysis suggests that this rarely happens.

In many cases there is ambiguity in who is ultimately responsible for providing a service, for example in cases of government contracting out the service. There is also a problem of 'attributability' in some service sectors, for example because a provider will make more of an effort to claim responsibility for a good quality service while denying accountability for a bad quality one. The infrastructure of service provision can also advertise or hide the provider, for example in massive over-ground water pipes versus thin underground ones (see Batley and McLoughlin, 2015, for more examples). Part of the apparent circulation of providers that we see between waves could be explained by these ambiguities.

6.1 Changes in access

Our principal measure of access to a service is the time it takes (in minutes) for the respondent to reach the service or, in the case of water, the time taken on a round trip to fetch water from the water source. Respondents travelled furthest to access the health post (an average of 45 minutes), followed by the school (25 minutes), and on the whole travelled shorter distances to reach the water source (6 minutes) (Table 7). For all basic services, the majority of respondents changed their journey time, and for health and education the majority changed their time by more than +/- 5 minutes. For water, only a quarter (26%) increased or decreased their journey time by +/- 5 minutes. For those with a change greater or less than 5 minutes, the average change was relatively large. For health and education, the average

lengthening of the journey was equivalent to a *doubling* of the average journey time. For water, the average lengthening of a journey represented a *fourfold* increase in the average journey time.

It is not clear why respondents are reporting such big differences in journey time. One explanation is that they are accessing different providers – as we saw above around 10% of respondents stated they switched provider. Another potential explanation is that road infrastructure or access to transport changed. For example, the floods or landslides experienced by around a third of the sample (see section 4.1) could have led to road closures and, as such, longer journey times.²²

	Change over time					
Service	Mean journey time (pooled, in minutes)	% whose journey time changed at all	% whose journey changed by more than +/-5 minutes	Average change for better access	Average change for worse access	
Health	45 minutes	80%	65%	46 minutes	-34 minutes	
School	25 minutes	79%	54%	26 minutes	-22 minutes	
Water	6 minutes	60%	26%	22 minutes	-22 minutes	

Table 7: Change in access to basic services

Note: Average change only shown for those with changes of at least five minutes.

Figure 4 shows the share of respondents reporting no change, better, or worse access. When it came to direction of change, for the health post and school more respondents saw an increase in journey time than a decrease, showing a tendency towards worse access. Access to the water point was a little different, with a small majority of switchers experiencing a decrease in journey time.

Figure 4: Average journey time and changes in journey time by service sector (+/- 5 minutes counted as 'no change')



Note: Pie charts show the share of respondents who experienced each type of change in their access to the service between waves.

²² We tested this theory by looking at whether respondents in Bardiya, where major flooding occurred in 2014, were more likely to report a lengthening of journey times to basic services. We did not find that they were more likely to do so than respondents in other districts.
Respondents were also asked whether they had received any social protection transfer or livelihood assistance from a list of specific programmes in the past three years (see Table 8).²³ In each wave, roughly 38% of households had received at least one social protection transfer and around 18% had received livelihood assistance.

	Change between waves					
Type of assistance	Received it (both waves pooled)	Never received it	Always received it	Started receiving it	Stopped receiving it	
Any social protection	38%	51%	27%	12%	11%	
Livelihood assistance	17%	70%	5%	13%	12%	

Table 8: Access to social protection or livelihood assistance across the two waves

Note: 'Never' means never within the two waves of the survey; 'always' means in both waves of the survey.

There was no difference by panel wave in the percentage receiving social protection, however the percentage receiving livelihood assistance did rise marginally. 27% of the sample received social protection and 5% received livelihood assistance across both waves, with 51% and 70% respectively never having received it in either wave. Overall, these statistics suggest that there seems to be relatively little consistent and long-term support available to surveyed households.

The most commonly-received types of social protection transfer were a 'stipend for girls and Dalit children/students' (25% ever received this, of the full sample), the 'old-age allowance' (17%), and the 'single women/widows allowance' (11%) (Table 15 in Annex 2). The most common types of livelihood assistance were 'seeds and tools distribution' (15% ever received this), 'goats and pigs for income generation' (9%), and 'skill enhancement trainings' (8%) (Table 16 in Annex 2).

As Table 9 illustrates, female-headed households were much more likely than male-headed households to be receiving social protection and this was the case in both waves. This difference was chiefly accounted for by female-headed households being much more likely to receive the 'single women/widow allowance'.

	Female-head	emale-headed households		Male-headed households	
Social protection transfer	Wave 1 (%)	Wave 2 (%)	Wave 1 (%)	Wave 2 (%)	
Old-age allowance	13.1	11.1	11.4	14.5	
Single women/widow allowance	18.7***	26.7***	2.6	3.1	
Disability grant	0.8	1.2	1.1	1.3	
Stipend for girls and Dalit children/students	17.7	16.6	14.9	16.7	
Midday meal, school uniform, cooking oil for children	5.1	1.6	8.7	3.9	
Cash transfers for family whose family member disappeared during or due to conflict	0.0	0.3	0.2	0.1	
Cash transfers for family whose family was killed during/due to conflict	0.7	0.6	0.2	0.2	
Scholarship to children of those families whose family members disappeared or were killed due to conflict	0.3	0.4	0.2	0.2	
Any social protection transfer	47.9	51.2	34.1	34.5	

Table 9: Receiving social protection transfers by sex of household head

Note: Asterisks indicate the result of tests to determine whether the change in the percentage receiving the transfer between waves is statistically significant: * p<0.01 ** p<0.05 *** p<0.1

For the most commonly-received social protection transfer, the 'stipend for girls and Dalit children/students', the vast majority of recipients correctly identified the government as the provider.

 $^{^{\}rm 23}$ A list of these transfers can be found in Appendix 3.

The punctuality and reliability of the transfer improved over time, with the percentage of recipients identifying that the transfer 'always' arrived on time' rising from 78% to 84% and the percentage stating that they 'always' received the right amount rising from 77% to 88%.

'Seeds and tools distribution' was the most common livelihood assistance programme and the punctuality of distribution improved over time (from 88% receiving it on time in 2012 to 96% in 2015). Over the same time period there was a sizeable shift in who respondents identified as the provider of the assistance: in wave 1 the most frequently named provider was a 'national NGO' (60%), whereas in wave 2 the most frequently cited was government (72%) and NGO provision had shrunk to 25%.

6.1.1 Health

To identify factors associated with a change in access to basic services, we ran regressions with 'journey time to the service' as the outcome variable. Where the outcome is 'journey time to the health post' we can identify several sets of factors that can be broadly classified as changes in household livelihood activity, exogenous factors, and features of the service itself.

In the category relating to changes in **household livelihood activity**, we find that if a member of the household started a private-sector job²⁴ between waves (where previously no one in the household worked in this sector) their journey time to the health post shrunk by around 7 minutes. Similarly, if a household member migrated within Nepal for work between waves there was an average reduction in journey time of 6 minutes. Drawing on the RE results, the average education level within the household at wave 1 also correlated strongly with access to the health post, with households being around 7 minutes closer to the health post if their average education was at least above literacy level. Femaleheaded households were, on average, a minute closer to the health post (also drawn from RE results).

A cluster of **exogenous factors** is linked to changes in journey time, a component of which is that experiencing an economic shock between waves, when not having experienced it in wave 1, is associated with a four-minute increase in journey time. Starting to perceive the village/local area as safe between waves is linked to a reduction in journey times. At the same time, however, experiencing fighting (i.e. verbal and physical disputes) in the area between waves was also linked to a reduction in journey times, possibly again suggesting that aspects of local safety have an influence on health facility access (albeit in non-uniform ways).

The group of variables describing **features of the health centre** showed almost no significant associations with changes in journey time. The exception was that respondents who identified the government as the health service provider in wave 2 but not in wave 1 saw a reduction in their journey time of around four minutes. There is no indication, however, that having to pay formal or informal fees for the health post, having to use it more frequently, experiencing problems with it, or there having been meetings and consultations about it make a difference to the distance people travel.

6.1.2 Education

In the regressions, hardly any explanatory variables had a statistically significant association with access to the school.²⁵ The only variable in the FE regression that was significantly correlated was having had a household member migrate *within* Nepal in the last three years,²⁶ which was linked to a reduction in journey time to school. It may be that this effect captures households which are located in a village with comparatively better transport links, enabling both outward migration and quicker

²⁴ The results for private-sector work, number of livelihood activities, migration, average education level, fighting in the area, safety in the village, and the government running the health centre are sensitive to model specification.

²⁵ This was the case both when testing access to the school separately for boys and girls, and when testing combined access. Our final model combines access to the boys' and girls' school; if a household contains boys and girls of primary-school age then an average is taken of their journey times to school.

²⁶ This result also became non-significant when the model was re-specified in the sensitivity analysis.

journeys to school. A handful of time-invariant factors drawn from the RE regression are also linked to better or worse access, for example that female-headed households have shorter journeys to the school on average, compared to male-headed households. Households that were displaced during the conflict (and then returned) have longer journey times to school. Most of the displaced in our sample are from Rolpa, so this effect may capture households living in comparatively remote VDCs with less developed road networks.

Does this mean we can't explain why some people travel longer or shorter distances to school? Naturally, a large part of what explains differences in journey times is location, which in Nepal implies wide differences in terrain and road network development. As shown in Table 10, children in Rajapur, Bardiya, only walk for an average of 14 minutes to reach the school, while children living around llam Bazaar, in the hilly llam district, travel for an average of 36 minutes. Looking at changes over time, there are also some outliers to the overall trend, such as Pasupatinagar, where almost two thirds saw a lengthening of journey time, and Rajapur, where in fact a large share saw their journey time decrease. In the regression analysis, understandably, district is a significant predictor of journey time.

District	VDC	No change	Shorter	Longer	Average journey time at baseline (wave 1)
Rolpa	Budagaun	25%	36%	39%	29.1
	Liwang	22%	29%	50%	27.7
	Thawang	18%	29%	52%	35.0
Bardiya	Belwa	19%	30%	50%	19.2
	Gulariya	21%	38%	41%	14.9
	Rajapur	26%	41%	33%	13.7
llam	Pasupatinagar	13%	23%	64%	26.6
	llam	19%	37%	44%	35.8
	Chulachuli	24%	29%	47%	25.9
	Total	21%	33%	45%	24.4

Table 10: Change in journey time to the school, by VDC

An alternative measure of access is **payment for the service**, and we do see some changes over time that tell us something about the importance of accountable school management systems. Primary education in Nepal is mostly free (there are fees for registration and moving to the next year) and all educational materials are supposed to be provided by the schools. Despite this, the percentage of households paying school fees for government-run schools increased from around 28% to 45%, with some variation between boys' and girls' schools (Table 11). Simultaneously, the percentage that made informal payments to the government school fell by almost the same amount. Households should not be paying any core fees for government school so the implication is that these costs are associated with extras, for example examinations and class registration fees (Mallett et al., 2016: 34).

Table 11: Payment of school fees over time, by school provider

	Pa	Pay formal fees (%) Pay in			y informal fees	s (%)
Who runs the girls school (wave 1)	Wave 1	Wave 2	Difference	Wave 1	Wave 2	Difference
Government	28.8	46.3	17.5***	32.2	14.0	-18.1***
Private	98.5	98.5	0.1	54.2	24.5	-29.7***
Who runs the boys school (wave 1)						
Government	27.5	44.5	17.0***	35.0	15.1	-19.9***
Private	96.5	99.0	2.5**	54.3	26.4	-27.9***

Note: Asterisks indicate the result of tests to determine whether the change in the percentage paying fees between waves is statistically significant: * p<0.01 ** p<0.05 *** p<0.1.

What these data capture is not necessarily a change in monetary cost but in how formalised these costs are perceived to be. The regression did not pick up a link between changes in costs and a household's decision to send their child to a different school. However, qualitative evidence from a study conducted by the SLRC on schooling in Rolpa (Tandukar et al., 2016) provides some insight into a case where the lower cost of the public school, coupled with improvements in its quality, incentivised a switch in school:

'Before I did not like Bal Kalyan School and I sent my girl to private school. But ever since the new headmaster (Madhusudhan) came, the school has changed. Most households started sending their children to his school. He has set strict rules on attendance, studies and also brought facilities to the school. I then brought my girl back to Bal Kalyan from private school. This school is now cheaper with better facilities than the private school.'

(Respondent 5 in Tandukar et al., 2015)

The decision of where to send a child to school requires a trade-off between distance, cost and quality, and of course the reputation of a school and even an individual headteacher is a consideration for parents. These *relational* factors are not something that our survey is able to capture, but they have been documented in the qualitative literature (e.g. Acharya, 2014; Tandukar et al., 2015).

Interestingly, in our data we also see a decrease in the percentage of households paying informal fees for both the public and private (girls' and boys') school. At the same time, the share paying formal fees stayed mostly constant, suggesting that private schools may have lowered their costs in response to the increasing competitiveness of the public sector.

Another indicator of access is **attendance**, and here we see a decline in the frequency of attendance, despite the fact that enrolment rates remained the same. In wave 1, around 82% of respondents reported that the children in their household attended school every school day, whereas in wave 2 this figure was around 70%, with the shortfall having shifted into the 'most of the time' category. More children in *government* schools had less frequent reported attendance in wave 2 than those in private schools (Table 12).

	Sw			
Who runs the girls school (wave 1)	No change (%)	More frequent attendance (%)	Less frequent attendance (%)	Total (%)
Government	63.6	11.6	24.8	100
Private	73.0	9.5	17.5	100
	Sw	itch in boys' attenda	ince	
Who runs the boys school (wave 1)	No change (%)	More frequent attendance (%)	Less frequent attendance (%)	Total (%)
Government	57.8	13.9	28.3	100
Private	77.0	6.3	16.7	100

Table 12: School attendance over time, by school provider

Our data also allow us to make inferences about **school drop-out and retention rates** between waves. In both waves, a fairly high percentage of respondents stated that they had ever had to pull a child out of school prematurely. In wave 1 the most common reason for doing so was a 'lack of labour force at home', however 'marriage' was also a common reason for drop-out; in wave 2 the most common reason for drop-out was that the child was 'not interested' or 'had failed' (see Table 14 in Annex 2). Gender roles are strongly entrenched in these contexts and although investment in girls' education (and education in general) is perceived as important, the professional prospects for educated women remain much more limited than those of men (Acharya, 2014).

Our data also reveal another phenomenon of school-age children being absent from the household in the second wave – roughly 9% of children who were 16 years old or younger in wave 1 are now no longer listed as members of their household. While some of this can be explained by the fact that we tracked the *respondent*, who may have moved out of that household, there are also suggestions that some of these children have been sent to hostels in urban areas to attend better schools. In particular, the 'missing' girls who in terms of age were coming up to Grade 10 and the School Leaving Certificate (SLC) exam at baseline, are from wealthier families (according to the MSI) and from households with more children, which adds substance to this theory. The SLC is seen as the 'iron gate' to a more lucrative career so it is a positive development to see some suggestions of certain households investing in girls' (and boys') education at the same time that drop-out rates due to marriage declined.

6.1.3 Water

There were also relatively few explanatory variables that significantly correlated with changes in the time taken on a round trip to collect water. In one case, switching to a different water source was associated with a lengthening of journey time – this source was 'river or well', which in this context would be a worse source. Experiencing a problem with the water source where there had been none before was linked to an increase in journey time.²⁷ In cases where the government became responsible for providing and maintaining the water source between waves (or was perceived to be doing so), journey times also lengthened by roughly 5 minutes. Similarly, if a meeting had been held about water in wave 2 (but not in wave 1) then journey time also increased. This could be related to district and VDC-level changes: for example, in llam we see journey times lengthening overall and knowledge of meetings about water increasing. In the case of Chulachuli VDC (within llam district), the field team observed that, between the survey waves, one of the two main drinking water points ceased to function. While this meant that some users had to travel further for water, it also led to the creation of a committee to manage the use of the remaining water point. This anecdotal evidence is somewhat supported by the quantitative evidence.

Having to queue or pay for water were not significantly associated with changes in journey time, and neither was the perceived cleanliness of the water. Perceptions of safety, experience of shocks, changes to livelihood portfolio and household wealth also had no statistically significant links with water access. Collectively these results suggest that households may switch to a less accessible water source out of necessity if there is a problem, but are less likely to adapt their behaviour as a response to improved conditions. In the RE regression we also observe that the higher the household's average education level, the closer they are to their water source, and this result is likely linked to higher incomes that is not being picked up by the Morris Score Index.

6.1.4 Social protection and livelihood assistance

Given that the regression analysis tests whether the household received any **social protection**, some of the results here may be indicative of different targeting criteria. For example, we find that households that increased in size, whose average age increased, and whose dependency ratio increased (the number of children and elderly for every working-age adult) were more likely to receive social protection. Drawing on

²⁷ The statistical significance of this result was, however, sensitive to model specification.

the RE regression, Dalit and Madhesi households were also more likely to receive social protection in general (a number of programmes are specifically targeted at Dalit households), compared to Brahmin/Chhetri households, and households with a higher average education level. Female-headed households are also more likely to be receiving social protection, most likely the 'single-women/widows allowance'. All of these are results that we would expect to see, given the eligibility criteria of these programmes.

We do also find, however, that certain less obvious factors are linked to the likelihood of accessing social protection. Experiencing an environmental shock (flood, drought or crop disease)²⁸ or an economic shock between waves is associated with an increase in the likelihood of accessing social protection. The experience of an economic shock may have caused some households to become eligible for certain poverty-targeted transfers. An alternative explanation is that households who were already eligible for a transfer were encouraged to apply for it following a sudden threat to their existing sources of income. Having known about a meeting on social protection was also linked to a higher likelihood of receiving a transfer, which suggests a link between awareness and uptake. In the RE regression we also see that households displaced during the conflict are less likely to receive social protection. This is surprising, given that some of the social protection programmes that we recorded are targeted at victims of the conflict (although uptake is low). One possible explanation is that in 'only' having been displaced they do not meet other eligibility criteria which might, for example, include having a family member killed during the conflict (see Annex 2).

As in the case of social protection, some of the variables that predict receiving **livelihood assistance** are simply indicative of eligibility criteria. For example, having a household member start practising 'own cultivation' is associated with a rise in the likelihood of receiving this assistance,²⁹ the most common component of which is 'seeds and tools distribution'. Ethnicity/caste and location are also linked to the likelihood of receiving assistance (as shown in RE regression). Household average education level is, this time, positively correlated with livelihood assistance receipt, which could be a sign of some assistance being targeted at skilled trades.

A handful of factors also suggest that access to livelihood assistance is encouraged or precluded by local conditions beyond the control of the household. Those who experienced an economic shock (inflation or price hikes) for the first time in wave 2 became less likely to receive assistance, suggesting either that the assistance dried up or that a certain level of financial liquidity is needed to access it. Respondents who switched from perceiving their village as unsafe to safe became more likely to receive assistance, which again implies better conditions for the delivery and the uptake of these programmes. Oddly, households that experienced more crimes in wave 2 than in wave 1 were also *more* likely to receive livelihood assistance than those who didn't. It is likely that there is no direct link between crimes and livelihood assistance; rather, there could be some third factor at play that explains why wealthier households are both more likely to receive livelihood assistance and be the victim of a crime.

6.2 Changes in satisfaction

For each of the service sectors, respondents were asked to evaluate their satisfaction with that service, on a five-point scale. Satisfaction levels were for the most part very high in both waves, with eight out of ten respondents being satisfied with the health post by the second wave, and over nine out of ten respondents being satisfied with the school and water quality (Table 13). Social protection was the exception, where just two in ten respondents agreed that the transfer had made a positive difference to their livelihood or wellbeing.

²⁸ The results for experiencing an environmental shock, feeling safe in the village, and knowing of a meeting about social protection were sensitive to model specification.

²⁹ Own cultivation, economic shocks, and feeling safe in the village were sensitive to model specification.

For those who rated the health service, the school and the water source in both waves, a large majority were satisfied with the respective service in both waves. For each of these services there were also more respondents who switched to a more positive rating of the service between waves than to a more negative rating. For social protection – again the exception – a substantial share of those receiving a transfer in both waves became less satisfied over time with the intervention received.

	Wave	means	С	Changes in satisfaction over time			
	Satisfied in wave 1 (%)	Satisfied in wave 2 (%)	Always dissatisfied (%)	Always satisfied (%)	More satisfied (%)	Less satisfied (%)	
Health	73.2	81.0	7.5	61.2	19.5	11.9	
Education (pooled)	85.3	93.0	1.2	80.5	12.3	5.9	
Water	89.4	90.1	2.4	82.1	8.1	7.4	
Social protection	19.4	18.4	50.7 (no	change)	11.8	37.6	
Livelihood assistance	88.2	88.4	76.5 (no	change)	11.8	11.8	

Table 13: Changes in satisfaction with basic services over time

Note: Satisfaction with social protection and livelihood assistance are measured in a way that cannot be so readily divided into 'satisfied' and 'dissatisfied', as a result of which we have aggregated those who did not change their response over time.

6.2.1 Health

The regression results did not contain many statistically significant predictors of changes in satisfaction with the health service. Distance to the health post, frequency of use, and starting to pay fees for the service were not significantly associated with any change in overall satisfaction. The finding that journey times do not appear linked to satisfaction is supported by recent evidence that improving road networks - as a way of reducing journey times to markets and services - does not necessarily have an impact on health outcomes (Bucheli et al., 2016). In our survey, of course, we do not capture health indicators and nor do we test the effect of rural road reconstruction: however, our results do go some way towards confirming the finding that having an increased capability to access a service does not necessarily have a bearing on the capability of that service to satisfy people's needs (ibid).

Similarly, changes in household demographics (for example an increased dependency ratio would imply more need for the use of the service) and changes in wealth and livelihood activity do not significantly correlate with changes in satisfaction. Increased food insecurity between waves, however, was associated with a lower likelihood of rating the health service positively.³⁰

Certain other changes to **the performance of the service itself** were significantly linked to overall satisfaction. If a respondent experienced a problem with the health service in wave 2, where there had not been a problem in wave 1, he or she became less likely to be satisfied with it overall.³¹ By contrast, those who became satisfied with an individual aspect of the service, namely 'number of qualified personnel', 'availability of medicine' and 'waiting times', became more likely to be satisfied with the service overall. So too did respondents who were consulted about the health service for the first time in wave 2, implying that a positive rating of the service can be developed through participatory procedures as readily as it can be undermined through poor performance. If the government were perceived to have started running the service between waves, then respondents became less likely to be satisfied. This is despite the fact that a switch to government was also associated with shorter journey times. Thus, while such a switch might prove more convenient for the user, it might also expose them to poorer quality facilities (as perceived by the respondent).

³⁰ This result was sensitive to model specification.

³¹ Problems with the service, the government running the health centre, and the gender of the respondent were sensitive to model specification.

Drawing on the RE regression, female respondents were more likely to be satisfied, as were those with a higher education level (although this was only significant for secondary education). It should again be noted here that while these results may reflect physical improvements in service delivery, it is also possible that they are influenced by the prior expectations people have and the differential way in which each social group evaluates performance.

6.2.2 Education

For satisfaction with the school, there were very few statistically significant predictors of change.³² The service provider of the school, problems with the school, knowledge of meetings, consultations, and satisfaction with specific aspects of the service were all non-significant, which is a surprising finding. Only **starting to pay official fees** for either school between wave 1 and wave 2 was associated significantly with a change in overall satisfaction, and this change was positive. This result appears to support the message of some of the qualitative material collected by Tandukar et al. (2015), that the quality of government schools is perceived as having improved at the same time that a more formalised fee system has been introduced.

As with satisfaction with the health centre, access to the school (measured using journey time) was not significantly associated with satisfaction with the school. This result sits alongside recent evidence cited above that rural road construction in Nepal has had the effect of alleviating deprivation to some extent, but has not been found to impact health or education outcomes (Bucheli et al., 2016). As stated previously, although we do not capture these indicators in our study, our results are nonetheless consistent with the idea that reduced journey times do not necessarily equate to improvements in satisfaction with the school.

We find that **security** is also linked to satisfaction, with respondents who began to perceive their village as safe also becoming more likely to be satisfied with the school. Similarly, those who reported fighting in the area over the last three years saw a decline in their likelihood of being satisfied with the school. These results suggest that concerns about the security of children have an indirect effect on how the performance of the school is judged, regardless of the fact that local safety is not something that staff at local schools can necessarily control. On the other hand, since fighting is understood as verbal and physical disputes, it could also pick up harassment of school children. Increased **food insecurity** between waves was associated with a lower likelihood of rating the school positively.³³

Drawing on the RE regressions, gender, age and education level of the respondent made no difference to satisfaction. However, **ethnicity/caste/religion** showed some strong associations, namely that Dalit, Janajati and Muslim respondents were more likely to be satisfied with the school quality than Brahmin/Chhetri respondents. This may reflect different expectations of service quality among these groups, since the expectation of 'group-based distributive injustice' is deeply entrenched in Nepal (Fisk and Cherney, 2016). In other words, as a result of historical experiences, the expectations of some groups (e.g. Dalits, Janajati) may be lower than others (e.g. Brahmin / Chhetri), and hence easier to meet or surpass in the present. There might be other explanations behind Dalit respondents being satisfied with school quality, in that they are more likely to get scholarships stipends, which could influence their overall satisfaction with the school (even if on paper scholarships/stipends are in fact a separate social protection policy). We are less sure why Muslim respondents are more satisfied with the school: our assumption was that Muslim households are more likely to send their children to a Madrassa (religious school), however our survey data show that Muslim children attend all different types of school.

³² This may, in small part, be a consequence of the decision to merge satisfaction with the girls' and boys' schools where the respondent had reported on both, which causes some nuance to be lost in cases where the respondent expressed very different views about either school.

³³ This result was sensitive to model specification, as were fighting in the area and the payment of informal fees for the school.

6.2.3 Water

Changes to a household's **livelihood portfolio** were strongly linked to changes in the perception that the water supply was clean and safe. Households that saw a member start participating in 'own cultivation', 'selling goods' or their 'own business' also became more likely to judge their water as clean and safe.³⁴ These results may be a sign of broader regeneration of these areas, particularly in the sense that investment in clean water provision and the expansion of livelihood opportunities are both signs of the increased prosperity of an area or indeed household.

The regression also shows signs that some households are missing out on improvements to water infrastructure. These include households in Rolpa, those who previously were displaced by conflict (based on the RE regression), and those whose food insecurity increased over time. This points to the possible neglect of remote areas.

On the whole, changes to aspects of the water service were not significantly related to changes in satisfaction, notably having to queue for water, changes in the type of source or provider of source, and time taken to collect water. The exceptions were that **having to start paying** for drinking water and **experiencing a problem** with the service was linked to a decline in the likelihood of it being perceived as clean and safe.

6.3 Key findings on changes in basic services, social protection and livelihood assistance

Around 90% of respondents were using the same health centre, school or water source in both waves. However, most respondents saw their journey time to the health centre or school increase or decrease by more than 5 minutes, implying that routes and methods of transport are subject to frequent change. Satisfaction with services was high (the exception being social protection) and increased between waves. The results of the regressions and other analysis lead us to the following conclusions on what appears to drive changes in access and satisfaction.

Accessibility in Nepal is not about distance

When this study was conceived, 'journey time to the service' was chosen as a proxy for accessibility, on the basis that shorter journeys to basic services are a good thing. This notion stems from the assumption that time saved on a shorter journey can be put to use in productive ways that ultimately contribute to household wellbeing and economic growth. In our analysis there is a normative leap to another assumption that service users therefore have an inherent preference for shorter journeys. The results of this study indicate that in the districts sampled in this survey this is not the case. Rather, our analysis suggests that distance is largely irrelevant as to whether or not a household will use a particular service or express satisfaction with it. This could be related to the fact that the districts sampled have relatively good provision of services and fairly good accessibility, especially compared to other districts in the country.

In the case of drinking water, however, we find that fee-paying, which is another indicator of accessibility, is related to satisfaction, in that those who started paying fees for water were less satisfied with its quality. As is explored in Chapter 7 on perceptions of government, drinking water is a particularly politically salient public good, meaning that confidence in the service provider and the central state that funds it is as easily lost as it is won.

³⁴ Own cultivation, CSI, payment for drinking water, and having experienced a problem with drinking water were sensitive to model specification.

But certain security concerns are associated with changes in access

Safety perceptions are linked to shorter journeys to the health post (for example when it is perceived to be safer in the village or when there has been fighting in the area). The evidence here also suggests that concerns about the security of children in the local area (e.g. verbal and physical disputes) have an indirect effect on how the performance of the school is judged.

Social protection is accessed by many but perceived to not have much impact, while livelihood assistance is valuable but rarely in sustained supply.

In a given wave, roughly 38% of households had received at least one social protection transfer and around 17% had received livelihood assistance. A higher share of households received social protection across both waves than livelihood assistance, which may be related to different targeting criteria.

Crucially, experiencing an economic shock made it more likely that a household would start to receive social protection, one interpretation being that households that were already eligible for a transfer were encouraged to apply for it following a shock. Other studies have highlighted the challenges associated with actually obtaining transfers in practice, linked in turn to geographical and bureaucratic difficulties (Hagen-Zanker et al., 2015), which provides some support for the idea that eligible households only take up receipt of these (low value) interventions when they really need to. Fewer than one in five recipients of social protection stated that it made any difference to their quality of life (and transfer amounts were very low), implying that it is hardly worth trying to access. This finding is consistent with other studies that assessed the impact of the Child Grant (which is in the category of interventions received most frequently by our surveyed households) and found few impacts on beneficiary households due to the low transfer level (T. P. Adhikari et al., 2014; Hagen-Zanker et al., 2015).

However, experiencing an economic shock meant that a household was less likely to receive livelihood assistance. Given that this assistance had one of the highest satisfaction ratings of any basic service, this result suggests that households do not necessarily opt-out in times of hardship but rather that the withdrawal of assistance tends to coincide with an economic shock. Alternatively, it may be that economic shocks somehow make it more difficult for households to access this kind of assistance (e.g. if fuel price hikes deter travel).

The importance of frontline officials/day-to-day experience

There was a considerable amount of change with regard to who was perceived to run each of the services (Table 6). In the case of the water source, if the government was perceived to have started running it, respondents were less likely to be satisfied with its quality. It is of course not possible to derive causal interpretations from these results alone.

We also find that improvements in people's day-to-day experience with the health centre are linked to improvements in overall satisfaction. This includes the number of qualified staff, waiting times and the availability of medicines. By contrast, satisfaction with the school is not found to be linked to improvements in front-line aspects of service delivery. This includes the quality of school infrastructure, materials, and even teaching. There is some suggestion from the wider body of SLRC work in Nepal that improvements in the quality of public schooling can draw students away from the private sector. Our models here, however, have not identified any specific aspects of schooling that stand out as being more 'important' than others.

As a side-note to this, school drop-out rates declined although frequency of school attendance worsened – to a particularly severe extent in government schools. Further research could focus on the child's satisfaction with the school, which may not reveal the same priorities as those revealed in our survey of adults.

7 Changes in perceptions of government

In the baseline analysis of the SLRC survey it was found that there were low levels of trust and confidence in government at both the central and local level, with central government faring worst. The baseline regression analysis revealed that having experienced more problems with basic services in the past three years was associated with worse perceptions of government. Being aware of more grievance mechanisms and having been consulted about more services was associated with more favourable perceptions of government. This cross-sectional analysis strongly suggests that systems of accountability and inclusiveness in public services make a difference to how people feel about government. In the baseline, neither ethnicity/caste, age or wealth made a difference to perceptions of government overall.

How have people's perceptions of government changed over time, and what factors influence these changes? Our analysis is conducted for both local and central government and, as before, draws on both descriptive statistics and regression analysis.³⁵ The analytical framework and independent variables of interest are described in section 2.3.3. We also consider changes in civic participation.

7.1 Civic participation

The SLRC survey asked whether respondents had experienced a problem with particular services in the last three years (including health, education, water, social protection and livelihood assistance), whether they knew of a complaints procedure, whether a meeting had been held, and whether they had been consulted about each service. The results are displayed in Table 14.

	Wave 1 average	Wave 2 average	% with fewer in wave 2	% with more in wave 2
Number of problems	0.73	0.82	27.5	31.0
Number of grievance mechanisms known about	1.46	2.10	25.4	49.4
Number of meetings known about	0.81	0.97	25.1	38.5
Number of different services consulted about	0.38	0.53	14.4	26.8

Table 14: Problems and knowledge of participatory procedures

Note: Each respondent could have a score between 0 and 5 for each of these indicators, i.e. for up to five services.

Problems experienced with services

On average, wave 1 respondents reported 0.7 problems, with 55% reporting no problems at all. The numbers were not substantially different in wave 2, with an average of 0.8 problems per respondent and 54% reporting no problems. However, these cross-sectional averages mask the fact that 31% of respondents reported more problems with services between waves (and 27% reported fewer). This means that it is not always the same people who experience problems. The sectors that saw the biggest increase in reported problems were water (particularly in llam district) and livelihood assistance (particularly in Bardiya).

Grievance mechanisms

Similarly, the average number of grievance mechanisms that respondents knew about went up from 1.5 to 2.1 services, with 49% reporting knowledge of more complaints procedures in wave 2. The service with the biggest increase in knowledge of a grievance mechanism was social protection. These findings

³⁵ Central refers to the Government of Nepal seated in Kathmandu, and covers the main executive apparatus of the formal state. Local government refers to the deconcentrated bodies of the DDC, VDC and municipality, which function under the supervision of central government.

are supported by SLRC's qualitative work in Nepal, which indicates a recent expansion and publicisation of existing social accountability mechanisms in some of the survey sites (Acharya et al., 2016; Tandukar et al., 2015; Paudel et al., 2015). This is all the more positive, considering that recent studies looking at other districts in Nepal generally found extremely low awareness of grievance mechanism (T. P. Adhikari et al., 2014; Hagen-Zanker et al., 2015). It is perhaps possible that the increased awareness seen here could be linked to a rise in the implementation of 'disaster and risk reduction' programming following the earthquake, although we cannot confirm this.

If the respondent had experienced a problem with a service *and* knew of a complaint procedure, they were most likely to make a complaint about the water service rather than any other sector, in both waves. The proportions of respondents making a complaint about other basic services were extremely low and declined over time. For example, only 9% of those who had a problem with the health service *and* knew of a grievance mechanism made a complaint in wave 1, and in wave 2 this figure was less than 3%.

Meetings about a service

Knowledge of meetings increased slightly between the waves, and for all services around half of the respondents who knew about a meeting had attended it. Respondents were most likely to know of and attend a meeting about water. In terms of who called the meeting about a particular service, there was a shift in all sectors from the VDC secretary to either a 'local extension worker' (for example, a community health volunteer, postman) or a 'community group/organisation'.

Consultations about a service

As with the other participation indicators, more respondents reported having been consulted about a service in wave 2 than in wave 1, however these numbers were very low overall. The largest rise was in consultation about water services (from 9% to 18% of the sample). This rise was most visible when the respondent's water source was run by either the government or a provider identified by respondents in the 'other' category, which was mostly a Drinking Water Committee. These committees have been introduced relatively recently under the Local Governance and Community Development Programme, which is designed to realign the management of 'local development in a way in which local people can participate and lead the development process' (Acharya et al., 2016: 10). With a gradual expansion of the programme over time, we would expect to see an increase in reported consultations. What our data do not tell us, however, is whether those participating in such consultations feel delivery has improved as a result.

7.2 Changes in perceptions of local government

Fewer respondents had a negative perception of local government in wave 2: in wave 1, 57% stated that the decisions of local government *never* reflect their priorities, but this figure had lowered to 38% in wave 2. The proportion expressing a positive opinion of local government – that it 'to a large extent' or 'completely' reflected their priorities – grew from 4% to 8%, although evidently this proportion remains low. Looking at individual changes in perception over time, the largest share (42%) had a more 'positive' perception than previously, in the sense that their response was higher on the scale from 'Never' to 'Completely' than before (with most respondents switching from 'never' to 'sometimes').

Our other indicator of government perception – whether or not the government 'cares about my opinion' – also showed improvement over time to the extent that 34% in wave 1 believed that it did care, rising to to 44% in wave 2 (Figure 5). Since this is a binary variable there was not as much 'switching' of responses between waves, although 27% had switched from the no to yes category, compared with 15% who had become more negative (Table 15).





The decisions of local government reflect my priorities

The local government cares about my opinion

Table 15: Changes in perceptions of local government

	The decisions of local government reflect my priorities (%)	The local government cares about my opinion (%)
No change	39.7	58.5
More negative	18.3	14.6
More positive	42.0	27.0
Total	100	100

Notes: The first of these indicators (the government's decisions reflect my priorities) can take five different values from 'Never/not at all' to 'Always/completely'. The second indicator is binary, with simply a 'yes' or 'no' response. For this reason, we see much more switching of responses between waves in the first indicator (42% improved their opinion by the first indicator while this was only 27% for the second indicator). However, a positive change on the first indicator could be a change from 'Never' to 'Almost never', or it could be a change from 'Never' to 'Always', which is to say we do not differentiate here between a large change of opinion and an incremental one.

These figures are very similar to how the respondents themselves evaluated their own change in opinion. In wave 2, we also asked respondents whether they thought the government cared more or less about them now than three years ago: 24% stated that it cared more and 13% thought it cared less.

We ran two regressions to identify which factors were associated with changes in perceptions of whether the local government cares about a respondent's opinion, and perceptions of whether its decisions reflect his or her priorities.

The regression results show that to some extent changes in **civic participation and grievance mechanisms** explain changes over time. If the respondent knew about more meetings about services in wave 2, they also saw an improvement in their perception of whether the local government reflects their priorities *and* cares about their opinion. As in the baseline analysis (Upreti et al., 2014), experiencing more problems with services over time is linked to worsening perceptions of government.³⁶ Knowing of more grievance mechanisms improves perceptions; however these results are only statistically significant for the binary variable (whether government cares about the respondent's opinion). It was

³⁶ In one of the regressions, however, these results were sensitive to model specification, as was the result for the provider of the water source.

also found that if the respondent switched to having a government-provided water source (or perceiving it to be so) between waves, his or her opinion of the extent to which the government's decisions reflect his or her priorities improved. There is some suggestion from accompanying qualitative work that interventions to improve the inclusiveness of drinking water management have had success in some quarters, which may be reflected here (Acharya et al., 2016).

Somewhat surprisingly, ethnicity does not correlate with perceptions of local government. On the other hand, education is a strong predictor of perceptions, with primary and secondary-educated respondents having a better perception of government on both indicators relative to those with no education. This effect does not hold for those with education higher than the SLC, however.

7.3 Changes in perceptions of central government

As in the case of local government, perceptions of central government are on the whole negative but improved slightly between waves: 70% perceived that the decisions of central government never reflect their priorities in wave 1 and 60% perceived this in wave 2. Around 30% of respondents had a more positive view of whether central government's decisions reflect their priorities in wave 2, and a similar proportion had a more positive view of whether the government cares about their opinion (although for this latter variable the cross-sectional averages remain more static) (Figure 6). When asked directly whether they thought the government cared more or less than it did three years ago, 74% said that it cared the same amount, while 15% said less, and 11% said more. Respondents clearly have a more pessimistic perception of the government's improvement in accountability than the one we would form from looking at the two waves of data (see Table 16).



Figure 6: Perceptions of central government by wave



The central government cares about my opinion

■No ■Yes

Table 16: Changes in perceptions of central government

	The decisions of central government reflect my priorities (%)	The central government cares about my opinion (%)
No change	49.1	56.3
More negative	19.4	15.7
More positive	31.5	28.0
Total	100	100

Note: The first of these indicators (the government's decisions reflect my priorities) can take five different values from 'Never/not at all' to 'Always/completely'. The second indicator is binary, with simply a 'yes' or 'no' response. For this reason, we see slightly more switching of responses between waves in the first indicator. However, a positive change on the first indicator could be a change from 'Never' to 'Almost never', or it could be a change from 'Never' to 'Always', which is to say we do not differentiate here between a large change of opinion and an incremental one.

For changes in perceptions of central government, changes in **civic participation and grievance mechanisms** seem to matter less, with only grievance mechanisms being statistically significant.³⁷ The regression for whether the central government cares about a respondent's priorities indicates that if the respondent knew of more grievance mechanisms between waves, then they were more likely to think the government cares in wave 2. Similarly, the second central government regression indicates that those who knew about more grievance mechanisms improved their perception that the central government's decisions reflected their priorities.

Sex of the respondent was one of the few statistically significant factors in the second regression, indicating that female respondents are less likely to think that the government cares about their opinion (the same pattern is also confirmed in the first regression). This pattern is apparent even from looking at a simple cross-tabulation of the sex of the respondent and their views of government (Table 17).

	Decisions of local gov priorit	vernment do reflect my cies (%)	Local government does care about m opinion (%)		
Sex of respondent	Wave 1	Wave 1 Wave 2		Wave 2	
Male	47.5***	64.6**	35.7*	46.7**	
Female	39.7***	60.6**	32.1*	42.2**	
	Decisions of central و my prio	Decisions of central government do reflect my priorities (%)		does care about my on (%)	
Sex of respondent	Wave 1	Wave 2	Wave 1	Wave 2	
Male	31.7	43.7***	22.4	25.7***	
Female	29	38.1***	20.1	18.9***	

Table 17: Perceptions of government by sex of respondent

Note: Asterisks indicate the result of tests to determine whether the difference in perceptions of government for male and female respondents is statistically significant in each wave: * p<0.01 ** p<0.05 *** p<0.1.

There were more significant explanatory factors in the regression on the extent to which the decisions of government reflect the respondent's priorities. Here, in addition to grievance mechanisms, the variables relating to healthcare fees were also significant. If a respondent began paying official fees for the service between waves, his or her perception of government worsened. However, if they started to pay informal fees for healthcare, their perception of government improved between waves. This tells us something about people's priorities and expectations regarding healthcare, although we cannot fully explain the direction of this relationship. As was the case for local government, if the respondent switched to stating that the government provided their water service, they were more likely to agree that its decisions reflect their priorities in wave 2.

³⁷ Sensitivity analysis also found that this result was sensitive to model specification in both regressions, and in one of the regressions the results for payment of an official or informal fee to the health centre, and the government providing the water source were also sensitive.

The FE regression is not capable of analysing the difference between ethnic/caste groups, so we use a RE regression to test for these differences across waves. For central government, ethnic/caste group is only statistically significant for Janajati and 'Other' ethnic groups, who have more positive perceptions of government than Brahmin/Chhetri on the whole. These results are somewhat surprising, but looking at a simple breakdown of changes in perception by ethnicity shows more to the story (Table 18). All groups experienced a rise in the percentage perceiving that the central government's decisions reflect their priorities, and this was largest among the Madhesi. Brahmin and Janajati saw a decline in the proportion of respondents perceiving that the government cares about their opinion, while the other, historically more marginalised groups saw an increase. This was by far the largest for the Madhesi, of whom 5% agreed in wave 1 compared to 23% in wave 2.

It may seem surprising that the Madhesi ethnic group, which had some of the most active objectors to the Constitution passed in September 2015, would see the largest improvement in their perception of central government. It should be noted, however, that the Madhesi group in our sample is not representative of Madhesi across the whole of Nepal or other specific parts of the country. The Madhesi sample in our study is exclusively from Bardiya, which is a regional migration hub and has a diverse society, although we do acknowledge that it was also affected by the protests in 2015. Our interpretation is that the regionalist agenda of the protesting groups may not have been very popular among our respondents, in comparison to the message of social inclusion explicit in the Constitution.

	Decisions of cer do reflect my	Decisions of central government do reflect my priorities (%)		overnment t my opinion (%)
	Wave 1	Wave 2	Wave 1	Wave 2
Brahmin/Chhetri	30.2***	43.5***	23.1	23.2
Janjati/Indigenous	31.8***	38.0***	21.1	19.4
Dalit	32.6	40.9	25.3	27.0
Madhesi	16.0***	37.2***	5.6***	22.7***
Muslim	23.3*	37.8*	15.3*	26.3*
Other	37.5**	60.3**	27.6	38.2
Total	30.2***	40.7***	21.2	22.0

Table 18: Perceptions of central government, by wave and respondent ethnicity

Note: Asterisks indicate the result of tests to determine whether the change in perceptions of government for each ethnic group between waves is statistically significant: p<0.01 ** p<0.05 *** p<0.1.

A surprising result was to see such comparatively positive perceptions of central government among Dalit respondents in both waves. We tested to see whether male and female Dalit respondents had similar responses to these questions, given that the intersectionality of ethnicity and sex would be expected to be linked to particular grievances or expectations. These tests found that female Dalits were slightly more negative about the central government than males, but this difference was small.

7.4 Key findings on changes in perception of government

Perceptions became more positive

As a whole, perceptions of both local and central government improved between waves across the sample. Perceptions of local government were largely more positive than perceptions of central government in both waves, and there was also a greater improvement for local government.

Underlying perceptions are linked to ethnicity

The regressions did not tell us a great deal about how different ethnicities perceive the government. However, the descriptive statistics revealed some strong changes over time among certain ethnic groups. Madhesi, mainly situated in Bardiya in our sample, saw a large increase in their approval rating of the central government, from only 6% agreeing that the central government cares about their opinion in wave 1, to 28% agreeing with this statement in wave 2. Our interpretation of this result is that the improvement is in part due to the promulgation of the Constitution in September 2015. This was a major symbolic step and was received positively in Bardiya, a regional migration hub and comparatively more diverse than other districts. This positive shift should not be overstated however, as Madhesi respondents were still the least likely of any ethnic group to perceive that the central government's decisions reflected their priorities. More generally, the lack of significant regression results linked to ethnicity and caste speaks to the underlying complexity of these categories. There is a lot of withincaste variation in Nepal, and existing research suggests that it is the subjective perception of differential group power and status – rather than the categorical identity in and of itself – that shapes subsequent attitudes towards things like service delivery and legitimacy (Fisk, 2015).

Female respondents view the central government more negatively

Female respondents are less likely than male respondents to perceive that the central government cares about their opinion or that its decisions reflect their priorities. Nepal largely remains a patriarchal society in which few women hold positions of political power and influence. Since the time of the peace agreement, political decision-making at the local level has relied on consensus being achieved, since no party can claim a mandate to govern. Criticism has been levelled at local government bodies in Nepal for fostering a 'consensual corruption' (Bhattarai, 2010), whereby consensus is reached on how to distribute state resources by simply dividing up the spoils equally between the individual decision-making parties (see also Byrne and Klem, 2014). This results in the under-representation of women's interests.

Knowledge of grievance mechanisms and meetings is linked to more positive perceptions of government

As in the baseline of this study, there is evidence here that knowledge of grievance mechanisms improves people's perception of the central state and, to a lesser extent, also their perception of local government (though it should be stressed that a causal relationship has not been established). We also find that knowledge of meetings about basic services improves people's perceptions of the local government.

Drinking water provision is particularly important

The government starting to provide drinking water (or at least being perceived to do so) between waves is linked to respondents becoming more likely to state that the local and central governments' decisions reflect their priorities. There may be something particularly immediate about water provision as a priority that makes it more of a deciding issue than other service sectors. Lacking access to potable water has obvious implications for health, and the fetching of water can be laborious and time-consuming, particularly for women who are traditionally responsible for this task. Batley and Mcloughlin (2015) also note that the provision of drinking water by the government has the highest rating for 'political salience' because it is highly visible and frequently used, meaning that it presents possibilities for organised demand, and it is easily attributable to political effort.

No evidence that social protection and livelihood assistance promote better perceptions

Social protection programmes are comparatively well-established in Nepal, with a lot of investment having gone into the sustained delivery of a range of transfers. Receipt of such transfers has been described as providing important symbolic value to recipients and contributing towards social inclusion. As stated in the 2007 Interim Constitution, rolling out social protection was explicitly intended to reduce social exclusion and assist with the process of political healing, among other aims (Koehler, 2011). The results of our study do not provide any evidence that this is the case, however, since we find no statistically significant link between the receipt of social protection or livelihood assistance and perceptions of government. This is consistent with other studies that found that receipt of the Child Grant to Dalit households has no impact on perceptions of government (T. P. Adhikari et al., 2014; Hagen-Zanker et al., 2015). These studies instead find that the way the programme has been designed and implemented - including low value of the benefit and irregular delivery - may have undermined state-society relations (ibid). Of particular relevance here is the fact that, in our own survey results, respondents experiencing more service-related problems over time became more negative about local government (although not central). There is a suggestion here (which needs exploring further) that badly administered service delivery may worsen perceptions even more than not providing a service at all. This is one theme developed slightly further in the SLRC survey synthesis paper (SLRC, forthcoming).

8 Summary of findings and conclusion

The SLRC is concerned with understanding how processes of livelihood recovery and state-building unfold over time. One of the main ways it is attempting to do this is through the implementation of a cross-country panel survey. The thematic focus of this survey is wide-ranging, generating information on livelihoods; on access to and experience of basic services, social protection and livelihood assistance; and on exposure to shocks and coping strategies; and people's perceptions of government.

In Nepal, the survey was conducted in three districts with varied geography, conflict-affectedness and level of service provision: Bardiya, Ilam and Rolpa. We initially surveyed 3,176 respondents in 2012, of whom we found 2,855 at follow-up in 2015. This means that 9 out of every 10 of our original respondents were found.

Between the two waves of the panel survey there were several key changes to the broader political context of Nepal, notably the promulgation of the Constitution accompanied by political discontent, major strikes and road blocks. Nepal was also struck by a major earthquake in 2015, which had devastating costs in terms of human lives, infrastructure and service provision, though less so in the districts covered by this survey.

Our longitudinal analysis provides a picture of lives in mostly upward change. There are signs of social and technological progress, including a modest increase in ownership of mobile phones and computers, and fewer girls leaving school prematurely due to early marriage. We have also witnessed shifts in households' livelihood activities, with casual labour on the rise, but also improvements in wellbeing, with asset wealth rising over time on the whole and food insecurity falling. Households experienced an average of three (major) shocks in the three years between waves, and we captured shifts in the use of livelihood strategies such as taking loans and having a household member migrate.

Around the individual trajectories of respondents and households, development progress in Nepal moves at a slower pace. Large-scale development plans by Nepali governments have a history of failure to achieve their stated goals of accelerating economic growth and reducing poverty. Panday (2012), who has documented Nepal's 'failed development', identifies social and cultural 'rigidities', such as the asymmetrical reliance on India for trade, and corruption in all corridors of public life, as the main barrier to realising these aspirations. Recent years have seen the scaling up of social protection programmes but their material and 'symbolic' value to state-building efforts have been found to be overstated, both in the evidence presented here and in other studies (see, for example, T. P. Adhikari et al., 2014; Hagen-Zanker et al., 2015).

8.1 Changes in people's livelihoods and wellbeing

Our survey showed small improvements in people's livelihoods and wellbeing. For example, the majority of households increased their assets between waves, and households also became generally more food secure over the same period.

So which factors explain such changes? Five factors stand out from the regression analysis.

The first is changes in livelihood activities. In the three years between panels, there was a considerable amount of change in most households' livelihood portfolios, with the biggest increases overall in selling goods and non-agricultural casual labour. Switches into particular types of livelihood activities, for example entrepreneurial or home-based industries, sometimes require productive assets, so it is no surprise to see levels of asset wealth rise with a household's entrance into a new livelihood activity (Ellis, 2000; Davis, 2003; Nagler and Naudé, 2014). Entrance into casual labour, by contrast, is linked to a worsening of both indicators of food security (CSI and FCS).

Second, going into debt between waves is linked to a fall in asset wealth and a worsening of food security. However, levels of borrowing are high in both waves (around 60% of households have debts) and it is possible that the long-term benefits of borrowing are being captured by these entrances into new household livelihood activities.

Third, remittance-receiving households are slightly better off in terms of asset wealth, suggesting some level of migration dividend.

Fourth, we find that the higher the household's average education level, the better their livelihood and wellbeing outcomes across waves.

Finally, higher caste groups also consistently fare better on livelihood and wellbeing outcomes, with certain ethnicities/lower caste/Muslim households faring worst.

8.2 Changes in basic services, social protection and livelihood assistance

Around 90% of respondents used the same health centre, school or water source in both waves. However, most respondents saw their journey time to the health centre or school increase or decrease by more than 5 minutes, implying that routes and methods of transport are subject to frequent change. Satisfaction with basic services was high and increased between waves.

Regression analysis shows that safety perceptions are linked to shorter journeys to the health post (for example, when it is perceived to be safer in the village or when there has been fighting in the area). The evidence here also suggests that concerns about the security of children in the local area (e.g. verbal and physical disputes) have an indirect effect on how the performance of the school is judged.

There is some suggestion from this study and the wider body of SLRC work on Nepal that improvement in the quality of public schooling can draw students away from the private sector. Yet in the regressions, the quality of school infrastructure, materials, and even teaching has no relationship with overall satisfaction. In the case of drinking water, we find that fee-paying, is related to satisfaction, in that those who started paying fees for water were less satisfied with its quality.

Social protection is accessed by a fairly high share of households (38% in any given wave) but perceived to not have much impact, while livelihood assistance is considered valuable by respondents but received by few households (17% in any given wave but only 5% across both).

Crucially, experiencing an economic shock made it more likely that a household would start to receive social protection, one interpretation being that households that were already eligible for a transfer were encouraged to apply for it following a shock. Fewer than one in five recipients of social protection stated that it made any difference to their quality of life (and transfer amounts were very low), implying that it is often not worth trying to access. This finding is consistent with other studies that assessed the impact of social protection in Nepal and found few impacts on beneficiary households due to the low transfer level and inconsistent delivery (T. P. Adhikari et al., 2014; Hagen-Zanker et al., 2015).

However, experiencing an economic shock meant that a household was less likely to receive livelihood assistance. Given that this assistance had one of the highest satisfaction ratings of any basic service, this result suggests that households do not necessarily opt-out in times of hardship but rather that the withdrawal of assistance tends to coincide with an economic shock. Alternatively, it may be that economic shocks somehow make it more difficult for households to access this kind of assistance.

8.3 Changes in perceptions of government

Perceptions of both local and central government – which are deployed in this survey as an indirect proxy measure of state legitimacy, subject of course to caveats (see Section 2.3.3) – improved between waves across the sample as a whole. This should be seen alongside the signing of the Constitution in

2015, following a decade of political wrangling and negotiation, as well as a gradual process of consensus-building on a path forward. Perceptions of local government were, on the whole, more positive than perceptions of central government in both waves, and there was also a larger improvement for local government. In terms of what kinds of factors are associated with these changes, four findings in particular stand out from the regression analysis.

First, we found that female respondents are less likely than male respondents to perceive that the central government cares about their opinion or that its decisions reflect their priorities. This may be a reflection of the fact that Nepal largely remains a patriarchal society in which few women hold positions of political power and influence.

Second, greater knowledge of grievance mechanisms and more meetings on services being held are linked to more positive perceptions of government. As in the baseline of this study, there is evidence here that knowledge of grievance mechanisms improve people's perception of the central government and to a lesser extent also their perception of local government. We also find that knowledge of meetings about basic services improves people's perceptions of the local government.

Third, changes in access to basic services do not appear to influence changes in perceptions of government, but in the case of water, provider seems to matter. The government starting to provide drinking water (or at least being perceived to do so) between waves is linked to respondents becoming more likely to state that the local and central governments' decisions reflect their priorities.

Finally, receipt of social protection has been described as providing important symbolic value to recipients and assisting with the process of political healing (Koehler, 2011). The results of our study do not provide any evidence that this is the case, however. Changes in access to or satisfaction with social protection and livelihood assistance do not influence changes in perceptions of government. This is consistent with other studies that found that receipt of the Child Grant has no impact on perceptions of government (T. P. Adhikari et al., 2014; Hagen-Zanker et al., 2015). Instead, these studies find that the way a programme has been designed and implemented – including low monetary value of the benefit and irregular delivery – may have in fact undermined state-society relations (ibid).

9 References

Acharya, G., Upreti, B., Paudel, S., Tandukar, A., and Harris, D. (2016) 'The Drinking Water and Sanitation Programme of Nepal's Local Governance and Community Development Programme'. London: Secure Livelihoods Research Consortium (SLRC).

Acharya, S. (2014) 'Gender, Jobs and Education Prospects and Realities in Nepal'. Kathmandu: UNESCO.

ADB (Asian Development Bank) (2009) 'Nepal Critical Development Constraints'. Kathmandu: ADB.

ADB (2010) 'Overview of Gender Equality and Social Exclusion in Nepal'. Kathmandu: ADB.

Adhikari, A. (2010) 'Long Wait for Local Government'. Himal South Asian, October 2010.

Adhikari, A. (2012) 'Revolution by Other Means: The Transformation of Nepal's Maoists in a Time of Peace' in von Einsiedel, S., Malone, D.M. and Pradhan, S. (eds), *Nepal in Transition: From People's War to Fragile Peace*. Cambridge: Cambridge University Press, pp. 265–283.

Adhikari, A. (2014) 'The Bullet and the Ballot Box'. London and New York: Verso.

Adhikari, R. K. (2010) Food utilization practices, beliefs and taboos in Nepal: an overview. The Global Health Technical Assistance Project. Washington, DC: USAID.

Adhikari, T. P., Thapa, F. B., Tamrakar, S., Magar, P. B., Hagen-Zanker, J., & Babajanian, B. (2014). How does social protection contribute to social inclusion in Nepal?. *Evidence from the Child Grant in the Karnali Region. ODI Report.*

Allison, P. D. (2009). Fixed effects regression models. *Quantitative Applications in the Social Sciences, Vol. 160.* SAGE publications.

Angrist, J. D., and Pischke, J. S. (2008). *Mostly harmless econometrics: An empiricist's companion*. Princeton university press.

Asia Foundation (2012) A Guide to Government in Nepal: Structures, Functions and Practices. Kathmandu: The Asia Foundation.

Bardasi, E., Beegle, K., Dillon, A. and Serneels, P. (2010) 'Do Labor Statistics Depend on How and to Whom the Questions are Asked? Results from a Survey Experiment in Tanzania'. Policy research working paper 5192. Washington, DC: World Bank.

Batley, R., and Mcloughlin, C. (2015) 'The Politics of Public Services: A Service Characteristics Approach', *World Development* 74: 275-285.

Baum, C. (2006) An Introduction to Modern Econometrics Using Stata, 1st edition. Texas: StataCorp LP.

Bhattarai, P. (2010) 'Messy Local Governance', *Republica*, 17 November 2010 ed. Kathmandu: Nepal Republic Media Private Limited.

Brick, J. M. (2013) 'Unit Nonresponse and Weighting Adjustments: A Critical Review', *Journal of Official Statistics* 29(3): 329–353.

Brick, J. M. and Kalton, G. (1996) 'Handling Missing Data in Survey Research', *Statistical Methods in Medical Research* 5(3): 215-238(doi:10.1177/096228029600500302).

Brinkerhoff, D. W., Wetterberg, A., and Wibbels, E. (2016). *Distance, Services, and the Decoupling of Citizen Perceptions of the State in Rural Africa*. International Development Working Paper No. 2016-01 (May 2016). North Carolina: RTI International.

Bucheli, J. R., Bohara, A. K. and Villa, K. (2016) *The Impact of a Rural Road Development Project on Multidimensional Poverty in Nepal* (No. 235214). Agricultural and Applied Economics Association.

Byrne, S. and Shrestha, G. (2014) 'A Compromising Consensus? Legitimising Local Government in Postconflict Nepal', *Int. Dev. Planning Review* 36 (4): 435-453.

Byrne, S. and Klem, B. (2015) 'Constructing Legitimacy in Post-war Transition: The Return of 'Normal' Politics in Nepal and Sri Lanka?', *Geoforum* 66: 224-233.

Carpenter, S., Slater, R. and Mallett, R. (2012) Social protection and basic services in fragile and conflict-affected situations. Working Paper 8. London: Secure Livelihoods Research Consortium.

CBS and NPCS (Central Bureau of Statistics and National Planning Commission Secretariat) (2012) *National Living Standard Survey 2011/12*. Kathmandu: CBS and NPCS.

Clarke et al. (2010) 'The Choice Between Fixed and Random Effects Models: Some Considerations for Educational Research'. DoQSS Working Paper No. 10-10. Institute of Education.

Coates, J. C.; Webb, P.; Houser, R. F.; Rogers, B. L. and Wilde, P. (2010) "He said, she said": who should speak for households about experiences of food insecurity in Bangladesh?' *Food Security* 2: 81-95.

Davis, J. R. (2003) 'The Rural-Non-Farm Economy, Livelihoods and their Diversification: Issues and Options', *Livelihoods and their Diversification: Issues and Options (July 2003)*.

Demombynes, G. (2013) 'What's the right way to pick the respondent for a household survey?' World Bank blog post. 15 July [https://blogs.worldbank.org/impactevaluations/education/whats-right-way-pick-respondent-household-survey]

Dougherty, C. (2011) 'Chapter 14: Introduction to Panel Data Models', *Introduction to Econometrics*. Oxford: Oxford University Press.

Ellis, F. (2000) 'The determinants of rural livelihood diversification in developing countries', *Journal of Agricultural Economics* 51(2): 289-302.

European Report on Development (2009) *Overcoming fragility in Africa: Forging a new European approach*. San Domenico di Fiesole: Robert Schuman Centre for Advanced Studies.

Fisk, K. (2015) 'Rebuilding institutional legitimacy in post-conflict societies: a case study of Nepal'. PhD thesis, School of Social Science, University of Queensland.

Fisk, K. and Cherney, A. (2016) Pathways to Institutional Legitimacy in Postconflict Societies: Perceptions of Process and Performance in Nepal. *Governance: An International Journal of Policy, Administration, and Institutions*, online 12 May 2016. doi:10.1111/gove.12208

Hagen-Zanker, J., and Azzarri, C. (2010). Are internal migrants in Albania leaving for the better? *Eastern European Economics*, 48(6), 57-84.

Hagen-Zanker, J.; Mallett, R.; Ghimire, A.; Shah, Q.A.; Upreti, B. and Abbas, H. (2014) 'Migration from the margins: mobility, vulnerability and inevitability in mid-western Nepal and north-western Pakistan'. London : Secure Livelihoods Research Consortium.

Hagen-Zanker, J., Mallett, R. and Ghimire, A. (2015) 'How does Nepal's Child Grant work for Dalit children and their families?', *A mixed methods assessment of programme delivery and impact in Bajura and Saptari*. London: Overseas Development Institute.

Hausman, J. A. (1978) 'Specification tests in econometrics', Econometrica 46: 1251-1271.

Kohler, U. and Kreuter, F. (2009) Data Analysis Using Stata. 2nd ed. College Station, TX: Stata Press.

Himalayan Times, The (2016) 'Post-quake reconstruction cost escalates by 25 pc'.13 May 2016. Available at: https://thehimalayantimes.com/nepal/post-earthquake-nepal-reconstruction-cost-escalates-25-pc/

Jha, P. (2014) Battles of the new republic: A contemporary history of Nepal. Oxford: Oxford University Press.

Kalton, G., and Flores-Cervantes, I. (2003) 'Weighting methods', *Journal of Official Statistics* 19(2): 81–97.

Khatun, D. and Roy, B. C. (2012) 'Rural livelihood diversification in West Bengal: determinants and constraints', *Agricultural Economics Research Review* 25(1): 115-124.

Kish, L. (1990) 'Weighting: Why, When, and How?' in American Statistical Association (ed.), *Proceedings of the Survey Research Methods Section* (pp. 121-130). Retrieved from https://www.amstat.org/sections/SRMS/Proceedings/papers/1990_018.pdf

Koehler, G. (2011). Social protection and socioeconomic security in Nepal. *IDS Working Papers*, 2011(370), 1-20.

Larsen, H. O.; Rayamajhi, S.; Chhetri, B. B. K.; Charlery, L. C.; Gautam, N.; Khadka, N.; Walelign, S. Z. (2014) 'The role of environmental incomes in rural Nepalese livelihoods 2005–2012: contextual information'. Frederiksberg: Department of Food and Resource Economics, University of Copenhagen. (IFRO Documentation; No. 2014/4).

Levi, M., Sacks, A. and Tyler, T. (2009) 'Conceptualizing legitimacy, measuring legitimating beliefs', *American Behavioral Scientist* 53(3): 354-75.

Mallett, R. and Slater, R. (2012) *Growth and livelihoods in fragile and conflict-affected situations*. Working Paper 9. London: Secure Livelihoods Research Consortium.

Mallett, R.; Hagen-Zanker, J.; Slater, R. and G. Sturge (2015) 'Surveying livelihoods, service delivery and governance: baseline evidence from the Democratic Republic of Congo, Nepal, Pakistan, Sri Lanka and Uganda'. London: Secure Livelihoods Research Consortium.

Mallett, R., Acharya, G. and Sturge, G (2016) 'Taxation, livelihoods, governance: evidence from Nepal'. London: Secure Livelihoods Research Consortium.

Maxwell, D. and Caldwell, R. (2008) 'The Coping Strategies Index: Field Methods Manual'. Atlanta, GA: CARE International.

Morris, S.; Carletto, C.; Hoddinott, J.; and Christiaensen, L. J. M. (1999)' Validity of Rapid Estimates of Household Wealth and Income for Health Surveys in Rural Africa'. Food and Consumption Division Discussion Paper No. 72. Washington, DC: IFPRI.

Mundlak, Y. (1978) 'On the pooling of time series and cross section data', *Econometrica: journal of the Econometric Society*, 69-85.

Nagler, P. and Naudé, W. (2014) Non-farm entrepreneurship in rural Africa: Patterns and determinants. IZA Discussion Paper 800. South Africa. Bonn: Institute for the Study of Labour.

National Planning Commission. Nepal Earthquake 2015, *Post-disaster Needs Assessment 2015*. Kathmandu: National Planning Commission, 2015. 6.

NeKSAP (2013) 'Nepal Food Security Bulletin'. Issue 37, January 2013. Kathmandu: Nepal Food Security Monitoring System (NeKSAP).NeKSAP (2016) 'Nepal Food Security Bulletin'. Issue 46, 2016. Kathmandu: Nepal Food Security Monitoring System.

Nepal Rastra Bank (2015) Current Macroeconomic and Financial Situation of Nepal (Based on Three Months' Data of 2015/16). Nepal Rastra Bank Research Department (October 2015).

Nepal Rastra Bank (2016) Current Macroeconomic and Financial Situation of Nepal (Based on Three Months' Data of 2015/16). Nepal Rastra Bank Research Department (2016).

NIDS, NCCR North-South, and NCCR (2013) *Nepal migration yearbook 2012*. Kathmandu: Nepal Institute of Development Studies, NCCR North South and NCCR.

Nielsen, Ø. J.; Rayamajhi, S.; Uberhuaga, P.; Meilby, H. and Smith-Hall, C. (2013) 'Quantifying rural livelihood strategies in developing countries using an activity choice approach', *Agricultural Economics* 44: 57–71.

OECD (Organisation for Economic Cooperation and Development) (2010) The state's legitimacy in fragile situations: unpacking complexity. Paris: OECD

Panday, D. R. (2012) 'The Legacy of Nepal's Failed Development'. *Nepal in Transition: From People's War to Fragile Peace*, 81-99. Cambridge: Cambridge University Press.

Paudel, S.; Upreti, B.; Acharya, G.; Tandukar, A. and Harvey, P. (2015) 'Health services and users' perceptions of the state in Rolpa, Nepal'. London: Secure Livelihoods Research Consortium.

Rabe-Hesketh, S. and Skrondal, A. (2008) *Multilevel and longitudinal modeling using Stata*. College Station, TX: STATA press.

Rahut, D. B., Ali, A., Kassie, M., & Marenya, P. P. (2014). Rural livelihood diversification strategies in Nepal. *Poverty & Public Policy*, 6, 259–281.

Reardon, T.; Taylor, J. E.; Stamoulis, K.; Lanjouw, P. and Balisacan, A. (2000) 'Effects of non-farm employment on rural income inequality in developing countries: An investment perspective', *Journal of Agricultural Economics* 51: 266–288.

Reliefweb (2013) 'Nepal: Constituent Assembly Election 2013 under FPTP - Elected Candidates by Political Party'. Published on 30 Nov 2013. Available at http://reliefweb.int/map/nepal/nepal-constituent-assembly-election-2013-under-fptp-elected-candidates-political-party

Särndal, C. E. and Lundström, S. (2005) *Estimation in surveys with nonresponse*. Ocford: John Wiley & Sons.

Scoones, I. (1995). Investigating difference: applications of wealth ranking and household survey approaches among farming households in southern Zimbabwe. *Development and Change*, 26(1), 67-88.

Sijapati, B.; Baniya, J.; Bhandari, A.; Bhattarai, A.; Kharel, S.; Limbu, A. et al. (2015) 'Migration and Resilience: Experience from Nepal's 2015 Earthquake'. Kathmandu: Centre for the study of Labour and Mobility.

SLRC (Secure Livelihoods Research Consortium) (2015) 'The first round of the SLRC Panel Survey: The Process Paper'. London: Secure Livelihoods Research Consortium.

SLRC (Secure Livelihoods Research Consortium) (forthcoming) Tracking change in livelihoods, service delivery and governance: Evidence from a 2012-2015 panel survey in the Democratic Republic of Congo, Nepal, Pakistan, Sri Lanka and Uganda. London: Secure Livelihoods Research Consortium.

Sunam, R. K. and McCarthy, J. F. (2016) 'Reconsidering the links between poverty, international labour migration, and agrarian change: critical insights from Nepal', *The Journal of Peasant Studies* 43(1): 39-63.

Tandukar, A.; KC, S.; Upreti, B.; Paudel, S.; Acharya, G. and Harvey, P. (2015) 'Education services and users' perceptions of the state in Rolpa, Nepal'. London: Secure Livelihoods Research Consortium.

Torres-Reyna, O. (2007) 'Panel Data Analysis, Fixed & Random Effects (using Stata 10.x) (ver. 4.1)'. Princeton, NJ: Princeton University. Available at http://dss.princeton.edu/training/Panel101.pdf

Tschirley, D. L., and Weber, M. T. (1994). Food security strategies under extremely adverse conditions: The determinants of household income and consumption in rural Mozambique. *World Development, 22*(2), 159-173.

UN Nepal Information Platform (2014) 'Press Statement: United Nations Office of the Resident Coordinator in Nepal'. Published 20 August 2014. Available at http://un.org.np/headlines/press-statement-united-nations-office-resident-coordinator-nepal

Upreti, B.; Uprety, P.; Hagen-Zanker, J.; KC, S. and Mallett, R. (2014) 'Surveying livelihoods service delivery and governance: baseline evidence from Nepal'. London: Secure Livelihoods Research Consortium.

Vaitla, Bapu; Coates, Jennifer; and Maxwell, Daniel. 2015. *Comparing Household Food Consumption Indicators to Inform Acute Food Insecurity Phase Classification*. Washington, DC: FHI 360/Food and Nutrition Technical Assistance III Project (FANTA).

Van de Walle, S., and Van Ryzin, G. G. (2011). The order of questions in a survey on citizen satisfaction with public services: lessons from a split-ballot experiment. *Public Administration*, 89(4), 1436-1450.

Walelign, S. Z.; Pouliot, M.; Larsen, H. O.; and Smith-Hall, C. (2016) 'Combining household income and asset data to identify livelihood strategies and their dynamics', *The Journal of Development Studies* 1-19.

Wang, S. Y.; Yoon, J. H.; Gillies, R. R. and Cho, C. (2013) 'What Caused the Winter Drought in Western Nepal during Recent Years?', *Journal of Climate* 26(21): 8241-8256.

World Bank data bank (2016) *Personal remittances, received* (% of GDP). Retrieved from http://data.worldbank.org/indicator/BX.TRF.PWKR.DT.GD.ZS (Accessed 22/12/2016).

World Travel and Tourism Council (2014) 'Travel & Tourism Economic Impact 2014 Nepal'. Ministry of Finance. Budget Plan for 2015/16 Fiscal Year. Kathmandu: Ministry of Finance.

Appendix 1: Full sampling and weighting methods

Wave 1

The sampling strategy combined purposive and random sampling at different stages in order to ensure that we could make comparisons in terms of conflict-affectedness, remoteness and access to services, while also being able to draw statistically significant conclusions at the study/district and village level. Districts and VDCs³⁸ were selected purposively in order to locate the specific groups of interest and to select geographical locations relevant to the broader SLRC research themes, with wards selected randomly. The criteria of accessibility – conflict-affectedness and access to services – were used to select Rolpa, Bardiya and Ilam districts. Rolpa, where the armed conflict originated, was the most conflict-affected, followed by Bardiya and then Ilam. Rolpa is the most mountainous district in our sample, Ilam has a combination of hills and Terai (plains), and Bardiya is entirely Terai.

Within districts, VDCs were stratified in terms of remoteness and accessibility from the service delivery point of view, and then randomly sampled. Within each district we sampled the headquarter VDC or municipality. One implication of this is that location is likely to be a strongly significant factor in determining access to services. Three VDCs covering a range of levels of service provision were selected in every district. For example, in Rolpa, Liwang is the district headquarters, with a relatively higher level of service provision, Budagaun falls in the middle, and Thawang is highly remote with fewer services.

Within districts, wards and households were randomly selected and the voters list, obtained from the Election Commission of Nepal, was used as a sampling frame to select households within them using a simple random sampling method. We used this list as it was relatively recent, freely available (unlike the latest census data), and cheaper than conducting a new household listing. At the household level the respondent was quasi-randomly selected, meaning that enumerators tried to sample a balance of men and women of different ages and positions within the household.

The minimum overall sample size required to achieve significance at the study level, given population and average household size in the districts, was calculated using a 95% confidence level and a confidence interval of 5%. The same criteria were used to calculate sample size at the village level. Finally, the sample was increased by 20% to account for attrition between 2012 and 2015 so that the sample size in 2015 is still statistically representative. In the end 3,174 completed questionnaires were obtained.

Wave 2

Tests were run to determine whether any observed characteristics from wave 1 could predict attrition in wave 2. Overall, male respondents were more likely to drop out of the sample than females, and this was particularly pronounced in Rolpa. The most common reason for male attrition was migration for work, while for women it was marriage or family reasons. The higher attrition rate among men is explained by women being much less likely to have migrated independently for work. Age was a significant determinant of attrition, to the extent that those at the younger and older ends of the distribution were more likely to drop out (most of the 90 death cases were elderly people and most migrants were young). Other determinants of dropout were the respondent having a history of migration

³⁸ Nepal has 75 districts. Each district has a number of VDCs/municipalities. VDCs are the lowest administrative level of government, and are divided into nine wards.

(more likely to dropout) or being a farmer or having no paying activity at baseline (more likely to stay in the sample). Household size, dependency ratio, marriage (in the case of women), and the education level of the respondent also partly predicted dropout.

To minimise attrition bias, non-response weighting adjustments are used in the wave 2 analysis. In any given dataset there is a design weight given to all units (in this case respondents) at baseline. In our case, the design weight is equal to 1 for all respondents at baseline. This is because at the village level all respondents had, in theory, an equal selection probability, and although our data can be aggregated at higher levels (e.g. region), we do not claim that conclusions made above the village level are representative. In finding that attrition from our sample at follow-up is non-random, it is necessary to adjust the design weight to restore the proportions of the original sample (Kish, 1990; Brick and Kalton, 1996).

Using wave-1 data, a probit regression was run with the outcome variable 'response' (respondent in wave 2=1, non-respondent at wave 2=0) and including a list of covariates that proved at least partly to explain non-response in wave 2 (see discussion above). This technique, known as response propensity weight adjustment, replaces the unknown probability of response with an estimate, which is a function of observed or known characteristics about the respondent (Kalton and Flores-Cervantes, 2003; Särndal and Lundström, 2015; Brick, 2013). The results of these regressions are shown in Tables 7, 8 and 9 in Annex 2. Following the probit regression, the probability of response is calculated for each individual, then the inverse of the probability is taken, which becomes the non-response adjustment. The final weight for each wave is calculated by multiplying the design weight and the non-response adjustment.

Non-respondents in wave 2 end up with a weight of 0 and all those remaining in the sample have a weight greater than 1. Put differently, this means that those remaining in the sample take on greater emphasis, the more similar they are to those who have dropped out.

Appendix 2: Full analytical methods

When it comes to analysing the data, the complexity of the dataset can pose a serious challenge. There are now up to two observations for each respondent, and it is likely that their responses to some questions will be correlated over time. As such, the way we approach this from an analytical perspective has implications for the validity of our estimates. In this Appendix we describe the workings of two commonly used estimation models and explain our choice of model for this analysis.

Fixed and Random Effects models

Consider a simple model with one time period where y is the dependent variable, α is the intercept, β is the coefficient of variable x, for k independent variables and for i individuals (respondents in our case).³⁹ For the function that relates x to y there is the unobserved error term ε for each individual:⁴⁰

$$y_i = \alpha + x_{ki}\beta_k + \varepsilon_i$$

In a case such as ours, where we have observations for more than one time period, the problem is that for the same individual across time, the error terms are likely to be correlated because there are some key characteristics about that individual that do not change.

Even if we control for everything that we can *observe* about that individual (by inserting a vector of *k* covariates into the model), there are still likely to be unmeasured individual factors that have an influence on an individual's outcomes over time. To put it in different terms, when a respondent answers whether or not they believe that the government cares about their opinion, their answer will be based on their personal beliefs, opinions, preferences, expectations, lived experience, personality and mood. Some of these we can attempt to capture (for example, we can control for the fact that people displaced by conflict are likely to have had a different experience to those who remained, and this may also affect our variables of interest), but most of these factors remain unobserved.

When it comes to modelling such a relationship, there are ways of addressing this bias. Consider now a model where: there are different time periods, denoted by t; where some of the covariates are time-variant (meaning they can and do change over time), denoted by x; and where others are time-invariant (meaning they do not change over time for anyone), denoted by z:

$y_{it} = x_{kit}\beta_k + z_{ji}\delta_j + u_i + \varepsilon_{it}$

For each of the *k* variables that do vary over time (*x*) there is coefficient β , and for each of the *j* time invariant variables (*z*) there is coefficient δ . The error term is now also split into two parts: individual-level effect *u* and disturbance term ε . This model requires four basic assumptions:

- 1. Observations are independent and identically distributed (i.i.d), where
- 2. $E(\varepsilon_{it} | X_i, u_i) = 0$ (errors are independent of the individual-level effects)
- 3. $Var(\varepsilon_{it} | X_i, u_i) = \sigma^2$ (the variance of the errors is homoscedastic)
- 4. $Cov(\varepsilon_{it}, \varepsilon_{is} | X_i, u_i) = 0 \forall t \neq s$ (and there is no serial correlation of the errors).

³⁹ The dependent variable is also known as the variable of interest or outcome variable and is the variable that you are modelling the 'effect' of something on. Independent variables are the variables that you estimate the effect of. The intercept is the value that the dependent variable takes when all independent variables are set to zero (this is not universally true but it applies in our analysis).

⁴⁰ This section acknowledges its debt to Baum (2006: Ch. 9), for the models presented.

The remaining question is how to treat the individual-level effect, u_i . One approach is to assume that the individual-level effects are 'randomly' distributed across individuals and uncorrelated with everything else in the model:

 $E(u_i | X_i, \delta_i) = b$, a constant (the individual-level effects are uncorrelated with the regressors).

This is known as the Random Effects model (RE). This assumption is rather strong as it requires us to believe that when we have controlled for all observable characteristics of a respondent, any differences between them are more or less the result of random chance. In other words, we would have to accept that there is nothing else about the respondents themselves, besides what we have measured, that explain outcomes in any of the variables. A strength of this model, however, is that it can estimate effects for variables that do not change over time (time-invariant variables denoted by *z* in the model above).

An alternative model, the Fixed Effects model (FE) rejects this assumption and assumes that there *i*s a correlation between the individual level effects and the regressors.⁴¹ When the u_i are correlated with some of the regressors, the bias can be reduced by treating them as parameters in the model or, in other words, by controlling for every individual in the sample.

A drawback of the FE model is that it cannot estimate the effect of time-invariant variables. This is because when 'controlling for' the unobserved differences between individuals, the model can only estimate within-individual effects. These rely on there being a change between waves 1 and 2 for a given outcome variable. When there is no change in the outcome, there is no comparison observation against which to estimate the effect that a change *would* have. In the RE model this is not a problem since it estimates the effect of a change, based on a comparison group that includes any individual in any wave.

What follows from this is that the interpretation of the estimated effects differs depending on which model you use. The following figure illustrates simply what each model is able to tell us.

⁴¹ It should be noted that FE and RE are not the only models that can be used to analyse longitudinal data. For a discussion of more options for longitudinal modelling see Rabe-Hesketh and Skrondal (2008), and Dougherty (2011: Ch.14).

Figure 7: An illustrated example of the difference between FE and RE models.

In this example there are 3 households, each represented by a circle. There are two panel waves and each household has an observation in both. Assume each household has a value for Coping Strategies Index (CSI) wherever that household appears. We are testing the effect of CSI on an outcome variable, say, perception of central government.



Fixed effects model:

This model estimates the effect of a change within a household (or individual respondent) on the change in the outcome variable.

To calculate the expected change in the perception of government, it calculates a function of the black lines, which are differences in the value of CSI from one time period to the next.

Random effects model:

This model estimates the combined effect of a change within a household (or individual respondent) *and* differences across households, potentially within the same wave, on the outcome variable. The model calculates differences across all instances of a particular value, regardless of whether they came from the same individual over time or not.

To calculate the expected change in the perception of government, it calculates a function of the black lines, which are differences in the value of CSI.

Deciding which model to use

Deciding whether to use the RE or FE model is both a conceptual and statistical decision. It is possible to test whether the assumptions of the RE *do not* hold using the Hausman test (Hausman, 1978). Theoretically, it would make sense to run the Hausman test on each pair of models for each outcome variable to determine whether the assumptions appear to hold water in each case. However, an objective of the SLRC survey is to look for similarities and differences across the various sample populations. Therefore, the models used in each country analysis must be exactly the same (or as similar as possible given the differences in available data across countries). With this in mind, the decision of whether to use FE or RE was made based on conceptual justifications.

Ultimately, the FE model was chosen since it is designed '[s]ubstantively... to study the causes of changes *within* a person [or entity]' (Kohler and Kreuter, 2009: 245, emphasis ours), and this is the focus of our research rather than the study of macro-level processes. It is also highly doubtful that we can make the assumption inherent in the RE model that all personal differences between individuals can be accounted for by the control variables. For this to be true we would need to capture such elusive traits as 'expectations' of services and 'personality' or risk-omitted variable bias resulting from the failure to control for these (Torres-Reyna, 2007). Clarke et al. (2010) describe in detail the selection process between RE and FE in the context of education studies, noting that the RE assumption will not hold in practice when the mechanism driving the outcome 'is only partially understood and perfect measures of all the factors driving [the outcome] are rarely available'. This certainly applies to the SLRC survey. While we have included a broad range of explanatory variables in our surveys and regressions, we know that we are only capturing aspects of the processes that drive complex outcomes such as perceptions of government.

Deciding on the FE model still leaves us with the problem of how to estimate the effect of time-invariant factors, such as gender of respondent or displacement in a conflict prior to baseline (and these are some of our most important variables of interest). The only way to estimate the effect of variables that do not change over time and correcting for correlated residuals over time is by using RE. To get around the problem of unrealistic assumptions, we tried using the Mundlak correction (Mundlak, 1978) which allows for all possible correlations between u_i and the regressors x_i . However, the estimates of time-invariant effects did not prove more efficient than those in the RE model.⁴² In the end, it was decided that the RE model would be run alongside the FE model but used only to estimate the effect of time-invariant variables.

Those who look at FE and RE models with the same set of regressors, side-by-side, will note that although the coefficients usually remain almost identical in terms of size and direction of effect, there are always more statistically significant results in the RE model. This is because the standard errors of the coefficients are larger in the FE regression, and these are used in the test for significance. Though it may be tempting to choose a model that provides the most significant results, in our case we cannot ignore the possibility of omitted variable bias in the RE models. Because of this, it is only used when there is no FE option to estimate an effect of a variable of interest.

⁴² 'Efficient' in this context means that the variance is small, which improves the chance of detecting statistically significant effects. As Allison (2009: 21-23) points out, a strength of the RE model is that it is efficient in terms of reducing the size of the variance.

Appendix 3: List of social protection and livelihood assistance programmes

Table 19: Social protection

Name of programme in survey	instrument (English/Nepali)	Specific programme	Eligibility criteria
Old-age allowance	वृद्द भत्ता	Security (pension) for the elderly	All citizens over age of 70 are privileged (over 60 in Karnali Zone) (over 60 if belong to Dalit Community) Starting at NPR500 per month, then increased to NPR1000/m and from July NPR2000/m
Single women/widow allowance	एकल महिला भत्ता	Widows' grant\social assistance	From the date of becoming a widow
Disability grant	अपांग तथा असहाय भत्ता	For persons with disability or sight-impaired, based on Ministry of Local Development criteria	NPR500-1000 per month (depending on severity)
Stipend for girls and Dalit children/students	केटीहरू तथा दलित बालबालिका/विद्यार्थीलाई छात्रवृत्ति	Ministry of Education with partners	Girls and Dalit children/students
Midday meal, school uniform, cooking oil for children	केटाकेटीलाई मध्य दिनको खाजा	Ministry of Education school feeding programme (Food for Education project with World Food Programme)	Children of elementary school of remote areas
Cash transfers for family whose family member disappeared during or due to conflict	द्वन्द्वका कारणले वा द्वन्द्वका बेलामा परिवारको सदस्य वेपत्ता भएका परिवारलाई आर्थिक राहत हस्तान्तरण	Ministry of Peace and Reconstruction and partners	Family member of person disappeared during or due to conflict
Cash transfers for family whose family was killed during/due to conflict	द्वन्द्वका कारणले वा द्वन्द्वका बेलामा परिवारको सदस्य मारिएका परिवारलाई आर्थिक राहत हस्तान्तरण	Ministry of Peace and Reconstruction and partners	Family member of person killed during or due to conflict
Scholarship to children of those families whose family members disappeared or were killed due to conflict	द्वन्द्वका कारणले वा द्वन्द्वका बेलामा बाबुआमा गुमाएका बालबालिकालाई छात्रवृत्ति	Ministry of Peace and Reconstruction/Ministry of Education	Children of person disappeared or killed during or due to conflict

Table 20: Livelihood assistance

Name of programme in survey	instrument (English/Nepali)	Specific programme	Eligibility criteria
Seeds and tools distribution	बीऊबीजनतथाउपकरणवितरण	District agriculture offices and many livelihood support projects/NGOs	Local farmers recommended by district agriculture offices, or development partners
Seed money for revolving fund (saving and credit)	घुमुवाकोषकालागिबीऊपॅ्ँजी (वचततथाऋण)	No specific agency, but overall coordination by Ministry of Federal Affairs and Local Development and District Development Agriculture Office (DADO), DDC	Individuals recommended by local coordination mechanisms
Agricultural extension	कृषिविस्तार	DADO	All farmers
Fertiliser voucher	मलभौचर	DADO	Selected farmers
Goats and pigs for income generation	आम्दानीबढाउनबाख्रातथासुँगुरपाल न	District Livestock Development Office	Farmers/farmers groups
Skill enhancement trainings	सीपविकासतालिम	DADO/Women Development Office/Small and Cottage office	Farmers groups, women's groups
Micro-finance credit system management	लघुवित्तऋणपद्धतिव्यवस्थापन	Ministry of Poverty Alleviation and Cooperatives	Credit and micro-finance groups
Teaching women about mobilisation of funds in their areas	आफ्नोक्षेत्रमाकोषपरिचालनबारेमहि लाहरूलाईसिकाउने	Women Development Offices	Women members/groups/any eligible
Marketing information	बजारशास्त्रकोसूचना	Federation of Nepalese Chambers of Commerce and Industries (FNCCI), Cooperatives, banks	Entrepreneurs, producers
Exposure visit	भ्रमण	NGOs/DADOs. Women Development Office/several district-based organisations/development project	Any individuals selected by development projects
Farmers field school	कृषकपाठशाला	Ministry of Agriculture Development/Food and Agriculture Organisation	Farmers groups



SLRC Working Papers present information, analysis and key policy recommendations on issues relating to livelihoods, basic services and social protection in conflict affected situations.

This and other SLRC papers are available from **www.securelivelihoods.org**. Funded by UK aid from the UK government, Irish Aid and the EC.

Disclaimer: The views presented in this report are those of the author(s) and do not necessarily reflect the UK government's official policies or represent the views of Irish Aid, the EC, SLRC or our partners. © SLRC 2017

Readers are encouraged to quote or reproduce material from SLRC for their own publications. As copyright holder SLRC, requests due acknowledgement

Secure Livelihoods Research Consortium Overseas Development Institute (ODI) 203 Blackfriars Road London SE1 8NJ United Kingdom

T +44 (0)20 3817 0031 F +44 (0)20 7922 0399 E slrc@odi.org.uk www.securelivelihoods.org @SLRCtweet














Researching livelihoods and services affected by conflict

Tracking change in livelihoods, service delivery and state legitimacy

Evidence from a 2012–2018 panel survey in Nepal

Gemma Hennessey and Jessica Hagen-Zanker

December 2019

Contents

1	Intro	oduction	5
2	Met	hodology	7
	2.1	Design process	7
	2.2	Sampling and weighting for non-response	7
	2.3	Analytical methods	8
	2.4	Outline of key variables	9
3	Des	cription of sampled locations and changes in context	10
	3.1	Shocks	10
	3.2	Security and safety	11
	3.3	Political changes	12
	3.4	Ethnicity and caste	12
	3.5	Migration of respondents	13
4	Cha	nging livelihoods and wellbeing	15
	4.1	Livelihood activities	15
	4.2	Food security	16
	4.3	Asset wealth	19
	4.4	Debt/loans	22
	4.5	Migration and remittances	23
	4.6	Key findings on changes in livelihoods and wellbeing	25
5	Cha	nges in basic services, social protection and livelihood assistance	26
	5.1	Changes in access	26
	5.2	Changes in satisfaction with basic services	35
	5.3	Key findings on changes in access to and satisfaction with basic services, social protection and livelihood assistance	37
6	Cha	nges in perceptions of governance and state legitimacy	39
	6.1	Civic participation	39
	6.2	Changes in perceptions of government	41
	6.3	Perceptions of ward-level and provincial governments (wave 3 only)	48
	6.4	State legitimacy	52
	6.5	Key findings on changes in perceptions of governance and state legitimacy	56
7	The	effect of intersectional factors on behaviour	60
8	Sum	imary of findings and conclusion	62
	8.1	Changes in livelihoods	62
	8.2	Changes in basic services, social protection and livelihood assistance	63
	8.3	Changes in government perceptions and state legitimacy	63
9	Refe	erences	65

Appendix 1: Full sampling and weighting methods		
Second and third waves	67	
Appendix 2: Full analytical methods	68	
OLS and logistic regressions	68	
Appendix 3: Regressions	69	
Appendix 4: Construction of the government perception indices	90	
Appendix 5: Construction of the state legitimacy index	91	

Tables

Table 1: Attrition by district and VDC	8
Table 2: Summary of outcome variables	9
Table 3: Experience of crime across the waves	11
Table 4: What is your main source of household income? By wave	16
Table 5: Change in CSI between waves 2 and 3	16
Table 6: Changes in CSI and FCS across waves	17
Table 7: Changes in Morris index	20
Table 8: Migration at the household level	24
Table 9: Changes in service and service provider, across waves	26
Table 10: Change in access to basic services	27
Table 11: Payment of formal fees for private and government run boys' and girls' schools, by wave	29
Table 12: School attendance over time, by school provider	30
Table 13: Access to social protection or livelihood assistance across waves	31
Table 14: Change in access to social protection between waves 2 and 3, by ethnic group (wave 1 classifications)	31
Table 15: Receiving social protection transfers by gender of household head	32
Table 16: Change in journey time to school, by (former) VDC (fixed in wave 1)	33
Table 17: Changes in satisfaction with basic services across waves	35
Table 18: Problems and knowledge of participatory procedures	39
Table 19: Problems with services	40
Table 20: Knowledge of grievance mechanisms	40
Table 21: Changes in perceptions of local government over waves	42
Table 22: Changes in perceptions of central government across waves	44
Table 23: Changes in perceptions of central government by ethnicity of respondent (wave 1 classifications)	44
Table 24: Changes in perceptions of central government by ethnicity of respondent (wave 3 classifications)	45
Table 25: Changes in perceptions of government by sex of respondent	45
Table 26: Changes in average Government Perception Index (GPI)	47
Table 27: Average GPI and SLI, for recipients and non-recipients of livelihood assistance	51
Table 28: Level of trust in public entities, wave 3 only	53
Table 29: Perceptions of run-up to elections, by district	53
Table 30: Percentage of respondents who perceive that if something bad happens to them it is due to a personal characteristic, experience or belief, by gender	60

Figures

Figure 1: Timeline of significant events during the survey, 2012–2018	5
Figure 2: Recent shocks experienced by the household, 2012–2018	10
Figure 3: Experience of fighting in the past three years, by district, across waves	11
Figure 4: Perceptions of safety, over waves	11
Figure 5: Ethnicity breakdown in wave 3, by wave 1 classifications	12
Figure 6: Ethnicity breakdown in wave 3, by wave 3 classifications	13
Figure 7: Countries of destination for respondents who internationally migrated and were not re-interviewed i wave 3	in 14
Figure 8: Respondents engaging in particular livelihood activities, by wave	15
Figure 9: Sankey diagram of changes in CSI across waves	18
Figure 10: Histogram of the Morris Score Index (unweighted) in waves 1 and 2, and waves 2 and 3	20
Figure 11: Sankey diagram of changes in MSI across waves	21
Figure 12: Changes in average wealth (MSI) over time, by ethnicity (wave 1 classifications)	22
Figure 13: Does anyone in the household owe money to anyone? By wave	23
Figure 14: Recipients of remittances (households) across all waves	24
Figure 15: Average journey time and changes in journey time by basic service (+/- 5 minutes counted as 'no change'), wave 2 to 3	28
Figure 16: Frequency of school attendance, over time	29
Figure 17: School enrolment over time	30
Figure 18: Perceptions of local government, by wave	41
Figure 19: Perceptions of central government, by wave	44
Figure 20: Changes in average Government Perception Index, wave 2 and wave 3 (kernel density plot)	47
Figure 21: Government Perception Index (GPI), pooled, by education	48
Figure 22: Does the government care about your opinion, by government level, by gender, wave 3 only	49
Figure 23: Does the government care about your opinion, by government level, by district, wave 3 only	49
Figure 24: Beetham's state legitimacy	52
Figure 25: Voting in the 2017 elections, by education level	52
Figure 26: Is federalism an improvement for Nepal?	54
Figure 27: Histogram of the state legitimacy index	55
Figure 28: Average state legitimacy index, by ethnic/caste group, 2018 only	56
Figure 29: State legitimacy index, by household religion, wave 3 only	56
Figure 30: Percentage of respondents who perceive that if something bad happens to them it is due to a personal characteristic, experience or belief, by ethnicity	61

1 Introduction

In 2012/13, the Secure Livelihoods Research Consortium (SLRC) designed and implemented the first round of a panel survey in five fragile and conflict-affected countries – the Democratic Republic of Congo (DRC), Nepal, Pakistan, Sri Lanka and Uganda. The survey generated cross-country data on livelihoods, access to and experience of basic services, social protection and livelihood assistance, exposure to shocks and coping strategies, and people's perceptions of governance.

The cross-country panel survey is directly relevant to particular themes from SLRC's six-year global research programme:

- 1 *Livelihood trajectories.* What do livelihood trajectories in conflict-affected situations tell us about the role of governments, aid agencies, markets and the private sector in enabling people to make a secure living?
- 2 *Legitimacy*. What are people's perceptions, expectations and experiences of the state and of local-level governance? How does the way services are delivered and livelihoods are supported affect people's views on the legitimacy of the state?

In 2012, 3,176 respondents were interviewed in Nepal, with 2,855 of the original sample reinterviewed in 2015, followed by 2,575 in 2018, providing three waves of data for longitudinal analysis. The survey covered three districts that differ in terms of geography, accessibility and service provision – Bardiya, Ilam and Rolpa. Between the three waves of the panel survey, several key changes and events occurred (Figure 1). Between waves one and two, a new constitution was established, resulting in widespread political discontent. In 2015, Nepal was struck by a major earthquake, with devastating consequences (although the effects were less felt in the three districts in this study). Between waves two and three, Nepal became a federal state, introducing a four-tier system of governance, with political and territorial boundaries redrawn.

Figure 1: Timeline of significant events during the survey, 2012-2018

2012	September-November: First wave of the SLRC survey
2013	
2014	
2015	April: Major earthquake strikes Kathmandu killing 8,000
	September: new constitution passed by parliament
	September: protests, economic and road blockade by Madhesis
	September-December: second wave of the SLRC survey
2016	February: economic blockade lifted
2017	June: elections for local, provincial and federal government
2018	September-December: third wave of the SLRC survey

This country report presents the findings and analysis of the three waves of the panel survey. The findings are representative at village level,¹ but not representative at national level, as the three sample districts were selected purposively and not randomly. Rather than identifying patterns at a national level, the focus of analysis is on how individuals and households in contrasting circumstances manage over time.

¹ By wave 3, political and territorial boundaries in Nepal had been redrawn following the 2015 Constitution. Administrative units changed between waves, thus villages or VDCs in waves 1 and 2 are different from rural municipalities in wave 3. In wave 3 analysis, we refer to respondents' location – district or VDC – as fixed in wave 1, to allow for comparisons.

Section 2 presents the survey methodology for Nepal in greater detail, discussing the specific sampling methods used and describing basic characteristics of the final sample. Section 3 gives some background on the sampled locations and contextual changes between the three waves. Sections 4–7 constitute the analytical foundation of the paper, respectively exploring: changes in livelihoods and wellbeing; changes in people's access to and experience with basic services, social protection and livelihoods assistance; changes in people's perceptions of government actors and state legitimacy; and behaviour. Section 8 sums up the main findings and presents suggestions for additional research.

2 Methodology

Cross-sectional surveys provide a snapshot of a situation at a particular point in time. Longitudinal surveys provide information on changes and trajectories over time. The SLRC survey is a panel survey, which is a particular type of longitudinal survey where the same individuals are followed over a succession of survey rounds, in our case three waves in 2012, 2015 and 2018. An advantage of panel surveys is that they allow for the direct study of change within, for example, a household or an individual. This is substantially different to observing an event and people's situation at only a single point in time. This survey captured only quantitative data, with no qualitative data collected systematically for this particular report.

Panel surveys present their own set of particular methodological challenges, however. Attrition, meaning drop-out from the sample, is perhaps the most major threat, as is non-response to some of the questions within a survey. But others exist too. In this section, we discuss these challenges and disclose how we dealt with them. The section is split into four parts, focusing respectively on: survey design; sampling and weighting; analytical models; and key variables of interest.

2.1 Design process

Changes to the survey instrument

Three notable changes were made to the third-wave survey instrument:

- Additional module on state legitimacy (see Section 6.4). In the first and second wave of analysis, questions on perceptions of government were thought to be an indirect proxy of state legitimacy, drawing from Levi et al.'s (2009) influential work (SLRC, 2015). In the third wave of the panel survey, we added an additional module, specifically on state legitimacy. A state legitimacy index (SLI) was constructed from the questions in this module, see Section 6 and Appendix 5 for full explanation.
- Additional module on behaviour (see Section 7)
- New ethnicity classifications. After the wave 2 survey, it became clear that the ethnicity categories in the wave 1 and wave 2 survey instruments were not an accurate reflection of how people classified themselves. As a result, the wave 3 survey instrument included more nuanced categories. Finally, we should note that, in all three waves, the modules and questions were sequenced in the same order. We felt this was important because ordering can affect the way in which people report against particular questions (van de Walle and van Ryzin, 2011). The two new modules were added to the end of the survey instrument. Thus, maintaining the original sequencing was another step we took to ensure that the research design itself or rather changes to the design is not what is driving changes in the variables.

Timing of survey

The third wave of fieldwork was conducted between September and December 2018.

2.2 Sampling and weighting for non-response

At the baseline in 2012 there were 3,176 completed surveys. In the second wave in 2015 we were able to complete 2,852 surveys (three additional respondents were found but did not consent to be interviewed). In the third wave in 2018, 2,575 surveys were completed. Attrition overall was 19% and non-random, partly since it had not been possible to randomise the tracking of respondents who had

moved house between waves. As Table 1 illustrates, the attrition level differed by district and VDC. It should be noted that as a result of the federal restructure between waves 2 and 3, VDCs no longer exist as an administrative unit in wave 3 (replaced by rural municipalities), yet districts remain the same in wave 3 as in other waves (see Section 3.3 for discussion).

District	(Former) VDC	Wave 1	Wave 2	Wave 3 Resp	onse rate %	Attrition %
Rolpa		717	629	561	78.2	21.8
	Budagaun	211	182	164	77.7	22.3
	Liwang	321	278	264	82.2	17.8
	Thawang	185	166	148	80.0	20.0
Bardiya		1,213	1101	967	79.7	20.3
	Belwa	341	310	273	80.1	19.9
	Gulariya	549	506	458	83.4	16.6
	Rajapur	323	285	263	81.4	18.6
llam		1,246	1125	963	77.3	22.7
	Pasupatinagar	296	272	249	84.1	15.9
	llam	496	449	415	83.7	16.3
	Chulachuli	454	404	341	75.1	24.9
Total		3,176	2,855	2,575	81.1	18.9

Table 1: Attrition by district and VDC

Note: Between wave 2 and wave 3, local governing boundaries changed. This means that the VDCs in wave 1 no longer exist in wave 3. For comparison, this table shows VDCs as fixed in wave 1. Districts remained the same.

In the second and third waves, it was necessary to calculate weights to account for the attrition – the details of how this was done are found in Appendix 1.

As noted previously, our sample is representative at the (former) VDC level, and not representative at the national level. However for the sake of brevity, we refer to our sample using the country name. As such, when we refer to Nepal, we are using this as short-hand for 'the sample drawn for our study from Nepal', which is in fact representative only of the nine (former) VDCs in the country. The same is true when we refer to districts by name, for example, if we say, 'in Rolpa', we mean 'our sample in Rolpa'.

2.3 Analytical methods

We ran two different types of regression analysis, based on whether the outcome variable was continuous or binary. For continuous variables, we ran OLS regressions (fixed effect and random effect models). For binary outcome variables we ran logistic regressions (fixed effect and random effect models) – in the report we refer to the odd ratios from these regressions rather than the coefficients. We also ran OLS regressions for binary outcome variables, this is referred to as Linear Probability Model (LPM). In the report we draw primarily from the logistic regressions, in cases where there are statistically significant results in the logistic regressions that are inconsistent with the LPM findings, we indicate this in a footnote.

Note on the interpretation of the fixed effect regressions

As explained in Appendix 1, the fixed-effect estimate changes within a household as opposed to across households as it is done in a standard regression with cross-sectional data. Therefore, when estimating a fixed effect model we are looking whether changes in our dependent variable are correlated with changes in the explanatory variables over time within each household. As this is a three-waves panel survey there are three observations per household to estimate the co-movement of the variables of interest. When describing the correlation between changes in our variables, changes have to be

understood as average changes across the three waves. In fact, the model chosen does not take into account in which year the changes have happened.

2.4 Outline of key variables

Table 2: Summary of outcome variables

_	Outcome area	Outcome indicators	Explanation of indicators
1	Livelihoods and wellbeing	Coping strategies index (CSI) and Food consumption score (FCS)	Indexes capturing 1) the level of household food insecurity and 2) the quantity and to an extent quality of food (Mallett et al., 2015; Maxwell and Caldwell, 2008).
2		Morris score index	An index measuring household asset wealth (Mallett et al., 2015; Morris et al., 1999).
3	Access to basic services	Access to health centre	Journey time (in minutes) to reach the health centre that the respondent typically uses.
4		Access to school	Journey time to reach the primary school that children attend.
5		Access to principal water source	Time (in minutes) taken for a return journey to the household's main source of drinking water.
6		Access to social protection	Has anyone in the household received a social protection transfer in the past year?
7		Access to livelihood assistance	Has anyone in the household received a livelihood assistance transfer in the past year?
8	Experience of basic	Satisfaction with health centre	Overall satisfaction with the health centre.
9	services	Satisfaction with school	Overall satisfaction with the school.
10		Perception of water quality	Is your drinking water clean and safe? (yes/no)
11	Perceptions of	Perception of local government	Perception of local government actors
	governance and state legitimacy		1) Do you agree with the statement: The local government is concerned about my opinion? (yes/no); 2) To what extent do decisions of those in power at local government reflect own priorities?
12	_	Perception of central government	1) Do you agree with the statement: The central government is concerned about my opinion? (yes/no); 2) To what extent do decisions of those in power at central government reflect own priorities?
13		Perception of provincial government	Perception of provincial government actors
			1) Do you agree with the statement: The provincial government is concerned about my opinion? (yes/no); 2) To what extent do decisions of those in power at provincial government reflect own priorities? In wave 3 only.
14		Perception of ward-level government	Perception of ward-level government actors
			Do you agree with the statement: The provincial government is concerned about my opinion? (yes/no) In wave 3 only.
15		Government perception index (GPI; GPI3 – wave 3 only)	Indexes comprised of the perception of local and central government variables (GPI), and the extent central, provincial local and ward-level governments are concerned about my opinion questions (GPI3) in wave 3 only.
16		State legitimacy index (SLI)	Index comprised of the state legitimacy variables (Gilley, 2006), wave 3 only.

3 Description of sampled locations and changes in context

Three districts were sampled for this survey: Bardiya in the western terai (plains), Rolpa in the midwestern hills, and llam in the eastern hills (although one of the (former) VDCs sampled in llam, Chulachuli, is on the terai). Rolpa was selected for being remote and the district where which saw much of the early fighting during the conflict, llam is the most prosperous district with the greatest provision of services, and Bardiya is a Terai district selected for its diversity of people and livelihoods.

3.1 Shocks

In the six years between surveys (2012–2018), households reported having experienced a range of environmental and economic shocks. Out of the 12 shocks that were asked about in the survey, respondents reported an average of two shocks in wave 3, compared to three shocks in wave 2, and 1.5 shocks in wave 1 (Figure 2). In wave 3, 25% of individuals reported more shocks, compared to 57% reporting less shocks, than in wave 2.



Figure 2: Recent shocks experienced by the household, 2012-2018

Over 90% of the sample reported being affected by an earthquake in the second wave of the survey, due to the major earthquake experienced in Nepal in September 2015, shortly before the data collection began.

3.2 Security and safety

There is some indication that security has improved. Respondents were asked whether in the last three years they had experienced fighting in the area. The proportion experiencing fighting in the past three years has continued to decrease, from 37% in wave 1, to 26% in wave 2, to 22% in wave 3. There are key differences across districts, with Ilam experiencing the most fighting in wave 1 (40%) to the least of the three districts in wave 3 (16%) (Figure 3).



Figure 3: Experience of fighting in the past three years, by district, across waves

Meanwhile, the average number of crimes experienced in wave 1 was close to 2, in wave 2 close to 1, and in wave 3 close to 2 (Table 3).

Table 3: Experience of crime across the waves

	Wave 1	Wave 2	Wave 3
Have experienced crime in past three years	18%	7%	12%
Mean crimes experienced	2.1	1.4	1.8

In terms of perceptions of safety, nine out of ten respondents report feeling safe in their village and outside their village in all three waves, with a marked increase between waves 1 and 2 (Figure 4).



Figure 4: Perceptions of safety, over waves

3.3 Political changes

Between waves 2 and 3, Nepal became a federal system according to the 2015 Constitution, with four levels of government: central, local, provincial and ward-level, as opposed to the former two-tier central/local government. As a part of the restructure, administrative units and territorial boundaries were redrawn. The levels of government in wave 3 are as follows:

- Central government refers to the national federal Government of Nepal sitting in Kathmandu.
- Provincial government refers to the governments of seven federal provinces promulgated in September 2015.
- Local government refers to municipalities and rural municipalities (or gaunpalikas) established in the 2015 Constitution, which restructured over 3,900 old municipalities and villages into 753 new municipalities and rural municipalities. Our three sample districts consist of rural municipalities only. Since the 2015 Constitution, 460 rural municipalities replace 3,157 VDCs, meaning that the political and territorial boundaries of our original nine VDCs are different in the 2018 round of the survey. This mismatch is likely to have some impact on wave 3 analysis.
- *Ward*-level government refers to the most local level of self-government in Nepal. Since the 2015 Constitution, 6,743 wards sit under 753 local government municipalities and rural municipalities.

3.4 Ethnicity and caste²

As mentioned in Section 2.1, the third wave survey instrument included different ethnicity and caste group classifications. The breakdown of our sample in wave 3, by ethnicity, is seen in Figures 5 and 6, by wave 1 and wave 3 classifications respectively.



Figure 5: Ethnicity breakdown in wave 3, by wave 1 classifications

² Note that no one has changed their ethnicity, but rather that SLRC has changed the way in which we classified ethnicity within the survey instrument.

Figure 6: Ethnicity breakdown in wave 3, by wave 3 classifications



The bulk of Brahman/Chhetri as classified in waves 1 and 2 (92%) are re-categorised as Hill High Caste in wave 3. Janajati/Indigenous (waves 1 and 2) are split mostly between Hill Janajati/Adivasi (60%) and Terai/Madhesi Janajati/Adivasi (36%). The majority of wave 1 and 2 Dalits (78%) are re-categorised into Hill Dalit, with the remainder split over other categories. Nearly all Madhesi (94%) are reclassified as Terai/Madhesi Janajati/Adivasi, and nine in ten Muslims are re-categorised into Musalman. The new classification had 9 in the 'Other' category, compared to 76 in the old classification.

3.5 Migration of respondents

As discussed in Section 2.2, of the 3,176 respondents interviewed in 2012, 2,575 were re-interviewed during the third wave of interviews in 2018, representing a retention rate of 81%. Among those re-interviewed in wave 3, 95% still lived in the same village in 2018 as in 2015. Of those still living in the same village, 98% lived in the same dwelling in 2018.

Of those who were not re-interviewed in wave 3 (excluding the deceased respondents), 62% had migrated within Nepal, and 38% had migrated internationally. This differed by gender, with the majority (78%) of female respondents migrating internally, compared to the majority of men migrating abroad (55%). Men mostly migrated for work, while a quarter of female respondents migrated (internally) for marriage or family reasons. Of all international migration, 41% was to India, while 35% was to the Gulf (UAE, Kuwait, Qatar, Saudi Arabia) and 11% to Malaysia (Figure 7). Around 7% of the internal migrants had relocated to Kathmandu, 25% to Jhapa district, 17% Banke and 12% Dang.

Figure 7: Countries of destination for respondents who internationally migrated and were not reinterviewed in wave 3



Note: The key refers to the number of respondents.

4 Changing livelihoods and wellbeing

In this section, descriptive statistics and results of regression analysis on changes in food insecurity and asset wealth are summarised. Regression analysis focuses on the Coping Strategies Index (CSI), the Food Consumption Score (FCS) and the Morris Score Index (MSI).

4.1 Livelihood activities

On average, households in the sample increased their number of livelihood activities from 2.0 different activities in 2012, to 2.5 in 2015, and slightly decreased to 2.4 different livelihood activities in 2018. Between waves 1 and 2, 47% of households reported more livelihood activities, with 20% reporting fewer, and the remaining third the same number in 2015 as in 2012. There was a similar amount of change between waves 2 and 3: 31% reported more livelihood activities in the third wave, 35% reported fewer, and a third the same number as before. Looking at the type of livelihood activities that households engage in, the most common is own cultivation, livestock or fishing (Figure 8). There has been a small decrease in those engaged in own cultivation, livestock or fishing, and casual labour (both agriculture and non-agriculture) between waves 2 and 3, after a previous increase. The proportion of those engaged in no paid activity has decreased by 13% points.



Figure 8: Respondents engaging in particular livelihood activities, by wave

There were high levels of switching between livelihood activities by households across the waves. For own cultivation, 75% of households were engaged in this activity in waves 1 and 2, and 79% in waves 2 and 3. However, there was more movement in other categories of employment. For instance, only a quarter of households that reported selling goods in wave 1 also did so in wave 2, meanwhile just over a third of households selling goods in wave 2, also sold goods in wave 3. For those households which owned a business in wave 1, one in five no longer owned a business by wave 2, and for households with a business in wave 2, one in four no longer owned a business by wave 3.

This high level of shifting is consistent with other studies that find that households commonly shift livelihood strategy through time (Walelign et al., 2016). That the majority of households can be classified as small-scale farmers with a frequent and high level of diversification into other activities is also reflective of what is understood about Nepali livelihood strategies in general (Nielsen et al., 2013;

Rahut et al., 2014; Larsen et al., 2014). The main source of income reported in all waves was own cultivation, however after slightly increasing from 46% to 47.4% between waves 1 and 2, in wave 3 a smaller proportion of 37% reported this as their main source of income (Table 4). After own cultivation, the main sources of income in all waves were 'own business', casual labour (non-agriculture) and remittances, which all slightly increased in wave 3. Casual labour (non-agriculture) rose in wave 3 by 5 percentage points to 15%.

	Wave 1 (%)	Wave 1 (%) Wave 2 (%)		
Own cultivation, livestock or fishing activity	46	47.4	37	
Casual labour agriculture/fishery	2.8	2.7	2.9	
Casual labour non-agriculture	13.5	9.8	14.7	
Selling goods	3	2.6	2.7	
Own business	12.1	13.5	15.7	
Private sector job in agriculture/fishery	0.9	0.2	0.3	
Private sector job in non-agriculture	3.6	4.3	5.2	
Public sector job	7.8	7.6	7.4	
Paid housework and childcare	0	0	0	
Remittances	9.6	11	12.2	
Social protection transfers	0.7	0.9	1.8	
Total	100	100	100	

Table 4: What is your main source of household income? By wave

4.2 Food security

We measured food security using two indexes: the CSI and FCS. The CSI is an overall score of household food insecurity, based on the number of times a household reports using coping strategies or behaviours over the past month. The FCS is a measure of food quality, measuring diet diversity based on food groups consumed over the past month, with more nutrient-dense food groups weighted more heavily in the index. On average, households in our sample have become more food secure over the three waves from 2012 to 2018. Food *insecurity* – as measured by the CSI – decreased, with the average CSI score decreasing from 3.2 in wave 1 to 1.4 in wave 2 and 1.2 in wave 3 (see Table 6). A two-sample t-test found that the differences in means between waves 1 and 2, and waves 2 and 3, were both statistically significant (p value< 0.01).

Between waves 1 and 2, more households became less food insecure than households that became more food insecure: 38% of households switched to a lower CSI score, compared to 19% of households which switched to a higher CSI score. Between waves 2 and 3, this trend continued, although by a smaller margin, with more households switching to a lower CSI score (24%) than switched to a higher CSI score (18%) (Table 5).

CSI	Overall	Rolpa (%)	Bardiya (%)	llam (%)
No change	58.4%	38.7	58.5	69.5
Improved	23.5%	29.2	30.5	13.3
Worsened	18.1%	32.1	11	17.2

Table 5: Change in CSI between waves 2 and 3

However, looking at breakdown by district level, between waves 2 and 3, improvements were largely due to a considerable improvement in food security in Bardiya, where 30% of households switched to a lower CSI score, (compared to 11% worsening). In the remaining districts, more households worsened in CSI score (Table 5).

The other measurement of food security – FCS – also improved across all waves on average, and in all districts (Table 6). A two-sample t-test found the difference in means of FCS between waves 1 and 2, and waves 2 and 3 were both statistically significant (p value< 0.01).

Levels of food consumption saw a lot more fluctuation between waves than the CSI, with only 3% not switching between waves 1 and 2, and the same between waves 2 and 3. Between waves 1 and 2, and between waves 2 and 3, most households (around 60%) improved their food consumption between waves, switching to higher FCS scores, compared to around 40% of households which switched to lower FCS or worsened levels of food consumption between each of the waves, There are small differences across districts: Ilam saw the most improvers in levels of food consumption between waves, and Rolpa the least.

Mean CSI	Wave 1	Wave 2	Wave 3	Change in CSI wave 1 to 2	%	Mean change in CSI	Change in CSI wave 2 to 3	%	Mean change in CSI
	3.23	1.43	1.22	Improved (lower)	37.7	-6.76	Improved (lower)	23.5	-4.44
				Worsened (higher)	19.1	4.10	Worsened (higher)	18.1	4.71
				No change	45.3	n/a	No change	58.4	n/a
Mean FCS	Wave 1	Wave 2	Wave 3	Change FCS wave 1 to 2	%	Mean change in FCS	Change FCS wave 2 to 3	%	Mean change in FCS
	39.21	41.96	44.74	Improved (higher)	57.6	9.85	Improved (higher)	58.6	9.26
				Worsened (lower)	39.7	-7.75	Worsened (lower)	38.3	-7.12
				No change	2.6	n/a	No change	3.1	n/a

Table 6: Changes in CSI and FCS across waves

Figure 9 illustrates the degree of movement in households' CSI between the three waves. The blue bars represent the households with the lowest level of food insecurity ('level 1'), and the red bars the households with the highest levels of food insecurity ('level 5'). It can be seen that there was a fair amount of movement across the waves between different levels of food insecurity, with around half of households not switching between waves. Between waves 1 and 2, many households switched to the lower food insecurity category, with level 1 growing in size in wave 2.

Figure 9: Sankey diagram of changes in CSI across waves



Note: W1, W2, W3 refer to waves 1, 2 and 3 respectively.

4.2.1 What explains changes in food security over time?

The results presented here are conditional correlations, meaning that they apply when all other factors are held constant. In the interest of brevity, this point is not made again throughout the remainder of the paper; however, it should be considered to apply to all regression results presented in the report.

Most respondents experienced some changes in food security, and regression analysis helps us understand which factors are associated with improvements. The results of the fixed effects regression reveal several clusters of variables that are linked with changes in food security. Only the statistically significant results are discussed here, unless specified otherwise; this is also the case throughout the rest of the report.

The first cluster of explanatory variables that emerged in regression analysis were **economic** factors, or 'inputs' to household production. Households that became wealthier in their assets improved in food security and levels of food consumption – an increase in the MSI is associated with a decrease in CSI and increase in CSI. At the same time, households that become indebted are associated with worsened food consumption and increased food insecurity over time. Households that begin to receive a social protection transfer also see an increase in food insecurity, as well as a decrease in food consumption levels.

Having a household member become engaged in in own cultivation, selling goods, or starting their own business is associated with a *decrease* in food insecurity, meanwhile a household member entering their own business, selling goods or getting a job in the private sector are associated with improved levels of food consumption.

There are interesting migration impacts on a household's food security. While receiving remittances is positive for households (associated with an increased CSI and FCS), having a household member migrate internationally within the past three years is associated with an increased CSI and decreased FCS. This suggests that migration is a key coping strategy for households, but there are high start-up costs with a household sending a member abroad.

The second cluster of explanatory variables refers to **risks**, **safety and security**. Perceptions of safety are important for food security; respondents perceiving their village or wider area to be safe between waves is associated with decreased food insecurity, and improved food consumption over time. Households

that have experienced fighting in the area in the past three years have much higher CSI scores (food insecurity) and worse levels of food consumption. Similarly, experiencing more crime increases food insecurity, and decreases food consumption.

Households that experience a natural shock are associated with increased food insecurity and decreased levels of food consumption. Households experiencing a natural shock has a conflicting impact, associated with increased food insecurity but *decreased* levels of food consumption. Perhaps counterintuitively, a household experiencing one additional shock (excluding earthquakes) is associated with an increase in levels of food consumption, perhaps as a result of receiving aid.

The third cluster of explanatory factors are time-invariant **household characteristics**, drawn from the RE results. Firstly, more educated households are more food secure. Higher average household education levels are associated with decreased food insecurity and improved levels of food consumption, compared to non-literate households. Descriptive statistics show that the Brahman/Chhetri ethnic group have much lower CSI scores and higher FCS scores than other ethnicities. This was reflected in regression analysis, with other ethnic groups linked to higher food insecurity and lower food consumption than Brahman/Chhetris (the reference category).³ Households with an older demographic profile are associated with better food consumption levels and lower food insecurity.

Location also matters – those in urban areas are associated with both higher food insecurity and worse food consumption, compared to households in rural areas. Being located in the Rolpa district is associated with higher food insecurity and lower food consumption than in Ilam, meanwhile households located in the Bardiya district are linked to lower food consumption than in Ilam, but *lower* food insecurity, Households displaced by the Ten Year War are associated with higher food insecurity, but *higher* food consumption.

4.3 Asset wealth

Based on the work of Morris et al. (1999), a weighted asset index – Morris Score Index (MSI) – was created to approximate household wealth. Households' assets were aggregated, with goods that fewer households own bearing a higher weight. The MSI was winsorised to account for extreme outliers – a step not taken in previous analyses. The scores among households in the sample range from 0 (no ownership of any of the assets listed in the survey) to around 440.

On average, household asset wealth improved over the three waves for our sample. The mean MSI increased from 34 in wave 1, to 38 in wave 2 and again (by a much smaller margin) to 39 in wave 3. A two-sample t-test on the difference of means between waves was run, finding that the difference in the mean MSI between wave 1 and wave 2 was statistically significant (p value< 0.01), but was not statistically significant between waves 2 and 3 (Figure 10).

³ All ethnic groups were statistically significant in the CSI regressions; in the FCS regressions, all but Muslim were statistically significant.

Figure 10: Histogram of the Morris Score Index (unweighted) in waves 1 and 2, and waves 2 and 3



Looking at individual households across the three waves, when minor switchers of plus or minus 2 percentage points, between waves 1 and 2, are excluded, the majority of households (54%) switched to a higher MSI score and so improved in asset wealth, compared to 33% of households who switched to a lower MSI score. However, between waves 2 and 3, there were more households that switched to a lower MSI (46%) than those with a higher score (42%) (Table 7). This means that, while on average asset wealth improved in our sample between waves 2 and 3, this comes from a smaller number of households considerably increasing in household wealth.

Table 7: Changes in Morris index

			Wave 1 to 2			Wave 2 to 3
Change in Morris index	Frequency	%	Mean size of switch	Frequency	%	Mean size of switch
No change	4	0.14%	n/a	1	0.04%	n/a
Minor switchers (within 2 MSI points)	358	13%	0.05	300	12%	0.04
Lower (got worse)	954	33%	-16.5	1150	46%	-20.7
Higher (got better)	1,539	54%	19.7	1031	42%	22.3
Total	2,855	100%	3.8	2482	100%	-0.3

Figure 11 illustrates the degree of movement in households' MSI between the three waves. The red bars represent the households with the lowest quartile of asset wealth ('1st quarter'), and the blue bars the households with the highest quartile of asset wealth ('4th quarter').

Figure 11: Sankey diagram of changes in MSI across waves



Note: W1, W2, W3 refer to waves 1, 2 and 3 respectively.

4.3.1 What explains changes in asset wealth over time?

Turning to regression analysis, both economic factors and several household characteristics were statistically significant. However, no variables from the risk, security and safety cluster were statistically significant.

Beginning with **economic factors**, a household increase in livelihood portfolio by one livelihood activity is associated with slightly improved asset wealth over time. Having a household member begin to be engaged in own cultivation, selling goods or starting their own business is associated with an increase in asset wealth over time. Households that start to receive livelihood assistance are also associated with improved asset wealth over time. Our survey does not tell us which direction causality goes in. For any of these changes in livelihood portfolio, it is possible that it was an increase in asset wealth that enabled the household member to start working in these sectors since many of the assets in our questionnaire have a specific productive use. This may also be the case for livelihood assistance recipients, since the most common form of livelihood assistance is tools, in other words 'assets'. For further discussions on the impact of remittances, see Section 4.5.

Unsurprisingly, households that enter into debt are associated with lower asset wealth. Households that are more food insecure are also less wealthy, although the impact is small (a 1% decrease in MSI, holding all other variables constant).

Similar to the migration dynamic with food security, remittances are associated with improved asset wealth over time, while at the same time a household member recently migrating is associated with a decrease in assets.

Looking to time-invariant factors in the RE regressions, **household characteristics** appear to have a larger influence on MSI than economic factors. More educated households are wealthier: households educated to primary level on average have a 7% higher MSI compared to non-literate households; the corresponding figures for secondary and tertiary average education levels are 12% and 32%, respectively.

All ethnic groups were statistically significant – all associated with lower asset wealth, compared to the reference category Brahman. Notably, Madhesi households have MSI scores 44% lower than Brahmans, and Muslim households 38% lower (holding all else constant). Looking to descriptive

statistics, all ethnic groups experienced an improvement in average asset wealth over the three waves, apart from Dalits who saw a slight decrease between waves 2 and 3 (Figure 12). A two-sample t-test was on the difference of means between Dalits in wave 1 and wave 2, which was statistically significant (p value< 0.01), and between waves 2 and 3, which was not statistically significant.



Figure 12: Changes in average wealth (MSI) over time, by ethnicity (wave 1 classifications)

Household composition is also important – larger households and older households (on average) were wealthier. Female-headed households are associated with lower MSI scores than their male-headed counterparts.

Location matters too: households in Rolpa are associated with higher asset wealth (31% holding all else constant) compared to llam, while households in Bardiya also tend to be wealthier (5%). Households in urban areas have higher asset wealth than those in rural areas. Finally, moving house in any of the waves was associated with reduced asset wealth.

4.4 Debt/loans

Regression analysis indicated households that took a loan (when previously not in debt), saw their food security and asset wealth worsen. Borrowing levels are high in our sample, with 65% of the sample reporting debt in wave 1, and 62% in waves 2 and 3. A national level survey found half of Nepali households were in debt, suggesting our sample may have above national levels of debt (The Asia Foundation, 2018). Only 13% of our sample households had experienced no debt in any of the waves (Figure 13).





In all waves, one in two households in debt borrowed money from family and friends. There was an increase over the three waves in the proportion of households borrowing money from formal lenders or banks or savings groups. By wave 3, more are borrowing from a formal lender or bank (34% compared to 24% in wave 2 and 17% in wave 1) and savings groups (22% in wave 1, 38% in waves 2 and 3), and fewer are borrowing from landlord or employers (20% compared to 31% in waves 1 and 2). There was another indication in the survey of improved access to credit between 2015 and 2018, with 21% of the sample stating they could borrow 20,000 NPR from a formal lender or bank, compared to 13% in wave 2.

In all three waves, most common reasons for borrowing were to meet immediate basic needs, followed by for 'productive uses' (e.g. starting own business) and health costs.

4.5 Migration and remittances

Migration is a relatively well-established phenomenon in Nepal, with some estimates suggesting that around one in five people are temporarily or permanently away from their home at any given time (Sijapati et al., 2017), and that one in four Nepalis have a relative working abroad (The Asia Foundation, 2018). Given that our survey covers districts with lower migration rates than other parts of the country, our results show a slightly different picture.

On an individual level (the interviewed respondents in our sample), 1% had internally migrated in the last three years, 4% in wave 2 and 3% in wave 3. Meanwhile, 2% had internationally migrated in the last three years in all three waves – however an important caveat to this is that these figures do not take into consideration those who migrated between waves and were not able to be tracked or re-interviewed, including the 190 internal and 117 international known migrants (Section 3.5).

Looking at the household level, 35% of households reported any internal or international migrant member in the past three years in at least one of the waves (Table 8). In the third wave of the survey, an additional question was added: if anyone in the household had migrated abroad in the past three years. This was as the original questions about internal and international migrants in the household were attached to a household roster on livelihoods which only included members who spent most of the past year living in the household, and so may have missed some household members. This additional question confirmed this concern – 19% of our household sample had a household member migrate abroad in the past three years in wave 3 (as opposed to 8% in the question based on the household roster). It is thought this question is a much more accurate reflection of out-migration in the area. The additional question also showed an interesting difference in international out-migration by district, with 23% of our sample in Rolpa and Ilam having a household member migrate abroad in the past three years.

Table 8: Migration at the household level

Migrant in the past three years	Wave 1	Wave 2	Wave 3	In at least one wave	In no waves	
Internal	5%	11%	9%	-	-	
International	7%	10%	8%	-	-	
International migrant (based on new question)	-	-	19%	-	-	
Any kind of migrant	11%	18%	16%	35%	64%	

Regression analysis indicates that households that have had a household member internationally migrate within in the past three years are associated with worsened food security and asset wealth, when other variables are held constant (including receiving remittances). This suggests that sending a household member abroad has high start-up costs for households. For most households in these parts of Nepal, international migration tends to be costly and hence not possible without access to a loan (Hagen-Zanker et al., 2014). Of the 19% of households in wave 3 that reported an international migrant in the last year, 73% reported taking out a loan for the purpose of migration. Over the waves, the average value of migration loans, adjusted for inflation, were high: equivalent to around 234,000 NPR in 2012, 204,000 NPR in 2015, and 244,000 NPR in 2018.

One in four households in our sample received remittances in wave 1, which increased to one in three households in waves 2 and 3. This reflects other findings which indicate a quarter of Nepali households have received remittances (The Asia Foundation, 2018). Figure 14 shows that while one in two households have never received remittances (in the past three years) in any of the waves, a third had received remittances in at least one of the waves, and 12% were in receipt of remittances in all waves.



Figure 14: Recipients of remittances (households) across all waves

When asked which livelihood activity provided the largest share of the household's income, there was a slight increase over the three waves in the proportion of households reporting remittances – 10% in wave 1, 11% in wave 2 and 12% in wave 3 – meaning that for one in ten households in our sample, remittances were the most important source of income. The importance of remittances to livelihood and wellbeing was reflected in regression analysis, in which starting to receiving remittances was statistically significant and associated with improvements in both food security and asset wealth over time. This has been reflected in other studies which find that Nepali households that receive remittances tend to have higher incomes (The Asia Foundation, 2018).

Migration thus has high upfront costs for households through migration loans, but can pay off longer term through remittances.

4.6 Key findings on changes in livelihoods and wellbeing

Diversification of livelihood activities over time is the norm

Over the six years between the first and third panels, there has been considerable change in most households' livelihood portfolios: 45% changed their main income source between wave 1 and 2, and 50% changed their main source of income between wave 2 and 3. The average amount of livelihood activities per household slightly decreased in wave 3 (after increasing in wave 2) – more households decreased the number of livelihood activities between waves 2 and 3 (35%), than increased (31%).

Accumulating assets and improving food security go hand in hand

Perhaps unsurprisingly, improved wealth, as measured by the MSI, is expected to improve food security and consumption. On the other hand, increases in food insecurity (CSI) are associated with decreases in the MSI. Households who begin to receive social protection transfers are less food secure, as measured by the CSI and FCS. Recipients of livelihood assistance score higher on the MSI, holding all else constant, perhaps reflecting that the most common form of livelihood assistance is transfer of assets in the form of tools.

Urban households are wealthier in terms of assets, but more food insecure

Indeed, we see a difference between districts, with households in Rolpa and Bardiya tending to be wealthier than Ilam, but less food secure (with the exception that households in Bardiya have lower CSI scores than in Ilam).

Socioeconomic inequalities persist

Inequalities persist in the livelihood and wellbeing outcomes of different ethnic and caste groups, even when the household has experienced the same general pattern of change between waves. The higher the household's average education level, the better their livelihood and wellbeing outcomes across waves. Higher caste/ethnic groups also consistently fare better on these outcomes.

The perceived security of an area and experiencing shocks are linked to food security, but not asset wealth

Feeling safe within and outside the village is positively associated with better food security, and at the same time experiencing more crimes or fighting in the area are both negatively associated. However, perceptions of safety are linked to a household's food security only, not also to its asset wealth.

Migration is a common livelihood strategy but has high start-up costs

Around one in six households had a migrant (internal or international) in 2018, and a third received remittances, showing that migration is a common livelihood strategy. Our regression results suggest some level of migration dividend, with households who start to receive remittances likely to be more food secure and wealthier. However, the impact of a household sending a member abroad in the past three years is negatively associated with these livelihood and wellbeing indicators – pointing to high start-up costs.

5 Changes in basic services, social protection and livelihood assistance

In this section, for each basic service (health, education and drinking water) and social protection and livelihood assistance, changes in both access to and satisfaction with the service are described. Results from regression analysis will also be presented to identify possible explanatory factors behind changes. In the survey, the main measure of access to services was the time taken, in minutes, for each respondent to reach the service (for schools and health centre), or for a round trip (for water sources). Access to social protection and livelihood assistance is measured as any household member receiving any type of social protection transfer or livelihood assistance in the past year.

Findings from this survey, and previous SLRC analyses, have raised doubts over the suitability of journey time to basic services as an indicator of access. For instance, a better quality health service may be further away, and thus journey time is not necessarily an indicator of respondents' access.

Across the three survey waves, there was little change in terms of the services being used by respondents. Similar to wave 2, there was very little change in wave 3 in terms of the services being used by respondents, with around 90% still using the same health centre, 85% the same school and 95% the same water source as three years previously. Respondents were also asked who they perceived to provide the health centre, schools and water source. Interestingly, while the majority of participants reported little change in service in terms of the physical structure, they reported a lot more change in regard to who they perceived to run the services between waves (Table 9).

Between waves 1 and 2, for health services and schools, people tended to think the change in service provider was from private run to government run or vice versa, while between waves 2 and 3, the change was more one-directional, from private run to government run for health, and the other way around for schools. For water, there was an increase in private providers in wave 3, after a decrease in the proportion of private providers between waves 1 and 2.

	Still using same service in wave 2 as in wave 1 (%)	Still using same service in wave 3 as in wave 2 (%)	Still same service provider in wave 2 as in wave 1 (%)	Still same service provider in wave 3 as in wave 2 (%)
Health centre	90.6	92.5	66	64.2
Girls' school	87.3	86.1	83.7	84.8
Boys' school	89.4	83.9	83.5	82
Water source	92.9	95.3	62.1	64.9

Table 9: Changes in service and service provider, across waves

Note: Change in service provider is self-reported by respondents.

5.1 Changes in access

In the survey, the main measure of access to services was the time it takes, in minutes, for each respondent to either reach the service (for schools and health centre) or, in the case of water, a round trip to fetch water from the water source.

Respondents travelled the furthest to access health services – 40 minutes in wave 3, followed by school – 26 minutes, and finally a short distance of 6 minutes for a round trip to fetch water (Table 10).

For all basic services, the majority of respondents changed their journey time by more than 5 minutes (shorter or longer) for health or schools and by more than 2 minutes for water between waves. For

health, two thirds changed by more than 5 minutes between waves 1 and 2 and between waves 2 and 3. Between waves 1 and 2, more households had a longer journey (32% of an average 46 minutes) than a shorter journey (23% of an average 34 minutes), while between waves 2 and 3, more households had a shorter journey (36%) than a longer journey (28%). A two-sample t-test found the difference in the mean journey time to the health centre between waves 1 and 2, and between waves 2 and 3 were both statistically significant (p value< 0.01).

Across the three waves, mean journey time remained at similar levels on average for education, yet a majority changed their journey by more than 5 minutes between all waves. For water source, journey times drastically reduced between waves 1 and 2, and stayed the same between waves 2 and 3 at 6 minutes. More households shortened journey time than lengthened between all waves – one in two households decreased their journey time between waves 1 and 2, compared to a third between waves 2 and 3. A two-sample t-test on the difference of mean journey time to schools between waves was run, finding that the difference in the mean journey time between wave 1 and wave 2 was statistically significant (p value< 0.05), but was not statistically significant between waves 2 and 3.

	Change, wave 1 to 2								Change, wave 2 to 3						
	Mean journey time (minutes)		No change in journey		Journey got shorter Journey got longer % Mean change change (mins) (mins)		ney got longer	No change in journey % Mean change (mins)		Journey got shorter % Mean change (mins)		Journey got longer % Mean change (mins)			
Service	Wave 1Wave 2 Wave 3			% Mean change (mins)			% Mean change (mins)								
Health	40	50	40	46	0.04	23	-34	32	46	36	0	36	-56	28	35
Education	24	26	26	35	2	26	-3	39	9	45	0.2	27	-22	28	26
Water	14	6	6	23	-0.3	49	-16	28	19	50	0	31	-16	19	13

Table 10: Change in access to basic services

Note: In the table, 'change' refers to journey times which have changed by more or less than 5 minutes for health and education, and 2 minutes for water source. So 'no change' includes journey times that have changed by less than 5 minutes (or 2 minutes).

Figure 15 shows the share of respondents reporting no change, better, or worse access between waves 2 and 3. For health service and water, more respondents saw a decrease in journey time than increase, showing a tendency towards better access. In contrast, between waves 1 and 2, more respondents saw an increase in journey time to health services. Roughly the same amount of respondents increased as decreased their journey time to school between waves 2 and 3.





Note: Pie charts show the share of respondents who experienced each type of change in their access to the service between waves 2 and 3. The dotted line shows the wave 3 average journey time, in minutes.

An *alternative* measure of access to education is payment for a service, and changes can be seen over time that tell us something about the importance of accountable school management systems. Primary education in Nepal is mostly free (there are fees for registration and moving to the next year) and all educational materials are supposed to be provided by the schools. Despite this, there was a considerable increase in respondents paying formal fees for government-run schools over the three survey waves – around 60% in wave 3, double the proportion in wave 1 (Table 11). This is generally matched by a decrease in respondents paying informal fees for government schools – around 10% in wave 3 compared to a third in wave 1. Households should not be paying any core fees for government schools, so the implication is that these costs are associated with extras, for example examinations and class registration fees (Mallett et al., 2016: 34).

		Informal fees (%)				
Who runs the girls' school?	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Government	28.8	46.4	63.4	32.2	13.8	13.8
Private	98.5	98.5	99.6	54.2	23.9	29.6
Who runs the boys' school?						
Government	27.5	44.8	59.3	35.0	14.5	10.2
Private	96.5	98.8	97.7	54.3	26.5	26.8

Table 11: Payment of formal fees for private and government run boys' and girls' schools, by wave

Note: Service provider of schools is self-reported by respondents.

These data seem to capture not a change in the monetary cost, but rather how formalised the costs are perceived to be. The regression results *did* (unlike the previous panel analyses) find a link between changes in costs (paying official fees or not) and journey time, which could suggest a switch in school.

The decision of where to send a child to school requires a trade-off between distance, cost and quality, and of course the reputation of a school and even an individual headteacher is a consideration for parents. These relational factors are not something that our survey is able to capture, but they have been documented in the qualitative literature (e.g. Acharya, 2014; Tandukar et al., 2015).

Another indicator of access to education is **attendance**. Over the three waves, there was a slight decline in frequency of attendance. In wave 3, 65% (boys) and 64% (girls) of respondents reported that the children in their household attended school every day, whereas in wave 2 this was 70% (both), this was mostly absorbed by the 'most of the time' category (Figure 16).



Figure 16: Frequency of school attendance, over time



More children in government schools had less frequent reported attendance in wave 3 than those in private schools.

Table 12: Schoo	l attendance	over time,	by school	provider
-----------------	--------------	------------	-----------	----------

	Switch in	girls' attendance w	ave 1 to wave 2	Switch in girls' attendance wave 2 to wave 3			
Who runs the girls' school?	No change (%)	More frequent (%)	Less frequent (%)	No change (%)	More frequent (%)	Less frequent (%)	
Government	63.6	11.6	24.8	56.4	19.3	24.3	
Private	73	9.5	17.5	66.3	14.3	19.	
	Switch in I	ooys' attendance w	vave 1 to wave 2	Switch in	boys' attendance w	vave 2 to wave 3	
Who runs the boys' school?	No change (%)	More frequent (%)	Less frequent (%)	No change (%)	More frequent (%)	Less frequent (%)	
Government	57.8	13.9	28.3	59.4	19.3	21.3	
Private	77	6.3	16.7	63.6	14.9	21.	

Over the waves we also see a decreasing school enrolment of those aged 16–21, and increasing enrolment at age 4 (Figure 17).



Figure 17: School enrolment over time

Respondents were asked if they had received any social protection or livelihood assistance in the last year (Table 13). In wave 3, 34% had received at least one social protection transfer, decreasing somewhat from 38% in waves 1 and 2. Recipients of livelihood assistance steadily increased across the waves from 16% in 2012, to 18% in 2015 to 21% in 2018.

Table 13: Access to social protection or livelihood assistance across waves

Type of transfer				Chang	ge between	waves 1 a	nd 2	Chang	ge between	waves 2 ar	nd 3
	Wave 1	Wave 2	ave Wave 2 3	Received in neither wave (%)	Received in both waves (%)	Started receiving in wave 2 (%)	Stopped receiving in wave 2 (%)	Received in neither wave (%)	Received in both waves (%)	Started receiving in wave 3 (%)	Stopped receiving in wave 3 (%)
Any social protection	38.0	38.5	33.9	51	27	12	11	52.7	24.2	8.9	14.2
Livelihood assistance	16.3	18.2	20.5	70	5	13	12	66.2	5.4	15.2	13.2

After staying steady between waves 1 and 2, a higher proportion of individuals stopped receiving social protection (14%) between waves 2 and 3, than started to receive it (9%). To investigate the decline in the proportion of households receiving social protection in wave 3, we looked at breakdown in changes by ethnic groups. As Table 14 shows, more households stopped receiving social protection than started receiving transfers between the two waves in all ethnic groups, although Dalits, Madhesis and Muslims are far more affected. The most commonly received types of social protection transfer in wave 3 were the old age allowance (17%), the single women/widows' allowance (9%) and the Child grant/Dalit stipend (9%).

Table 14: Change in access to social protection between waves 2 and 3, by ethnic group (wave 1 classifications)

		Change between waves 2 and 3							
	Received in neither wave	Received in both waves	Started receiving in wave 3	Stopped receiving in wave 3					
Brahman/Chhetri	63%	21%	8%	9%					
Janajati Indigenous	53%	23%	9%	14%					
Dalit	22%	47%	10%	22%					
Madhesi	36%	25%	9%	31%					
Muslim	39%	26%	8%	28%					

Notably, between waves 2 and 3 there was a considerable drop in the proportion of respondents receiving the Dalit child grant/stipend for girls, halving from 17% to 9% (after slightly increasing in wave 2 from wave 1). The amount of transfer has also decreased from wave 1. Adjusted to 2018 prices, the mean (self-reported) annual amount of Dalit child grant/stipend for girls received by survey respondents was 2,050 NPR in 2012, 810 NPR in 2015 and 750 NPR in 2018. However, at the same time, the reported impact of the child grant/Dalit stipend for girls was felt to be more beneficial for recipients in wave 3, with 10% stating that it helps a lot compared to 1% in wave 2. However, 69% of recipients in wave 3 still feel it is too small to make a difference.

There was a slight increase in those receiving old age allowance in wave 3, from 14% to 17% of respondents. The average annual amount of transfer, adjusted to 2018 prices, increased in wave 3 to 10,643 NPR, from 6,614 NPR in wave 1 and 8,950 NPR in wave 2. Fewer recipients felt that the old age allowance was too small to make a difference in wave 3 – 14%, compared to 35% in wave 2.

The proportion of respondents receiving any social protection decreased for both male- and femaleheaded households (with gender of household head being self-reported) (Table 15). However femaleheaded households continued to be more likely to receive any social protection transfer than maleheaded households, mostly due to female-headed households being far more likely to receive the single woman/widow allowance.

Table 15: Receiving social protection transfers by gender of household head

	Female-headed households					Male-headed households		
Social protection transfer	Wave 1%	Wave 2 %	Wave 3 %	Wave 1%	Wave 2 %	Wave 3 %		
Old age allowance	13.1	11	15	11.4	14.2	17.9		
Single women/widow allowance	18.6	26.8	24.3	2.6	3	3.5		
Disability grant	0.8	1.2	1.9	1.1	1.3	2.3		
Child grant/Dalit stipend	17.7	16.8	9.3	14.9	16.8	8.4		
Mid-day meal, school uniform, cooking oil for children	5.1	1.6	0.6	8.7	3.9	0.8		
Cash transfers for family whose family member disappeared during or due to conflict	0.0	0.3	0.1	0.2	0.1	0.2		
Cash transfers for family whose family was killed during or due to conflict	0.7	0.6	0.5	0.2	0.2	0.2		
Scholarship to children of those families whose family members disappeared or were killed due to conflict	0.3	0.4	0.5	0.2	0.2	0.1		
Any social protection transfer	47.9	51.6	46	34.1	34.3	29.8		

Note: Gender of household head is self-reported by respondents.

There was a slight increase in recipients of livelihood assistance over the three waves, although 66% had not received any assistance in wave 2 or 3. The most commonly received type of livelihood assistance in wave 3 was seeds and tools (9%), skills enhancement training (5%) and teaching women about mobilising funds (4%).

Fewer recipients of seeds and tools (82%) felt that it improved their livelihood than in wave 2 (88%). Following the trend in wave 2, more respondents perceived that seeds and tools came from the government in wave 3 (75%), and fewer recipients in wave 3 perceived that seeds and tools came from a national NGO (17% compared to 60% in wave 1).

5.1.1 Regression analysis: health

To identify factors associated with a change in access to basic services, regressions were run with journey time to the service as the outcome variable. For access to health service, we identified four clusters of variables: those related to the health service itself, livelihood factors, risks/safety/shock factors and household characteristics (time-invariant variables).

Firstly, several **health-service-related** variables were statistically significant. Households that change health service between waves tend to have longer journey times, while changing health service provider to government-run is associated with a shorter journey time. Frequency of use of health service was also statistically significant; increasing how often the household uses the health service is associated with shorter journey times.

Starting to pay official fees for health services was associated with longer journeys – 11 minutes longer (holding all other variables constant). Being consulted about the health service was also associated with a longer journey time to the clinic.

Secondly, changes in household **livelihood activities**, such as a household member starting a private sector job or selling their own goods, are associated with reduced journey times to the health centre, holding all else constant. In contrast, an increase of one livelihood activity in a household's livelihood portfolio is associated with longer journey times. Households with a recent internal migrant in the last three years are associated with shorter journey times to the health clinic.

Several **risk**, **safety and shock factors** were also identified. Experiencing both natural and health shocks are associated with an increase in journey time to health services. Meanwhile, experiencing fighting locally in the last three years is associated with longer journey times.

Lastly, drawing on the RE results, several time-invariant **household characteristics** were identified. The average household education level correlates strongly with access to health services – primary-educated households are linked to a shorter journey than non-literate households, and secondary- and tertiary-educated households have an even shorter journey length to health services. Interestingly, Dalit households have a shorter journey (holding all else constant) to health services, compared to higher-caste (and reference category) Brahman/Chhetri. Those living in an urban area (compared to rural) have a shorter journey time, and households in the Bardiya and Rolpa districts have a 25-minute and 8-minute shorter journey (respectively, and holding all other variables constant), compared to those in llam.

5.1.2 Regression analysis: education

In regression analysis, very few explanatory variables were statistically significant for access (journey time) to school. Changing schools between waves is associated with a longer journey time (by 7 minutes, holding all else constant). Paying official fees for the school is also associated with longer journey times. Experiencing a problem with education in the past year was also associated with a longer journey.

Having had a household member migrate within Nepal between waves, was linked to a reduction in journey time to school. It may be that this effect captures households which are located in a village with comparatively better transport links, enabling both outward migration and quicker journeys to school.

Considering household characteristics, or time-invariant variables in the random effects model, a female-headed household was associated with a shorter journey time compared to male-headed households. Madhesi or Muslim households tend to have longer journeys than Brahman/Chhetri households.

Naturally, a large part of what explains differences in journey times is location, which in Nepal implies wide differences in terrain and road network development. District is a significant predictor of journey time – living in Bardiya is associated with a 9-minutes shorter journey than households in the llam district (holding all else constant). As shown in Table 16, children in (former VDCs) Gulariya and Rajapur, Bardiya walk for an average of 17 minutes to school, whereas those living in Thawang, Rolpa walk for 35 minutes. Looking at changes over time, between waves 2 and 3 in Pasupatinagar, 50% saw their journey time shorten (compared to nearly two thirds seeing a lengthening of journey time between waves 1 and 2). Meanwhile, in Bardiya, in two former VDCs, Belwa and Rajapur, 55% and 61% respectively saw their journey time increase in wave 3.

		Average	age journey time (minutes) Change, wave 2 to 3 (%)				3 (%)
		Wave 1	Wave 2	Wave 3	No change	Shorter	Longer
Rolpa	Budagaun	29.1	27.4	29.2	21.4	37.7	40.9
	Liwang	27.7	30.3	29.7	16.3	36.6	47.1
	Thawang	35.0	42.6	35.3	24.8	42.7	32.5
Bardiya	Belwa	19.2	24.4	28.1	15.8	23.2	61.1
	Gulariya	14.9	16.6	16.9	17.1	45.8	37.1
	Rajapur	13.7	12.4	16.9	26.3	19.2	54.5
llam	Pasupatinagar	26.6	35.8	29.4	20.8	50.0	29.2
	llam	35.8	32.5	33.7	16.8	43.3	39.9
	Chulachuli	25.9	29.4	26.9	22.2	45.1	32.7
Total		24.4	26.5	26.4	19.5	38.5	42.1

Table 16: Change in journey time to school, by (former) VDC (fixed in wave 1)

5.1.3 Regression analysis: water

Regression analysis revealed a few **water-related** explanatory variables that significantly correlated with changes in the time taken on a round trip to collect water. Changing to a worse water source (from tap to 'river, bottled or well') was associated with a lengthening of journey time (6 minutes longer than tap, holding all else constant). In cases where the government became responsible for providing and maintaining the water source between waves (or was perceived to be doing so), journey times also lengthened. Experiencing a problem with water in the past year was also associated with a longer return trip to water sources. Other water-source-related factors, such as having to queue or pay for water, were not significantly associated with changes in journey time.

A couple of **economic** explanatory factors were also identified. An increase in wealth (as measured by the Morris index) is associated with shorter journeys to fetch water. However, experiencing an economic shock (inflation or a price hike) is also curiously associated with a decrease in journey time.

Looking to the RE regressions, primary-educated households are associated with slightly longer journeys to water than non-literate households. As with health and education services, location matters when accessing services – households in Rolpa tended to be further away from water sources than those in Ilam, while households in Bardiya tended to be closer.

5.1.4 Regression analysis: social protection

Regressions were run on whether a household receives *any* social protection transfer as the outcome variable. As a result, some of the results are indicative of targeting criteria for different social protection programmes, and thus suggest that social protection transfers may be well targeted. For instance, households that increase in size and in the dependency ratio (the number of children and elderly for every working-age adult) increase the odds of receiving social protection. Similarly, looking to the RE logit model, female-headed households are six times more likely to receive a social protection transfer than male-headed households – which can be largely explained by being more likely to receive the single woman/widow stipend (see Table 16). Being Dalit is linked to a six times higher chance of receiving any social protection transfer, again largely explained by Dalit children being eligible for the Child grant/Dalit stipend.

Other livelihood-related factors were identified. More food insecure families are more likely to receive social protection – an increase of one point on the CSI (indicating more food insecurity) is linked to a slightly higher likelihood of receiving social protection transfers.

Households that have experienced a natural shock are more likely to access social protection. Those who feel safe going out of the village are also more likely to receive transfers.⁴

Education level was found to be statistically significant; households with an average education level of secondary or tertiary are less likely to receive social protection transfers than non-literate households. As well as Dalit households, Madhesis were also more likely to receive social protection than Brahman/Chhetri households. Lastly, location also matters – households in Rolpa and Bardiya are more likely to receive social protection transfers than those in Ilam. Those displaced during the Ten Year War were less likely to receive social protection.

5.1.5 Regression analysis: livelihood assistance

Regressions were also run on whether a household receives any livelihood assistance as the outcome variable. Very few explanatory variables were found to be statistically significant, and notably the findings are quite different to previous analyses in wave 2.

⁴ However, this was not statistically significant in the LPM regression. Additionally, an increase in the number of shocks experienced by households is associated with a lower probability of households receiving social protection in the LPM.

An increase of one livelihood activity within a household's livelihood portfolio slightly increases the likelihood of the household receiving livelihood assistance by 21 percentage points (holding all else constant).⁵ An increase in household asset wealth (MSI) increases the likelihood of a household receiving livelihood assistance. Perhaps these two findings are indicative of the nature of livelihood assistance – supporting recipients in new or existing livelihood activities, including through tools (assets). Households being in receipt of social protection in the last year also increases the likelihood of also receiving livelihood assistance.⁶ Unlike wave 2 analyses, no risk, safety or shock factors were found to be statistically significant.⁷

Looking to the RE regressions and time-invariant household characteristics, female-headed households are more likely to receive livelihood assistance than male counterparts. Ethnicity for one ethnic group, Madhesi, has increased likelihood of receipt compared to Brahman/Chhetri households. Interestingly, secondary- and tertiary-educated households were more likely to receive livelihood assistance than non-literate households. Lastly, households in Rolpa are more likely to receive livelihood assistance than those in llam.

5.2 Changes in satisfaction with basic services

Satisfaction levels were for the most part high in all waves – seven out of ten respondents were satisfied with health overall in wave 3, nine out of ten were satisfied with schools and water. While satisfaction levels increased for all services between waves 1 and 2, they decreased between waves 2 and 3. Between waves 1 and 2, more respondents were more satisfied than less satisfied; between waves 2 and 3, more respondents were less satisfied with each of the services than were more satisfied (Table 17). The majority of respondents were always satisfied between waves (although this was lower for health services, it is still the case for almost 60% of the sample).

	Households satisfied overall by wave		Changes in satisfaction over waves 1 and 2				Changes in satisfaction over waves 2 and 3				
	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Always dissatisfied (%)	Always satisfied (%)	More satisfied (%)	Less satisfied (%)	Always dissatisfied (%)	Always satisfied (%)	More satisfied (%)	Less satisfied (%)
Health	73.2	81.6	73.9	7.5	61.2	19.5	11.9	6.7	59.9	13.1	20.3
Education	85.3	93.0	91.2	1.2	80.5	12.3	5.9	0.8	84.4	5.6	9.2
Water	89.4	90.1	86.0	2.4	82.1	8.1	7.4	3.0	79.0	6.7	11.4

Table 17: Changes in satisfaction with basic services across waves

5.2.1 Regression analysis on satisfaction with health services

The regression results identify several explanatory factors for changes in satisfaction with health services, clustered in the following section as health-service-related factors, livelihood factors, and risk, safety and shock factors.

Unsurprisingly, several **health-service-related** factors to do with the performance of the service itself were statistically significant – a change to satisfaction with number of qualified personnel has an increase in the likelihood of satisfaction with overall health (holding all else constant, the likelihood increases by 19 times), as does satisfaction with availability of medicine (8 times), and satisfaction with waiting times (4 times). Experiencing a problem with health services decreases the likelihood of satisfaction with health services, as does changing provider of the health centre to government-run.

 $^{^{\}scriptscriptstyle 5}$ However this was not statistically significant in the LPM regressions.

⁶ However this was not statistically significant in the LPM regressions.

⁷ However, this was the case in the LPM regressions, in which an increase in the number of shocks experienced by households is associated with an increased probability of households receiving livelihood assistance.

This is despite the fact that government running the health centre is related to shorter journey times – so a change to a more convenient, government-run centre may mean poorer quality/lower satisfaction with facilities.

A few **livelihood** factors were statistically significant. Increased food insecurity over time is associated with a lower likelihood of rating the health service positively. Number and type of livelihood activity were also statistically significant. An increase of one livelihood activity within the household is associated with a decrease in the likelihood of being satisfied with health services over time. A household member starting their own business increases the likelihood of satisfaction with health services, as does a member beginning to sell goods and a member entering the private sector.⁸

Of the statistically significant **risk**, **safety and shock** factors, perceptions of safety was important – feeling safe going out of the village is associated with a higher likelihood of positive satisfaction with health services. An increase in the number of crimes experienced decreases of the likelihood of being satisfied with health services.⁹ Interestingly, having a household member who experienced the earthquake *increases* likelihood of positive satisfaction with health services.

Finally, looking to the RE regressions, living in Rolpa or Bardiya increases the likelihood of satisfaction with health services, compared to Ilam. Unlike in wave 2 analyses, gender and education level were *not* statistically significant.

5.2.2 Education

There were very few statistically significant predictors of change in satisfaction with primary schools (boys and girls combined), outside of school-specific factors.

Unsurprisingly, **factors relating to school performance** such as satisfaction with number of teachers, quality of teaching staff and quality of equipment are all statistically significant and associated with an increased likelihood of satisfaction with schools overall (this is contrary to wave 2 analyses in which these variables were not significant). Again, unsurprisingly, experiencing a problem with education is related to a lower likelihood of being satisfied with education.¹⁰

A change in starting to pay official fees (as opposed to not paying official fees) for schools increases the likelihood of satisfaction with schools.

As with satisfaction with the health centre, access to the school (measured using journey time) was not significantly associated with satisfaction with the school. This result sits alongside recent evidence cited above that rural road construction in Nepal has had the effect of alleviating deprivation to some extent, but has not been found to impact health or education outcomes (Bucheli et al., 2016). As stated previously, although we do not capture these indicators in our study, our results are nonetheless consistent with the idea that reduced journey times do not necessarily equate to improvements in satisfaction with the school.

Similar to health services, having a household member who experienced the earthquake increases likelihood of positive satisfaction with school services. Unlike wave 2 analyses, no variables related to security were statistically significant.

Drawing on the RE regressions, only a couple of time-invariant or household characteristics were significant. One ethnic group was found to be statistically significant – Dalit respondents were more likely to be satisfied with school quality than the reference category Brahman/Chhetri respondents. This

⁸ However, none of the control variables related to livelihood activity was statistically significant in the LPM model. Food insecurity was statistically significant in both types of regressions. In the LPM model, two extra economic variables were additionally statistically significant: a 1% increase in the Morris Index between waves was associated with a higher likelihood of satisfaction with health services, and having a recent internal migrant leave the household between waves is also associated with a higher likelihood of satisfaction with health services.

⁹ However, neither feeling safe leaving the village nor the number of crimes experienced was statistically significant in the LPM model.

¹⁰ However, in the LPM model, none of these factors relating to school performance were statistically significant.
may reflect different expectations of service quality among these groups, since the expectation of 'group-based distributive injustice' is deeply entrenched in Nepal (Fisk and Cherney, 2016). In other words, as a result of historical experiences, the expectations of some groups (e.g. Dalits, Janajati) may be lower than others (e.g. Brahman/Chhetri), and hence easier to meet or surpass in the present. There might be other explanations behind Dalit respondents being satisfied with school quality, in that they are more likely to get scholarships stipends, which could influence their overall satisfaction with the school (even if on paper scholarships/stipends are in fact a separate social protection policy). Finally, those in urban areas were more likely to be satisfied than in rural areas.

5.2.3 Water

The regressions run on satisfaction with water – whether it is clean and safe – found only a few explanatory factors to be statistically significant, clustered around water source related factors, safety factors and respondent characteristics.

A couple of **water source-related** explanatory factors include changing to paying for drinking water – associated with a lower likelihood of satisfaction with water. Experiencing a problem with water also decreases the likelihood of satisfaction with water. Other changes to aspects of the water service were not significantly related to changes in satisfaction, notably having to queue for water, changes in the type of source or provider of source, and time taken to collect water.

Unlike wave 2 analyses, no livelihood-related variables were significant.

Safety emerged as an explanatory factor but showed mixed results. An increase in the number of crimes experienced decreased the likelihood of perceiving water to be clean and safe,¹¹ however more counterintuitively, feeling safe in the village was associated with *lower* satisfaction with water.

As with satisfaction with other services, looking to RE regressions and time-invariant **respondent characteristics**, location was linked to likelihood of satisfaction with water – living in Rolpa decreases of the likelihood of being satisfied with water (compared to llam), as does living in an urban area compared to rural areas. One ethnic group was found to be statistically significant – Madhesi respondents were more likely to be satisfied with water than the reference category Brahman. Finally, older respondents were slightly less likely to agree with the statement that water is clean and safe.

5.3 Key findings on changes in access to and satisfaction with basic services, social protection and livelihood assistance

Across the three survey waves, there was little change in terms of the services being used by respondents –around 90% of respondents were using the same health centre, school or water source in wave 3 compared to wave 2. On average: journeys to health centres increased in wave 2 but reduced in wave 3, compared to wave 1 levels; journeys to schools stayed the same; and round trips to water sources drastically reduced in wave 2 and stayed constant in wave 3. Yet most respondents saw their journeys increase or decrease by more than 5 minutes between waves, implying routes frequently change. Fewer respondents accessed social protection, while more received livelihood assistance across the waves. Satisfaction with basic services was high, although slightly decreased across the board between waves 2 and 3.

The results of the regressions and other analysis lead us to the following additional conclusions on what appears to drive changes in access and satisfaction.

¹¹ However number of crimes experienced was not statistically significant in the LPM.

Accessibility in Nepal is not about distance

Paying fees for water and schools were linked to access, in particular longer journey times. Meanwhile the government being perceived to provide health was associated with shorter journey times, but longer journey times for government run water sources. Unsurprisingly, wealthier households tend to have shorter journeys to their drinking water source, meanwhile having a recent household member internally migrate is linked to shorter journeys to health centres and schools.

In the case of drinking water, we find that fee-paying, which is another indicator of accessibility, is related to satisfaction, in that those who started paying fees for water were less satisfied with its quality. Meanwhile in the case of schools, we find that paying official fees is related to satisfaction in that those who start paying fees are more satisfied with its quality.

The importance of frontline officials/day-to-day experience

There was a considerable amount of change with regard to who was perceived to run each of the services. In the case of the health services, if the government was perceived to have started running it, respondents were less likely to be satisfied with its quality.

We also find that improvements in people's day-to-day experience with the health centre are linked to improvements in overall satisfaction. This includes the number of qualified staff, waiting times and the availability of medicines. Unlike in wave 2 analyses, satisfaction with schools is also found to be linked to improvements in frontline aspects of service delivery. This includes the quality of school equipment and numbers and quality of teachers. Other aspects such as class size and quality of school infrastructure were, however, not statistically significant.

Unsurprisingly, whether or not the sample experienced problems with health, water or education services was a key explanatory factor – those who experienced a problem with the service were less likely to be satisfied with the service.

Security concerns are associated with service satisfaction, but less so with journey times

Subjective perceptions of safety and the number of crimes in an area are related to satisfaction with both health services and water source. For health, experiencing less crime and feeling safer are associated with positive satisfaction with the service. For water, experiencing more crime is similarly negatively associated with satisfaction; however, curiously, feeling safer is also negatively associated with satisfaction with terms of access, experiences of fighting in the area were associated with shorter journeys.

6 Changes in perceptions of governance and state legitimacy

The third thematic area explored by the SLRC survey was people's perceptions of government actors, and more broadly state legitimacy. The following analysis draws on both descriptive statistics and regression analysis to explore what factors influence change in people's perception of government actors.

Between waves 2 and 3, Nepal transitioned into a federal structure, with territorial boundaries redrawn and levels of government restructured. In 2018, when the third wave survey was conducted, there were four levels of government: ward, local, provincial and central (compared to the previous structure of just local and central government). This clearly has implications for comparing differences between waves and needs to be taken into consideration when interpreting findings. In the third wave of the survey, respondents were additionally asked about their perceptions of the new levels of government: ward and provincial.

Another addition to the third wave of the survey was new questions on state legitimacy. In the following, we present descriptive statistics and (cross-sectional) regression analysis on this additional data from one time point only, in 2018.

We begin by considering changes in civic participation over the three waves.

6.1 Civic participation

Updated results on civic participation that include wave 3 respondents are displayed in Table 18.

Table 18: Problems and knowledge of participatory procedures

	Wave 1 average	Wave 2 average	Wave 3 average	% with fewer in wave 3 compared to wave 2	% with more in wave 3 compared to wave 2
Number of problems	0.73	0.82	0.85	28.6	31.7
Number of grievance mechanisms known about	1.89	2.61	3.07	35.4	44.1
Number of meetings known about	0.88	0.99	0.8	36.3	25.8
Number of different services consulted about	0.38	0.53	0.45	26.5	21.2

Note: Each respondent could have a score of between 0 and 5 for each of these indicators, i.e. for up to five services.

Problems experienced with services

On average, wave 1 respondents reported 0.7 problems, this increased marginally to 0.8 problems in wave 2 and once again to 0.9 problems in wave 3. A two-sample t-test on the difference of means between waves was run, finding that the difference in the mean number of problems between waves 1 and 2 was statistically significant (p value< 0.01), but not statistically significant between waves 2 and 3. Between waves 2 and 3, 32% of respondents reported more problems with services between waves, and 29% fewer, meaning that it is not always the same people who experience problems (a similar pattern was witnessed between waves 1 and 2).

While problems with health services remained the most prevalent in wave 3, the service which saw the biggest increase in reported problems was livelihood assistance (Table 19). Looking at breakdown by (former) VDC, there is considerable variation across localities, notably an increase in problems with livelihood assistance in wave 3 of 20 percentage points in Budagaun, Rolpa.

Table 19: Problems with services

Problems with services	Wave 1 %	Wave 2 %	Wave 3%
Health	30.3	26.5	28.2
Education	9.8	11.4	8.3
Water	19.0	23.8	23.2
Social protection	4.8	5.1	4.5
Livelihood assistance	8.8	15.7	21.8

Grievance mechanisms

The average number of grievance mechanisms respondents knew about went up from 1.5 mechanisms in wave 1, to 2.6 in wave 2, to 3.1 in wave 3. A two-sample t-test found the difference in the mean number of problems between waves 1 and 2, and between waves 2 and 3 were both statistically significant (p value< 0.01); 44% reported knowledge of more complaints procedures in wave 3 compared to wave 2 (with 35% reporting knowledge of fewer).

Table 20: Knowledge of grievance mechanisms

Knowledge of grievance mechanisms	Wave 1 %	Wave 2 %	Wave 3%
Health	43.4	59.3	66.7
Education	44.7	62	79.3
Water	45.6	55.1	57.8
Social protection	40.3	63.7	69.9
Livelihood assistance	26.9	33.9	40.3

Knowledge of grievance mechanisms improved for all services between wave 2 and wave 3, following the pattern in wave 2 (Table 20). Notably, nearly 80% of respondents knew of a grievance mechanism for education in wave 3, compared 45% six years prior. The service with the lowest knowledge among respondents of grievance mechanisms was livelihood assistance, an interesting trend considering the increases in problems with livelihood assistance.

Over a third of respondents who experienced a problem with the water service and also knew of a complaint procedure actually made a complaint in wave 3. This echoes wave 2. Although numbers were low (around 100 respondents), there was an increase of 11 percentage points to 30.5% of respondents who made a complaint about social protection (of those who experienced a problem and also knew of a grievance mechanism) between wave 2 and wave 3. For all services, the proportion of respondents who made a complaint about any service (of those who experienced a problem with the service and knew of a complaint procedure) was higher in wave 1, than in waves 2 and 3.

Meetings about a service

Knowledge of meetings slightly decreased in wave 3 compared to wave 2 (after slightly increasing from wave 1 to wave 2), and for all services over half of respondents who knew about a meeting had attended it – up to 73% about water. Only 4% of respondents knew of a meeting about livelihood assistance.

Consultations about a service

Fewer respondents reported having been consulted about a service in wave 3 than wave 2 (compared to a slight increase from wave 1 to wave 2), however numbers remained low. The largest decline in consultation was about health services – from 14% to 8.5% of respondents in wave 3.

6.2 Changes in perceptions of government

6.2.1 Changes in perceptions of local government

Following the pattern from wave 1 to 2, fewer respondents had a negative perception of local government in wave 3: in wave 1, 57% stated that the decisions of the local government never reflected their priorities; this dropped to 38% in wave 2 and to 25% in wave 3 (Figure 18). The proportion of those expressing a positive opinion of the local government that it reflected their priorities to a 'large extent' or 'completely' similarly improved once again in wave 3 - from 4% in wave 1, 8% in wave 2, to a notably higher 19% in wave 3, although this is still lower than those who have a negative perception of local government.

Looking at individual changes in perception over time, between waves 2 and 3 (Table 21), the largest proportion (42%) had a more positive perception than previously (on the scale from 'never' to completely'), compared to 25.3% with a less positive perception between waves.

Whether or not the respondents agreed with the statement that 'the local government cares about my opinion' also improved in wave 3 (following the trend in improvement over time in wave 2). In wave 1, 34% perceived that local government cares about their opinion, rising to 44% in wave 2, and again rising to 60% in wave 3. By wave 3, the majority of respondents stated that local government does care about their opinion. Between wave 2 and wave 3, 31% switched from a negative to a positive perception of whether local government reflects their priorities, and 17% became more negative.

A general improvement in perceptions of local government is also reflected when respondents were themselves asked to evaluate their change in opinion over the last three years. In wave 2, 24% stated they thought the local government cared more (and 13% cared less), meanwhile in wave 3, 43% felt the local government cared more (and 10% cared less).



Figure 18: Perceptions of local government, by wave



The local government cares about my opinion

Table 21: Changes in perceptions of local government over waves

	(Changes, waves 1 to 2		Changes, waves 2 to 3
	The decisions of local government reflect my priorities (%)	The local government cares about my opinion (%)	The decisions of local government reflect my priorities (%)	The local government cares about my opinion (%)
No change	39.7	58.5	32.8	51.7%
More negative	18.3	14.6	25.3	16.9%
More positive	42	27	41.9	31.4%
Total	100	100	100	100

Notes: The first of these indicators (the government's decisions reflect my priorities) can take five different values from 'Never/not at all' to 'Always/completely'. The second indicator is binary, with simply a 'yes' or 'no' response. For this reason, we see much more switching of responses between waves in the first indicator (42% improved their opinion by the first indicator while this was only 31% for the second indicator). However, a positive change on the first indicator could be a change from 'Never' to 'Always', which is to say we do not differentiate here between a large change of opinion and an incremental one.

Two regressions were run to identify factors that were associated with changes in perceptions of whether local governments' decisions reflect respondents' priorities and perceptions of whether the local government cares about a respondent's opinion.

Firstly, several **service-related** variables were statistically significant. Paying fees for health services was associated with a lower likelihood of a positive perception of local government – having to pay *informal* payments has lower odds of positive perceptions of local government reflecting priorities. Moreover paying *official* fees for health services is associated with lower likelihood of positive perception of local government caring about opinions. For perceptions of local government caring about opinions, satisfaction with health is also statistically significant, doubling the likelihood of positive perceptions.

Changing water source to tube or well (compared to reference category tap) was also statistically significant in both regressions, and positively associated with perceptions of local government, increasing the likelihood of positive perceptions. This is perhaps curious, considering that tube or well would be considered a worse water source than tap.

An increase of in the number of meetings about services known about by one meeting was associated with an improvement in the likelihood of perceptions of local government in both regressions.¹²

Secondly, a handful of **economic** factors were also identified. Perceptions of local government was positively associated with wealth, an increase in the MSI is associated with an increase in the likelihood that respondents perceive local government to reflect their priorities *and* care about their opinions. Experience of migration was also found to be positively associated with perceptions: having an international migrant leave the household in the past three years increases the likelihood of positive perceptions of local government reflecting priorities, meanwhile respondents' households receiving remittances also increases the odds of stating local government cares about their opinions.

Respondents in households that have increased the number of livelihood activities are more likely to have a positive perception of local government reflecting priorities *and* caring about opinions. For perceptions of local government caring about opinions only, type of livelihood activity in the household is also statistically significant: having a household member enter an insecure type of employment, namely enter own cultivation, casual labour or selling goods, is thought to lower the likelihood of stating local government cares about their opinions.¹³

¹² It should be noted that in the LPM regressions, no service-related variables were statistically significant for the outcome variable 'does the local government care about your opinions?'. For 'does the local government reflect your priorities?', the statistically significant findings were similar, apart from switching water source which was not significant.

¹³ While many economic/livelihood variables were statistically significant for 'does the local government reflect your priorities?' in the logistic regressions, only the logged Morris index was also statistically significant in the LPM regressions – associated with a higher likelihood of perceiving the government to reflect your priorities.

Shock-related factors were identified only for perceptions of local government reflecting priorities. Having a household member who experienced the earthquake decreases the likelihood of perceiving that local government reflects priorities. More curiously, experiencing an economic shock increases the likelihood of perceiving the local government to reflect priorities.¹⁴

Looking to the RE regressions, several time-invariant factors were identified. Education was a predictor of perceptions of local government – but only one education level was statistically significant. Respondent education level of higher than SLC (tertiary) increases the likelihood of positive perceptions of local government (for both the reflecting priorities *and* caring questions) compared to reference category non-literate.

Somewhat surprisingly, ethnicity does not correlate with perceptions of local government.

Unsurprisingly, location was a key determining factor of perceptions of local government. Respondents living in urban areas (fixed in wave 1) are less likely to hold positive perceptions of local government (in both regressions), compared to those in rural areas. The same can be said of respondents living in Rolpa (fixed in wave 1) compared to those in Ilam. Additionally, those who moved between waves have a lower likelihood of perceiving local government to reflect their priorities.

6.2.2 Changes in perceptions of central government

Similar to perceptions of local government, perceptions of central government have improved across waves: 70% in wave 1 felt that the decisions of central government *never* reflected their priorities, this was 59% in wave 2, and dropped to almost half of wave 1 (37%) in wave 3 (Figure 19). The proportion of respondents who answered 'to a large extent' or 'completely' increased from 3% in wave 2 to 8% in wave 3, yet this remains lower than the proportion answering 'never'; those who answered 'completely' remained low across time, between 0.1% and 0.4% in all waves.

Between waves 1 and 2, 32% of respondents had a more positive perception of whether decisions of central government reflected their priorities compared to 19% who had a lower perception (Table 22). This trend continued between waves 2 and 3, with 46% of respondents having a more positive perception and 19% more negative.

Whether or not respondents perceive the central government 'cares about my opinion' remains negative on the whole, but improved in wave 3, considerably more so than the very slight improvement between wave 1 and wave 2. In wave 1, 21% believed that central government cares, rising slightly to 22% in wave 2, and rising more considerably to 40% in wave 3. Between wave 2 and wave 3, 31% switched from the 'no' to 'yes' category, compared to 12% who had become more negative. A general improvement in perceptions of central government is also reflected when respondents were themselves asked to evaluate their change in opinion over the last three years. When asked if they perceived the central government to care more less than three years ago, 60% said it cared the same amount, 11% said less and 29% said more.

¹⁴ These shock-related variables were not statistically significant in the LPM.

Figure 19: Perceptions of central government, by wave



The local government cares about my opinion

The decisions of local government reflect my priorities

Table 22: Changes in perceptions of central government across waves

		Changes, wave 1 to 2		Changes, wave 2 to 3
	The decisions of central government reflect my priorities (%)	The central government cares about my opinion (%)	The decisions of central government reflect my priorities (%)	The central government cares about my opinion (%)
No change	49.1	56.3	34.8	57.3
More negative	19.4	15.7	19.4	11.7
More positive	31.5	28.0	45.7	30.9
Total	100	100	100	100

Tables 23 and 24 show the differences in perceptions of central government, by ethnicity of respondent (with wave 1 and wave 3 ethnicity classifications, respectively). In general, perceptions of central government improved across waves for all ethnic groups. Interestingly, there is a stark increase in proportion of Madhesi or Terai/Madhesi Janajati/Adivasi respondents with positive perceptions, from one of the lowest in wave 1 to one of the highest in wave 3. This is curious given that Madhesis came out in protest against the 2015 Constitution – during the second wave data collection.

Table 23: Changes in perceptions of central government by ethnicity of respondent (wave 1 classifications)

Ethnicity of respondent (wave 1 categories)	Decisions of central government <u>do</u> reflect my priorities (%)			Central government <u>does</u> care about my opinion (%)		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Brahman/Chhetri	30.2	42.8	65.8	23.1	22.5	43.2
Janajati/indigenous	31.8	38.4	62.2	21.1	19.4	40.7
Dalit	32.6	40.4	53.6	25.3	26.6	36.7
Madhesi	16	41.6	68.4	5.6	23.7	35.3
Muslim	23.3	36.9	71.2	15.3	28.2	27.3
Total	30.2	40.7	63.3	21.2	21.8	40.6

Table 24: Changes in perceptions of central government by ethnicity of respondent (wave 3 classifications)

Ethnicity of respondent (wave 3 categories)	Decisions of	Decisions of central government <u>do</u> reflect my priorities (%)			Central government <u>does</u> care about my opinion (%)		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3	
Hill High Caste	32	41.9	66.9	25.4	21.8	45.3	
Hill Janajati/Adivasi	34	39.8	59.3	25.6	21.6	40.8	
Hill Dalit	35.1	41.7	56	25.9	26.6	38.3	
Terai/Madhesi Janajati/Adivasi	24	36.5	64.4	10.7	18.8	36.3	
Terai/Madhesi Dalit	15.4	65.5	60.2	7.1	39.3	40.8	
Musalman	25.8	38.1	68.4	14.9	27	27.4	
Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung)	0	100	73.4	25	50.1	44.9	
Total	30.2	40	63.3	21	21.5	40.6	

Note: Marwadi, Terai/Madhesi Dalit should be interpreted with caution as the n was very small (less than 20).

Table 25 shows perceptions of central (and local) government, by gender. Across the board in all three ways, female respondents are less likely than men to perceive the government cares about their opinions. However, in wave 1, the difference in proportions of male and female respondents perceiving central government to reflect their priorities and care about their opinions is not statistically significant.

Table 25: Changes in perceptions of government by sex of respondent

Sex of respondent	Decisions of local government <u>do</u> reflect my priorities (%)			Local government care about my opinio		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Male	47.5***	64.6**	76.8*	35.7*	46.7**	61.7**
Female	39.7***	60.6**	73.6*	32.1*	42.2**	57.7**
	Decisions of central government <u>do</u>				Central gover	rnment <u>does</u>

Sex of respondent	reflect my priorities (%)			care about my opinion		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Male	31.7	43.7***	65.4**	22.4	25.4***	42.5**
Female	29.0	38.0***	61.5**	20.1	18.8***	39.1**

Note: A two-sample proportion test for each statement tests the difference in proportions of male and female respondents for each wave. Statistical significance stars are indicated in the table where: ***p<0.01, **p<0.05 and *p<0.1.

Two regressions were also run to identify which factors were associated with changes in perceptions of central government.

A few **service**-related variables were identified for perceptions of central government caring about opinions. Similar to perceptions of local government caring, satisfaction with overall health centre strongly increased the likelihood of respondents perceiving the central government to care about their opinions. Meanwhile, and again similar to local government, paying fees for health services reduced the likelihood. Interestingly, changing water service provider to the government also reduces the likelihood of perceiving central government to care about opinions.

Respondents knowing of more meetings about services increases the likelihood of perceiving central government to care about opinions, a similar trend to perceptions of local government. Additionally, an

increase in the knowledge of grievance mechanisms increases positive perceptions (but by a smaller margin).¹⁵

Just one service-related variable was statistically significant for perceptions of central government reflecting priorities – a change in receiving social protection, compared to not receiving social protection is associated with a lower likelihood of perceiving the central government to reflect the respondents' priorities.¹⁶

A couple of economic factors were identified for perceptions of central government reflecting priorities. An increase in wealth (as measured by the Morris Index) was associated with a higher likelihood in perceiving the central government to reflect priorities. Type of livelihood also mattered: having a household member engaged in selling goods *increased* the likelihood of positive perceptions.¹⁷ For perceptions of central government caring about opinions, an increase in the number of activities in a household's livelihood portfolio between waves was associated with improved perceptions.¹⁸ However, a household member beginning to engage in own cultivation, casual labour, their own business or private sector work is associated with *lower* likelihood of positive perceptions.¹⁹

A handful of factors related to shocks and safety were also statistically significant. Experiencing fighting in the last three years was associated with worse perceptions of central government (caring about opinions) and experiencing more crimes is linked to worse perceptions of central government (reflecting priorities).

For both central government regressions, having a household member who experienced the earthquake decreases the likelihood of positive perceptions. Meanwhile, similar to perceptions of local government (reflecting priorities), an increase of one economic shock experienced increases the likelihood of positive perceptions of *central* government.²⁰

Finally, looking to time-invariant factors in the random effects models, ethnicity, gender and location had explanatory power. Madhesi respondents were more likely to state the central government reflects their priorities, compared to the reference category Brahman/Chhetri. Female respondents were linked to a lower likelihood of positive perceptions of central government in both regressions.

Similar to perceptions of local government, those living in an urban area and those who have moved between waves were less likely to have positive perceptions of central government. Living in Bardiya and Rolpa is associated with lower perceptions of central government, compared to reference category llam. Those displaced during the ten-year war are also less likely to perceive central government cares about their opinions.

6.2.3 Government Perception Index (GPI)

Based on the four government perception variables common to the survey instruments in all three waves (extent local and central government reflect priorities/care about opinions), a government perception index (GPI) was created, using Principle Component Analysis (as detailed in Appendix 4). The GPI ranges from -1 (negative perceptions of governance) to 1 (positive perceptions of governance).

¹⁵ It should be noted that only one service-related variable – an increase in the number of grievance mechanisms known about was also statistically significant in the LPM regression for government caring about opinions.

¹⁶ This was not statistically significant in the LPM regression.

 $^{^{\}mbox{\scriptsize 17}}$ This was not statistically significant in the LPM regression.

 $^{^{\}mbox{\tiny 18}}$ This was not statistically significant in the LPM regression.

¹⁹ Only entering own business was also statistically significant in the LPM regressions, associated with worse perceptions of central government caring about opinions.

²⁰ Out of all of the risk, shocks and security variables, only one – experiencing an earthquake – was also statistically significant in the LPM regressions for both central government reflecting priorities *and* caring about priorities.

The GPI shows improvement in perceptions of government over time, yet on average perceptions remain closer to -1 than +1 (Table 26). Figure 20 illustrates this with a kernel density plot of the GPI in waves 2 and 3. A two-sample t-test on the difference of means between waves was run, finding that the difference in the mean GPI in wave 1 and wave 2 was statistically significant (p value< 0.01), and similarly statistically significant between waves 2 and 3.

Looking at individual changes, between waves 2 and 3, 58% improved in perceptions of government, compared to 31% who had lower perceptions of government in wave 3.

Table 26: Changes in average Government Perception Index (GPI)

Wave	Weighted mean GPI1
1	-0.61
2	-0.48
3	-0.23

Figure 20: Changes in average Government Perception Index, wave 2 and wave 3 (kernel density plot)



We conducted regression analysis with the GPI as the outcome variable, to identify explanatory variables.

Only a couple of **service**-related variables were identified. Interestingly, receiving livelihood assistance in the last year is linked to an increase in GPI, holding all else constant. An increase of one meeting about services known about is also positively associated with the GPI.

Just one **shock**-related variable was identified – having a household member experience the earthquake is negatively associated with government perceptions.

No economic variables were statistically significant.

Several **respondent characteristics** were identified. Secondary- and tertiary-educated respondents have better government perceptions than non-literate respondents. Figure 21 shows the GPI by education level, suggesting that GPI is correlated with education level.



Figure 21: Government Perception Index (GPI), pooled, by education

Female respondents have a lower GPI than their male counterparts.

Ethnicity was statistically significant only for Madhesi (and the 'other' category) in the GPI (as well as perceptions of central government), associated with better perceptions of central government than the reference group Brahman/Chhetri.

Finally, living in an urban area is associated with a lower GPI compared to rural areas, as well as moving home between waves. Respondents living in Rolpa or Bardiya have lower perceptions of government than those in reference district, Ilam.

6.3 Perceptions of ward-level and provincial governments (wave 3 only)

Nepal transitioned towards a federal structure between waves 2 and 3, with two additional levels of government: ward and provincial.

6.3.1 Perceptions of provincial-level government in 2018

When asked to what extent the provincial governments' decisions reflect their priorities, the majority (60%) replied 'never' or 'almost never', with 9% stating 'to a large extent', and just 0.5% 'completely'.

When asked whether the provincial government cares about their opinion, the majority of respondents stated no, meanwhile the majority stated that the ward-level government *does* care about their opinion. Comparing this question across levels of government shows more positive perceptions for ward-level and local government, and more negative perceptions across provincial and central government.



Figure 22: Does the government care about your opinion, by government level, by gender, wave 3 only





What explains perceptions of provincial government? Two regressions were run to identify which factors were associated with perceptions of whether the provincial level government cares about a respondent's opinion and perceptions of whether its decisions reflect his or her priorities. Since these regressions were run using wave 3 data only, wave 3 classifications of ethnicities were used.

Several service-related variables were identified. Being satisfied overall with the health service is positively associated with the provincial government (in both regressions). Access to health services was also identified: paying official fees for the health centre was also positively associated with perceiving the provincial government to reflect priorities, meanwhile an increase in journey time to the health centre was associated with lower likelihood of perceiving the provincial government to care about their opinions, but only very slightly.

Water source was also an explanatory factor - those in the sample with a tube, well, river, bottled or other water source were less likely to hold positive perceptions of the provincial government (in both regressions). Interestingly, those who pay for drinking water were *more* likely to perceive the provincial government to reflect their priorities.

Recipients of livelihood assistance were twice as likely to state the provincial government reflects their priorities.

Civic participation and grievance mechanisms were also significant. Being consulted about a service was associated with more positive perceptions of provincial government in both regressions. Similarly, an increase in the number of grievance mechanisms known about by respondents is associated with a higher likelihood that the provincial government reflect their priorities. Meanwhile, more counterintuitively, an increase in the number of problems with services, by one problem, was also associated with higher odds.

Several **economic** factors were also identified. Receiving remittances was positively associated with perceptions of provincial government in both regressions, meanwhile wealth was also associated with a higher likelihood of perceiving the provincial government cares about their opinions. Food insecurity was negatively associated – a higher score on the CSI was associated with lower odds of perceiving the provincial government to reflect opinions.

For perceptions that the provincial government reflects opinions, several **shocks** were statistically significant: an increase in the number of shocks experienced lowers the likelihood of positive perceptions, as does having a household member who experienced the earthquake. However, more curiously, experiencing a health shock or an economic shock is linked to an *increase* in the odds of positive perceptions.

Also curiously, feeling safe in the village is associated with an increase in the likelihood of perceiving the provincial government to care about opinions but a *decrease* in odds of reflecting priorities.

Perceptions of safety were also identified – experiencing more crimes decreases the likelihood that respondents state the provincial government cares about opinions, and feeling safe increases the likelihood. However, more curiously, feeling safe in the village decreases the likelihood of stating the provincial government reflects priorities.

Finally, several respondent characteristics were identified in regression analysis. Female respondents were less likely to have positive perceptions of provincial government. Primary educated respondents were less likely than non-literate respondents to perceive the provincial government to care about their opinion.

Living in an urban area is associated with lower likelihood of positive perceptions of provincial government than rural areas, as does living in Rolpa compared to Ilam. Further being displaced in the ten-year war was associated with a lower likelihood of stating the provincial government cares about respondents' opinions.

6.3.2 Perceptions of ward-level government in 2018

What explains perceptions of **ward-level government**? One regression was run to identify which factors were associated with perceptions of whether ward level government cares about a respondent's opinion. In comparison to the provincial government regressions, relatively few explanatory factors were identified.

Similar to local, provincial and central government, being satisfied with the health service increases the likelihood of positive perceptions of ward-level government (caring about their opinions). An increase in the number of problems experienced decreases the likelihood of positive perceptions of ward level government.

Wealth or **economic** factors are also positively associated with perceptions of ward-level government. Both improvements on the MSI and receiving remittances increase the likelihood of positive perceptions.

Interestingly, no shocks or exogenous factors were statistically significant, although several **respondent characteristics** were. Female respondents were less likely to perceive the ward-level government cares about their opinions, compared to their male counterparts. Just one ethnic group – Hill Janajati/Adivasi was statistically significant, linked to higher perceptions of ward-level government, compared to reference category Hill High Caste.

Similar to other levels of government, perceptions of ward level government are more negative for respondents in urban areas, compared to rural areas, and lower in Rolpa than Ilam.

6.3.3 Government perception index for all levels of government in 2018

An additional government perception index (GPI3) was created, based on the nine government perception variables in the wave 3 survey instrument (extent ward-level, local, provincial and central government reflect priorities/care about opinions), using wave 3 data only from 2018. This additional GPI3 similarly ranges from -1 (negative) to 1 (positive) and was also created using Principle Component Analysis. The mean GPI3 was -0.17.

Regressions were run to identify factors that were associated with perceptions of all levels of government in 2018, with GPI3 as the outcome variable.

Satisfaction with health services *and* water quality are positively associated with the GPI3. More services consulted about is also positively associated with perceptions of all levels of government in 2018, as is receiving livelihood assistance. Looking into recipients of livelihood assistance in more detail, descriptive statistics show that recipients of livelihood assistance have a higher mean GPI (and SLI, as discussed in Section 6.4.1 below) than non-recipients. This difference in means is statistically significant (p<0.01) (Table 27).

Mean government perception index (GPI1)	Not recipient of livelihood assistance	Recipient of livelihood assistance		
Wave 1	-0.64***	-0.50***		
Wave 2	-0.5***	-0.38***		
Wave 3	-0.28***	-0.01***		
Mean SLI				
Wave 3	5.03***	5.12***		

Table 27: Average GPI and SLI, for recipients and non-recipients of livelihood assistance

Note: A two-sample t test for the difference of means between the two groups: recipients of livelihood assistance and non-recipients of livelihood assistance. Statistical significance stars are indicated in the table where ***p<0.01, **p<0.05 and *p<0.1.

Wealth too is associated with a higher GPI3 score. No risk, safety or shock factors were statistically significant, but several respondent characteristics with identified. Female respondents were less likely to have positive perceptions of government compared to male respondents. Living in Bardiya was associated with worse perceptions compared to living in reference district llam, as does living in an urban area.

Ethnicity was not statistically significant in the regression based on wave 3 ethnicity classifications, but looking additionally at a regression including wave 1 classifications of ethnicity, being Madhesi was positively associated with the GPI3 (as was the 'other' category), compared to reference category Brahman/Chhetri.

6.4 State legitimacy

In previous waves of the SLRC survey, questions of perceptions of local and central government were analysed as a proxy for perceptions of state legitimacy. In wave 3, an additional module on legitimacy of the state was included in the survey. State legitimacy was theorised following Beetham (1991) as a threefold concept, comprising perceptions of state consent, legality and justification (Figure 24). Questions were accordingly designed to encapsulate these three aspects of state legitimacy. The additional module also asked respondents for their opinions on the introduction of federalism in Nepal since the previous wave of the survey in 2015.

Figure 24: Beetham's state legitimacy



In the following section, descriptive statistics from this new module will be summarised before the regression results of a state legitimacy index, based on wave 3 data only.

Consent: voting and participation in protests

A remarkable 92% of respondents reported they voted in the 2017 elections (Figure 25). Slightly more women voted than men. An interesting trend is in education level: higher levels of education correlate with *lower* likelihood of voting.



Figure 25: Voting in the 2017 elections, by education level

Only 14% of respondents were aware of peaceful protests against the government in the past three years. Of these, 34% have taken part in a protest – 37% of men and 31% of women. Men were also more likely to say that they would participate in a future protest than women (35% compared to 27%).

Legality: trust in public entities and views of national elections

Levels of trust in public entities were high among the sample, with over two thirds trusting or completely trusting the armed forces, police or the courts (Table 28). Trust was lowest for police, and lower for female respondents except for police where trust levels were the same between genders. Trust was highest in Bardiya and lowest in Rolpa, where trust in police was 55%.

		Gender of respondents		D	1)	
	Total (%)	Male (%)	Female (%)	Rolpa (%)	Bardiya (%)	llam (%)
Police	67	67	67	55	73	68
Armed forces	77	80	74	67	82	78
Courts	72	74	71	68	76	71

Table 28: Level of trust in public entities, wave 3 only

Note: This table shows the percentage of respondents who stated 'completely trust' or 'trust'.

There was also variation in ethnicity, with trust lowest among Hill Dalits (average 66%), and highest among Terai/Madhesi/Janajati/Adivasi (77%) and Musalman (78%).²¹

Perceptions of fairness around national elections were fairly positive, with a majority perceiving the vote count to be done fairly either 'often' or 'always' (88%). Again there is variation among sample districts: 92% in Bardiya, to 89% in Ilam, and 79% in Rolpa; 15% of respondents felt that the vote is rarely or never counted fairly. Perceptions of the run-up to elections differ considerably also across district (Table 29). National elections are perceived to be conducted more freely by respondents in Bardiya, compared to Rolpa, where for instance 16% of the sample felt that voters are threatened with violence.

Table 29: Perceptions of run-up to elections, by district

	District (fixed wave 1)			
	Rolpa	Bardiya	llam	Total
News rarely or never treats opposition candidates fairly	40%	26%	30%	30%
Voters are all the time or often threatened with violence	16%	3%	7%	7%
Voters are all the time or often offered money to vote for a candidate	22%	10%	17%	15%

Justification: rights, citizenship and punishment

In terms of rights and citizenship, 87% of respondents felt that they could get citizenship as easily as other Nepalis, regardless of ethnicity. Unsurprisingly there were variations across ethnic groups. While 2% of Hill High Caste felt that they disagreed or strongly disagreed that they could not get citizenship as easily as other Nepalis, 7% of Hill Dalits felt this was the case, 10% of Terai/Madhesi Janajati/Adivasi and 19% of Musalman (note the sample size was too small to draw conclusions from the other groups). When asked if registering a child at the government office is an equal process in terms of it taking the same amount of time and money for the respondent as for everyone else, a similarly high proportion (89%) responded affirmatively. When asked about citizenship for mixed heritage (Nepali and non-Nepali parents) children, 20% disagreed or strongly disagreed that the child should get Nepali citizenship. More men (22%) disagreed than women (18%). Looking at breakdown by ethnic group, more Hill Dalits disagreed (30%), followed by Hill Janajati/Adivasi (25%), Hill High Caste (19%), Musalman (16%) and Terai/Madhesi Janajati/Adivasi (13%).

²¹ Trust in entities was higher among Terai/Madhesi Dalit and Marwadi/Bengali/Ounjabu, but the sample size was too low (18 and 5 respondents respectively) to draw conclusions.

When asked whether or not someone not paying taxes should be fined, the majority felt they ought to be fined. Responses were more mixed as to whether someone criticising the prime minister ought to be punished, 37% strongly agreed or agreed, while 45% disagreed or strongly disagreed. Finally, if someone is caught trying to convert a Nepali from one religion to another, the majority (76%) felt they should be punished by the state. This was highest among Musalman (Muslim) respondents – 81%, and lowest among Hill Dalits (68%).

Hopes for federalism

More respondents were pessimistic for the impact of federalism in Nepal, than optimistic that federalism would amount to an improvement for Nepal, with 53% disagreeing or strongly disagreeing, compared to 24% agreeing or strongly agreeing (Figure 26).

However, when asked about hopes for federalism in terms of specific state functions, respondents were more optimistic. The three reported most important functions for the Nepali state were creating jobs, providing free basic services to all, and maintaining and improving national infrastructure. Respondents were then asked how they expected the introduction of federalism to impact main functions of the Nepali state. For most functions, the majority of respondents expected them to get slightly or much better – around 52% for creating jobs, 60% for providing basic services and 75% for infrastructure. An exception to this is for land and property rights, for which the majority (48%) expected this function to stay the same. The function for which the largest proportion expected it to get worse under federalism is safety and security for men and women (11%) – there was no significant difference between male and female respondents.



Figure 26: Is federalism an improvement for Nepal?



6.4.1 State legitimacy index

In analysis, we created a state legitimacy index (SLI) based on the method of Gilley (2006), which incorporates the three consent, legality, and justification aspects of the state legitimacy concept theorised by Beetham. Appendix 5 gives our methods for creating the Gilley's SLI, including what variables were included.

The SLI ranges from 0 (negative state legitimacy) to 10 (positive state legitimacy). In our sample, the SLI had ranged from 3.7 to 6.3, with an average of 5.04 (Figure 27).



Figure 27: Histogram of the state legitimacy index

What explains perceptions of state legitimacy? Regressions were run with the SLI as the outcome variable to identify explanatory factors associated with state legitimacy, based on data from the third wave of the survey only, and including the ethnicity classifications from wave 3.

Being satisfied your water is clean and safe is associated with better state legitimacy (higher SLI score). Receiving livelihood assistance in the household is also associated with higher perceptions of state legitimacy, as is receiving remittances.

Experiencing more crimes is negatively associated with state legitimacy, as is experiencing fighting in the area in the last three years.

Household composition was found to be important for state legitimacy. An increase in household size is negatively associated with the SLI. Female respondents are linked to lower perceptions of state legitimacy than male respondents. Those with secondary-level education or who have passed their SLC are associated with lower perceptions of state legitimacy than non-literate respondents, holding all else constant. This is interesting as perceptions of government are positively associated with higher education; however, looking at the three separate parts of the SLI, education only seems to be negatively associated with the legality aspects of SLI

Hill Dalit respondents are associated with a more negative SLI than reference group High Hill Caste (Figure 28).



Figure 28: Average state legitimacy index, by ethnic/caste group, 2018 only

Unlike the regressions on perceptions of governance, we additionally included religion as a control variable for the regressions with the SLI as the outcome variable. For religion, only those respondents from 'mixed' religious households were statistically significant, expected to have a lower SLI score than the reference category – Hindu (Figure 29).



Figure 29: State legitimacy index, by household religion, wave 3 only

Like perceptions of governance, living in an urban area is negatively associated with state legitimacy. Living in Rolpa is also associated with a lower SLI than reference category llam. Meanwhile, and curiously, being displaced during the conflict is *positively* associated with state legitimacy.

6.5 Key findings on changes in perceptions of governance and state legitimacy

The following summary pulls together results from both descriptive statistics and regressions run on ten outcome variables from Sections 6.2 and 6.3.

Perceptions became more positive

Following the trend in wave 2, perceptions of both local and central government improved between waves across the sample. Perceptions of local government were more positive than perceptions of central government in all waves.

Perceptions are more positive for more localised levels of government than more centralised government

Following the trend from previous waves that perceptions of local government are more positive than for central government, after the federal restructure by wave 3, there are indications that perceptions of more localised government – ward-level and local – are more positive than for higher levels of government – provincial and central.

Receiving livelihood assistance is associated with better perceptions of government and state legitimacy

Unlike findings from previous rounds of the survey, receiving livelihood assistance is found to promote better perceptions of government actors, and state legitimacy (as measured by the GPI, GPI3 and SLI). Receiving livelihood assistance was one of only two statistically significant service-related explanatory factors for the SLI.

This is perhaps interesting considering that respondents have increasingly reported more problems with livelihood assistance services, and that, compared to all other services, knowledge of grievance mechanisms for livelihood assistance is the lowest (see Section 6.1). The proportion of the sample receiving livelihood assistance slightly increased in the third wave of the survey to one in five. Recipients of social protection, meanwhile, were less likely to state central government reflected their priorities.

Satisfaction with health services is associated with better perceptions of government (but not state legitimacy)

Respondents' satisfaction with health services was associated with better perceptions of local and central government caring about opinions, as well as positive perceptions of all levels of government after the federal restructure.

Other factors related to the provision were important. Starting to pay for health services was associated with lower perceptions of government in some regressions – paying official fees for local and central government caring about opinions, and paying informal fees for local government reflecting priorities. Interestingly, paying official fees for health services was associated with *higher* odds of people finding that the provincial government reflects their priorities. Meanwhile, an increase in distance to the health centre – our indicator for access to health services – was associated with a lower likelihood of positive perceptions of the provincial government caring about respondents' opinions.

Drinking water provision is also important

A few drinking water-related variables emerged as important, but with little uniformity. Satisfaction with water was positively associated with the GPI3 – perceptions of all levels of government in 2018 – and state legitimacy (SLI – 2018 only). Changing water source to tube or well (from reference category, tap) is positively associated with perceptions of local government, while water source of tube, well or river or bottled water is negatively associated with perceptions of provincial government.

Whether or not respondents pay for water is linked to perceptions of provincial government reflecting priorities, with those who pay for water more likely to have positive perceptions. Meanwhile a change to the government providing drinking water is negatively associated with central government caring about opinions.

Civic participation and knowledge of grievance mechanisms and meetings is linked to more positive perceptions of government

Improvement in knowledge of meetings, grievance mechanisms and being consulted about services is linked to better perceptions of governance. An increase in the number of services consulted about is associated with better perceptions of provincial government and all levels of government in 2018 (GPI3). An increase in the number of meetings about services known about was associated with better perceptions of local and central government, while the number of grievance mechanisms known about was associated with better perceptions that the central government cares and the provincial government reflects priorities.

Knowledge of grievance mechanisms was not linked to state legitimacy (SLI) in our analysis.

Experiencing crime and fighting reduces state legitimacy

A household member experiencing an earthquake was associated with more negative perceptions of government (including GPI). Similarly, experiencing more crimes or fighting was associated with more negative perceptions of state legitimacy (SLI) and of the central government. Feeling safe in the village was associated with more positive perceptions of the provincial government.

A more counterintuitive finding was that a household member experiencing an economic shock of inflation or a price hike was associated with more positive perceptions of local, provincial and central government reflecting priorities. No shocks or safety-related factors were statistically significant for perceptions of ward-level government or the GPI3.

Female respondents view state legitimacy, the provincial and central government more negatively

Similar to findings in wave 2 analyses, female respondents are less likely than male respondents to have positive perceptions of government, and additionally the state legitimacy index. However, gender was not statistically significant for perceptions of *local or ward-level* government.

Higher education level is positively associated with government perceptions, but negatively with state legitimacy

Higher education levels were linked to better perceptions of local government and the GPI.

However, education seems to be negatively associated with the state legitimacy index, with those educated to secondary or tertiary level with a lower SLI score than non-literate respondents. Looking more closely at the three separate parts of state legitimacy, this appears to be driven by only the *legality* part of the SLI.

Wealth improves perceptions

An improved score on the Morris index – a measure of asset wealth – was associated with better perceptions of government in 6 out of 10 regressions, including all levels of government in 2018 (GPI3), and local, provincial and ward governments caring about opinions, but not state legitimacy (SLI).

Receiving remittances was associated with improvements on the SLI, as well as local, provincial and ward governments caring about opinions.

Ethnicity is linked to perceptions of governance and state legitimacy

There were improvements in perceptions and state legitimacy between waves for all ethnicities whether based upon wave 1 or wave 3 classifications, however there is a lot of variation between ethnic groups in the descriptive statistics. In regressions, at least one ethnic group was statistically significant, for perceptions of central, provincial government, the GPI and the GPI3, *and* state legitimacy (SLI), but not for local or ward-level government. For both the GPI and GPI3, the ethnic groups Madhesi and 'other' were statistically significant and positively associated with perceptions of government, compared to Brahman/Chettri. For the SLI, Hill Dalit and the 'other' category were negatively associated with state legitimacy compared to reference category Hill High Caste.

Urban areas have lower regard for government actors and state legitimacy

Whether respondents live in urban or rural areas matters – those living in urban areas have worse perceptions of government and SLI across all regressions. Similarly, what district respondents live in was statistically significant in all regressions; in general those living in Rolpa and Bardiya are more likely to have less positive perceptions of government than those in Ilam.

Hopes for federalism are mixed

When asked about hopes for federalism in the third wave of the survey, respondents were pessimistic in general. However, when asked about hopes for federalism in terms of specific state functions, there was more optimism. In terms of specific state functions, respondents were more optimistic, expecting several state functions – creating jobs, providing basic services and infrastructure – to improve under federalism.

7 The effect of intersectional factors on behaviour

In the third wave of the survey, a new module was added to the survey instrument asking respondents questions to capture intersectionality and the impact of conflict on behaviour. Respondents felt their lives were particularly influenced by their education (65.9%), being poor (47.1%), bad luck (47.1%) and the government (37.4%). Experiences from the war didn't rank highly on the other hand, only 17% agreed with the statement on this factor (Table 30)

Table 30: Percentage of respondents who perceive that if something bad happens to them it is due to a personal characteristic, experience or belief, by gender

	Total %	Male respondent %	Female respondent %	Difference (male-female)
You're a man/woman	22.5	4.3***	35.1***	-30.8
Your education	65.9	35.7***	69.6***	-33.9
Your age	28.4	27.5	28.7	-1.2
Your ethnicity	15.7	14.6	16.2	-1.6
Where you live	21.9	19.2***	23.6***	-4.4
Your experience in ten-year war	17.8	18.1	17.3	0.8
You're poor	47.1	43.3***	49.1***	-5.8
The government	37.4	36.2	36.9	-0.7
Who you know	9.1	8	9.5	-1.5
Bad luck	47.1	40.5***	50.8***	-10.3
God	20.5	15.9***	23.2***	-7.3
People want to harm you	13.1	9.9***	15***	-5.1

Note: A two-sample proportion test for each statement tests the difference in proportions of male and female respondents. Statistical significance stars are indicated in the table where: ***p<0.01, **p<0.05 and *p<0.1.

Responses to these questions were clearly gendered, with women more influenced by nearly all factors. Some 35% of female respondents stated that bad things happen due to their gender, compared to 4% of male respondents (this was statistically significant to 99%). A notable percentage of men (36%) stated that their level of education was the reason bad things happen to them, however an even higher 70% of women stated this was the case (statistically significant).

Looking at breakdown by ethnicity, there are clear differences in respondents' perceptions of why bad things happen to them (Figure 30). Hill Dalits are unsurprisingly more likely to feel that their ethnicity/caste makes a difference to their life.

Figure 30: Percentage of respondents who perceive that if something bad happens to them it is due to a personal characteristic, experience or belief, by ethnicity

- Ethnicity Hill high caste
- Ethnicity Hill Dalit
- Ethnicity Terai/Madhesi Dalit

Ethnicity Marwadi/ Bengali/ Ounjabu(Sikh)/ Jain (Balung)

- Ethnicity Hill Janjati/Adivasi
- Ethnicity Terai/Madhesi Janjati/Adivasi
- Ethnicity Musalman



Note: The sample sizes for Terai/Madhesi Dalit, Musalman and Marwadi/Bengali/Ounjabu/Jain (bars in grey tones) are too small to draw conclusions and so should be interpreted with caution.

The majority of respondents felt that their life and decisions are not influenced by conflict or war. However, war has more of an impact on behaviour in Rolpa, where 29% of respondents agree that what happens in their life is because of conflict.

8 Summary of findings and conclusion

The SLRC is concerned with understanding how processes of livelihood recovery and state-building unfold over time. One of the main ways it is attempting to do this is through the implementation of a cross-country panel survey. The thematic focus of this survey is wide-ranging, generating information on: livelihoods; access to and experience of basic services, social protection and livelihood assistance, and exposure to shocks and coping strategies; and people's perceptions of government and state legitimacy.

In Nepal, the survey was conducted in three districts with varied geography, conflict-affectedness and level of service provision: Bardiya, Ilam and Rolpa. We initially surveyed 3,176 respondents in 2012, of whom we found 2,855 at follow-up in 2015, and 2,575 in 2018. In the end we interviewed around 8 out of every 10 of our original respondents in all three waves of the survey.

Between the three waves of the panel survey there were several key changes to the broader political context of Nepal, notably the promulgation of the Constitution accompanied by political discontent, major strikes and road blocks. Nepal was struck by a major earthquake in 2015, which had devastating costs in terms of human lives, infrastructure and service provision, though less so in the districts covered by this survey. After the second wave of the survey, Nepal became a federal state, and a four-tier system of government was established, with political and geographical boundaries redrawn.

8.1 Changes in livelihoods

Our longitudinal analysis provides a picture of lives in mostly upward change, with small improvements in people's livelihoods and wellbeing over time. On the whole, asset wealth has risen over time and food insecurity has fallen. Indeed, more households became more food-secure than less between waves 1 and 2 and between waves 2 and 3. Between waves 1 and 2, the majority of households increased their assets between waves. However, between waves 2 and 3, while asset wealth rose on average, slightly more households (46%) *decreased* in asset wealth than increased their assets (42%) (when minor switchers are discounted).

So which factors explain such changes? Seven factors stand out from the regression analysis.

- 1 The first is changes in livelihood activities. In the six years across the panels, there was a considerable amount of change in most households' livelihood portfolios: 45% changed their main income source between waves 1 and 2, and 50% changed their main source of income between waves 2 and 3. Switches into particular types of livelihood activities, for example selling goods or starting own business, sometimes require productive assets, so it is no surprise to see levels of asset wealth rise with a household's entrance into a new livelihood activity (Ellis, 2000; Davis, 2003; Nagler and Naudé, 2014). Entering into certain livelihood activities, including selling goods and starting own business, was also associated with improved food security.
- 2 Entering into debt between waves is linked to a fall in asset wealth and a worsening of food security. Levels of borrowing are high in all waves (60% of households have debts). After borrowing to meet basic needs, a main reason for borrowing was for productive uses such as starting a new business. It is thus possible that the long-term benefits of borrowing are being captured by the above entrances into new household livelihood activities.
- 3 Having a household member internationally migrate between waves was linked to lower asset wealth and food security, while remittance-receiving households were better off. This suggests some level of migration dividend, but high start-up costs.
- 4 Urban households are wealthier in terms of assets, but more food-insecure.

- 5 Positive subjective perceptions of security of an area are linked to improved food security, but not asset wealth.
- 6 We find that the higher the household's average education level, the better their livelihood and wellbeing outcomes across waves.
- 7 As to be expected, higher-caste groups also consistently fare better on livelihood and wellbeing outcomes, with certain ethnicities, lower-caste and Muslim households faring worst. Asset wealth improved on average for all ethnic groups/castes in all waves, except for Dalits, who saw a decrease between waves 2 and 3.

8.2 Changes in basic services, social protection and livelihood assistance

Around 90% of respondents were using the same health centre, school or water source in all waves. However, most respondents saw their journeys increase or decrease by more than 5 minutes for health and schools, and 2 minutes for water, implying routes frequently change. Fewer respondents accessed social protection, while more received livelihood assistance in wave 3. Satisfaction with basic services was high across all waves, slightly increasing between waves 1 and 2, although slightly *decreasing* across the board between wave 2 and wave 3.

Regression analysis shows that improvements in people's day-to-day experience with certain aspects of the health centre or schools are linked to improvements in overall satisfaction. This includes the number of qualified staff or teachers and the availability of medicines or quality of school equipment. Those who experienced a problem with the health centre, schools or water source were less likely to be satisfied with the service. In the case of drinking water, we find that fee-paying is related to satisfaction, in that those who started paying fees for water were less satisfied with its quality. Meanwhile in the case of schools, we find that those who start paying fees are *more* satisfied.

Social protection is accessed by a fairly high share of households – around 1 in 3 – although slightly declined in wave 3, while households in our sample in receipt of livelihood assistance gradually increased over the waves, to 1 in 5 in wave 3. Regressions results suggest that social protection transfers may be well targeted, with results reflecting targeting criteria for different programmes. For instance, female-headed households are more likely to receive a social protection transfer than male-headed households, which can be largely explained by eligibility to the single woman/widow stipend. Similarly, being Dalit has a strong effect on the likelihood of receiving social protection, again largely explained by Dalit children's eligibility for the Child grant/Dalit stipend for girls. Fewer statistically significant results were identified for access to livelihood assistance. One interesting finding is that, while more educated households were less likely to receive social protection transfers, households educated to secondary level or higher are more likely to receive livelihood assistance than non-literate households.

8.3 Changes in government perceptions and state legitimacy

Perceptions of local and central government were previously deployed in the SLRC survey as an indirect proxy of state legitimacy. In wave 3 of the survey, a *direct* proxy for state legitimacy was added, as measured by the State Legitimacy Index (SLI). Another change in the 2018 round of the survey was due to the federal restructure in Nepal – the third wave survey thus additionally includes respondents' perceptions of ward-level and provincial government (as well as local and central).

We can compare perceptions of only local and central government across the three waves, since we have data on only ward- and provincial- level government and state legitimacy for the third wave. Looking across the three waves, we saw that on the whole perceptions (of local and central government) improved over time in our sample. For wave 3 only, after the federal restructure,

perceptions of more localised levels of government – ward-level and local – are more positive than for higher levels of government – provincial and central.

What explains changes in perceptions of local and central government across the three waves, and perceptions of government and state legitimacy in wave 3 only? Eight factors stood out in regression analysis:

- We found female respondents are less likely than male respondents to have positive perceptions of central and provincial government as well as state legitimacy (measured by the SLI). This may reflect the fact that Nepal remains a largely patriarchal society in which few women hold positions of political power and influence.
- 2 Becoming satisfied with health services was linked to being more likely to perceive local and central government cares about opinions. Looking to wave 3 only, satisfaction with health services and water source was linked to positive perceptions of all levels of government after the federal restructure, but only satisfaction with water was linked to state legitimacy.
- 3 Some changes in access to basic services were also linked to changes in perceptions of government. Paying fees for health services was linked to lower perceptions of government over time. Meanwhile a change in the government providing drinking water is negatively associated with people agreeing that central government cares about their opinions.
- 4 Unlike in previous analyses that found receipt of social protection or livelihood assistance had no link to perceptions of government, our regression analyses found starting to receive livelihood assistance promotes better perceptions of government actors, and state legitimacy (as measured by the GPI, GPI3 and SLI).
- 5 Greater knowledge of grievance mechanisms and meetings or being consulted about services is linked to better perceptions of government (but not state legitimacy).
- 6 Higher levels of education are associated with better perceptions of government, but not with state legitimacy, where higher levels may be associated with worse perceptions of state legitimacy.
- 7 Increased asset wealth is associated with more positive perceptions of government, while receiving remittances is associated with better state legitimacy.
- 8 Experiencing crime or local fighting is associated with worse state legitimacy and perceptions of central government.

9 References

Acharya, S. (2014) Gender, Jobs and Education Prospects and Realities in Nepal. Kathmandu: UNESCO

Beetham, D. (1991) The Legitimation of Power. Palgrave Macmillan

Bucheli, J.R., Bohara, A.K. and Villa, K. (2016) *The Impact of a Rural Road Development Project on Multidimensional Poverty in Nepal* (No. 235214). Agricultural and Applied Economics Association

Davis, J.R. (2003) 'The Rural-Non-Farm Economy, Livelihoods and their Diversification: Issues and Options'. *Livelihoods and their Diversification: Issues and Options* (July 2003)

Ellis, F. (2000) 'The determinants of rural livelihood diversification in developing countries' *Journal of Agricultural Economics* 51(2): 289–302

Fisk, K. and Cherney, A. (2016) 'Pathways to Institutional Legitimacy in Postconflict Societies: Perceptions of Process and Performance in Nepal' *Governance: An International Journal of Policy, Administration, and Institutions*, online 12 May 2016

Gilley, B. (2006) 'The meaning and measure of state legitimacy: Results for 72 countries' *European Journal of Political Research* 45(3): 499–525

Hagen-Zanker, J. Mallett, R., Ghimire, A., Shah, Q.A., Upreti, B. and Abbas, H. (2014) *Migration from the margins: mobility, vulnerability and inevitability in mid-western Nepal and north-western Pakistan.* London: Secure Livelihoods Research Consortium

Larsen, H.O., Rayamajhi, S., Chhetri, B.B.K., Charlery, L.C., Gautam, N., Khadka, N. and Walelign, S.Z. (2014) 'The role of environmental incomes in rural Nepalese livelihoods 2005–2012: contextual information'. Frederiksberg: Department of Food and Resource Economics, University of Copenhagen (IFRO Documentation; No. 2014/4)

Levi, M., Sacks, A. and Tyler, T. (2009) 'Conceptualizing legitimacy, measuring legitimating beliefs' *American Behavioral Scientist* 53(3): 354–375

Mallett, R., Acharya, G. and Sturge, G. (2016) *Taxation, livelihoods, governance: evidence from Nepal.* London: Secure Livelihoods Research Consortium

Mallett, R., Hagen-Zanker, J., Slater, R. and Sturge, G. (2015) *Surveying livelihoods, service delivery and governance: baseline evidence from the Democratic Republic of Congo, Nepal, Pakistan, Sri Lanka and Uganda.* London: Secure Livelihoods Research Consortium

Maxwell, Dan and Caldwell, Richard (2008) 'The Coping Strategies Index: Field Methods Manual'. Cooperative for Assistance and Relief Everywhere, Inc. (CARE)

Morris, S., Carletto, C., Hoddinott, J. and Christiaensen, L.J.M. (1999). *Validity of Rapid Estimates of Household Wealth and Income for Health Surveys in Rural Africa.* Food and Consumption Division Discussion Paper No. 72

Nagler, P. and Naudé, W. (2014) Non-farm entrepreneurship in rural Africa: patterns and determinants

Nielsen, Ø.J., Rayamajhi, S., Uberhuaga, P., Meilby, H. and Smith-Hall, C. (2013) 'Quantifying rural livelihood strategies in developing countries using an activity choice approach' *Agricultural Economics* 44: 57–71

Rahut, D.B., Ali, A., Kassie, M. and Marenya, P.P. (2014). 'Rural livelihood diversification strategies in Nepal' *Poverty & Public Policy* 6: 259–281

Tandukar, A., KC, S., Upreti, B., Paudel, S., Acharya, G., and Harvey, P. (2015) Education services and users' perceptions of the state in Rolpa, Nepal. London: Secure Livelihoods Research Consortium

The Asia Foundation (2018) A Survey of the Nepali People in 2017. San Francisco: The Asia Foundation

van de Walle, S., and van Ryzin, G.G. (2011) 'The order of questions in a survey on citizen satisfaction with public services: lessons from a split-ballot experiment' Public Administration 89(4): 1436–1450

Walelign, S.Z., Pouliot, M., Larsen, H.O., and Smith-Hall, C. (2016) 'Combining household income and asset data to identify livelihood strategies and their dynamics', *The Journal of Development Studies* 1–19

Appendix 1: Full sampling and weighting methods

See the previous appendices from the 'Evidence from a 2012–2015 panel surrey in Nepal' for full information.

Second and third waves

Tests were run to determine whether any observed characteristics from wave 1 could predict attrition in wave 2. Overall, male respondents were more likely to drop out of the sample than females, and this was particularly pronounced in Rolpa. The most common reason for male attrition was migration for work, while for women it was marriage or family reasons. The higher attrition rate among men is explained by women being much less likely to have migrated independently for work. Age was a significant determinant of attrition, to the extent that those at the younger and older ends of the distribution were more likely to drop out (most of the death cases were elderly people and most migrants were young). Other determinants of dropout were the respondent having a history of migration (more likely to drop out) or being a farmer or having no paying activity at baseline (more likely to stay in the sample). Household size, dependency ratio, marriage (in the case of women), and the education level of the respondent also partly predicted dropout.

To minimise attrition bias, non-response weighting adjustments are used in analysis. In any given dataset, there is a design weight given to all units (in this case respondents) at baseline. In our case, the design weight is equal to 1 for all respondents at baseline. This is because at the village level all respondents had, in theory, an equal selection probability, and although our data can be aggregated at higher levels (e.g. region), we do not claim that conclusions made above the village level are representative. In finding that attrition from our sample at follow-up is non-random, it is necessary to adjust the design weight to restore the proportions of the original sample (Kish, 1990; Brick and Kalton, 1996).

Using wave-1 data, a probit regression was run with the outcome variable 'response' (respondent in wave 2=1, non-respondent at wave 2=0) and including a list of covariates that proved at least partly to explain non-response in wave 2 (see discussion above). This technique, known as response propensity weight adjustment, replaces the unknown probability of response with an estimate, which is a function of observed or known characteristics about the respondent (Kalton and Flores-Cervantes, 2003; Särndal and Lundström, 2015; Brick, 2013). Following the probit regression, the probability of response is calculated for each individual, then the inverse of the probability is taken, which becomes the non-response adjustment. The final weight for each wave is calculated by multiplying the design weight and the non-response adjustment. Non-respondents in wave 2 end up with a weight of 0 and all those remaining in the sample have a weight greater than 1. Put differently, this means that those remaining in the sample take on greater emphasis, the more similar they are to those who have dropped out.

Appendix 2: Full analytical methods

OLS and logistic regressions

In regression analysis, we used two different types of regressions, dependent on whether the outcome variable was continuous or binary (Table A1). For continuous variables, Ordinary Least Squares (OLS) regressions were run. For binary variables, logistic regressions were run, with odd ratios.

Table A1: Regression type and outcome indicator

Outcome indicator	Type of variable	Regression type
Coping strategies index (CSI)	Continuous	OLS
Food consumption score (FCS)	Continuous	OLS
Morris score index (MSI)	Continuous	OLS
Access to health centre – journey time in minutes	Continuous	OLS
Access to school – journey time in minutes	Continuous	OLS
Access to principal water source – journey time in minutes	Continuous	OLS
Access to social protection – received or not received	Binary	Logistic
Access to livelihood assistance – received or not received	Binary	Logistic
Satisfaction with health centre – satisfied or not satisfied	Binary	Logistic
Satisfaction with school – satisfied or not satisfied	Binary	Logistic
Perception of water – satisfied or not satisfied with quality	Binary	Logistic
Perception of local government – government cares or doesn't care	Binary	Logistic
Perception of local government – government reflects priorities or doesn't reflect priorities	Binary	Logistic
Perception of central government – government cares or doesn't care	Binary	Logistic
Perception of central government – government reflects priorities or doesn't reflect priorities	Binary	Logistic
Perception of provincial government – government cares or doesn't care	Binary	Logistic
Perception of ward-level government – government cares or doesn't care	Binary	Logistic
Government perception index (GPI)	Continuous	OLS
Government perception index (GPI3 – wave 3 only)	Continuous	OLS
State legitimacy index (SLI)	Continuous	OLS

Appendix 3: Regressions

Coping strategies index	FE		RE	RE	
	coefficient	p value	coefficient	p value	
Household (HH) size	0.13	0.24	0.17**	0.01	
Household size squared	-0.00	0.58	-0.01	0.17	
Average age	-0.15***	0.00	-0.08***	0.00	
Average age squared	0.00**	0.01	0.00***	0.01	
Dependency ratio	-0.10	0.47	0.09	0.24	
Any HH member in own cultivation	-0.58**	0.03	-0.26	0.14	
Any HH member in casual labour (any)	0.31	0.18	0.57***	0.00	
Any HH member in selling goods	-0.80***	0.00	-0.90***	0.00	
Any HH member in own business	-0.55**	0.01	-0.89***	0.00	
Any HH member in private sector work (any)	-0.26	0.26	-0.56***	0.00	
Number of livelihood activities	0.04	0.82	0.13	0.25	
Any internal migrant	-0.12	0.51	-0.27*	0.08	
Any international migrant	0.52**	0.02	0.37**	0.03	
Did your household receive any remittances in the past three years?	-0.62***	0.00	-0.47***	0.00	
Has anyone in your household experienced a natural shock in the past	-0.29*	0.09	-0.10	0.46	
three years?					
Has anyone in your household experienced a health shock in the past three years?	0.44**	0.01	0.33***	0.01	
Has anyone in your household experienced an economic shock in the past three years?	-0.03	0.86	-0.24**	0.04	
Number of shocks (earthquake excluded)	-0.08	0.40	0.09	0.22	
Number of crimes	0.48***	0.00	0.37***	0.00	
In the last three years has there been fighting in this area?	0.55***	0.00	0.40***	0.00	
Feels safe in village	-0.92***	0.00	-1.07***	0.00	
Feels safe going out of village	-0.46**	0.05	-0.66***	0.00	
Received social protection in last year	0.42***	0.01	0.30***	0.00	
Received livelihood assistance in last year	-0.01	0.93	0.03	0.78	
Natural log of Morris Index	-0.74***	0.00	-0.81***	0.00	
Do any of your household currently owe any money to anyone?	0.45***	0.00	0.67***	0.00	
Female-headed household fixed wave 1			-0.08	0.46	
Average household education = Read/write or primary			-0.59***	0.00	
Average household education = Secondary or SLC passed			-0.76***	0.00	
Average household education = Higher than SLC			-0.82***	0.00	
Ethnicity fixed at wave 1 = Janajati			0.21*	0.06	
Ethnicity fixed at wave 1 = Dalit			0.96***	0.00	
Ethnicity fixed at wave 1 = Madhesi			1.71***	0.00	
Ethnicity fixed at wave 1 = Muslim			1.19***	0.00	
Ethnicity fixed at wave 1 = Other			-0.32	0.25	
District = Rolpa			0.67***	0.00	
District = Bardiya			-0.31***	0.01	
Urban rural fixed wave 1			0.23**	0.04	
Displaced during conflict 1996–2006			0.50**	0.04	
Moved to different house or village between waves			-0.26	0.37	
Constant	8.71***	0.00	6.92***	0.00	
Observations	7,736		7,736		
R-squared	0.51		,		
r ²	0.508				
Number of A4			2,814		

Food consumption score	FE		RE		
	coefficient	p value	coefficient	p value	
Household size	0.31	0.22	-0.01	0.97	
Household size squared	-0.01	0.62	-0.00	0.84	
Average age	0.54***	0.00	0.32***	0.00	
Average age squared	-0.01***	0.00	-0.00***	0.00	
Dependency ratio	0.43	0.11	0.49***	0.01	
Any HH member in own cultivation	0.15	0.79	-0.65*	0.10	
Any HH member in casual labour (any)	-0.63	0.19	-1.43***	0.00	
Any HH member in selling goods	1.67***	0.00	1.64***	0.00	
Any HH member in own business	1.45***	0.00	2.94***	0.00	
Any HH member in private sector work (any)	1.65***	0.00	2.19***	0.00	
Number of livelihood activities	-0.48	0.13	-0.67***	0.01	
Anv internal migrant	0.13	0.77	0.12	0.74	
Any international migrant	-1.53***	0.00	-1.10***	0.00	
Did your household receive any remittances in the past three years?	0.83***	0.01	0.49**	0.04	
Has anyone in your household experienced a natural shock in the past	_1.97***	0.00	_1 70***	0.00	
three years?	1.01	0.00	1.10	0.00	
Has anyone in your household experienced a health shock in the past three years?	-0.59*	0.09	-0.27	0.35	
Has anyone in your household experienced an economic shock in the past three years?	-0.10	0.74	0.75***	0.00	
Number of shocks (earthquake excluded)	0.56***	0.00	0.12	0.42	
Number of crimes	-0.50*	0.07	-0.50**	0.01	
In the last three years has there been fighting in this area?	-1.72***	0.00	-1.35***	0.00	
Feels safe in village	1.57***	0.00	1.74***	0.00	
Feels safe going out of village	1.11**	0.01	1.35***	0.00	
Received social protection in last year	-0.70**	0.03	-0.52**	0.02	
Received livelihood assistance in last year	0.23	0.42	0.48*	0.05	
Natural log of Morris Index	1.59***	0.00	2.84***	0.00	
Do any of your household currently owe any money to anyone?	-1.32***	0.00	-1.30***	0.00	
Female-headed household fixed wave 1			-0.22	0.40	
Average household education = Read/write or primary			1.76***	0.00	
Average household education = Secondary or SLC passed			3.31***	0.00	
Average household education = Higher than SLC			4.08***	0.00	
Fthnicity fixed at wave 1 = lanaiati			-2.91***	0.00	
Ethnicity fixed at wave 1 = Dalit			-3.35***	0.00	
Ethnicity fixed at wave 1 = Madhesi			-2 65***	0.00	
Ethnicity fixed at wave 1 = Muslim			0.02	0.00	
Ethnicity fixed at wave $1 = 0$ ther			-0.62	0.34	
			_7 87***	0.00	
District - Rordiva			_4 91***	0.00	
Urban rural fixed wave 1			_0.88***	0.00	
			1 1 2 * *	0.00	
Displaced during connect 1990-2000			0.00	0.00	
	00 07***	0.00	20.02***	0.99	
Unistant	23.21	0.00	30.03 ****	0.00	
Observations	7,733		7,733		
R-squared	0.66				
r2	0.658				
Number of A4			2,814		

Natural log of Morris Index	FE		RE	RE		
	coefficient	p value	coefficient	p value	%	
Household size	0.13***	0.00	0.14***	0.00	13.88	
Household size squared	-0.00***	0.00	-0.00***	0.00	0.00	
Average age	0.03***	0.00	0.02***	0.00	3.05	
Average age squared	-0.00***	0.00	-0.00***	0.00	0.00	
Dependency ratio	-0.01	0.39	-0.04***	0.00	-1.00	
Any HH member in own cultivation	0.17***	0.00	0.30***	0.00	18.53	
Any HH member in casual labour (any)	-0.01	0.67	-0.03	0.16	0.00	
Any HH member in selling goods	0.11***	0.00	0.18***	0.00	11.63	
Any HH member in own business	0.09***	0.00	0.13***	0.00	9.42	
Any HH member in private sector work (any)	-0.03	0.24	-0.01	0.68	0.00	
Number of livelihood activities	0.03*	0.10	-0.00	0.79	3.05	
Any internal migrant	-0.02	0.45	-0.02	0.45	0.00	
Any international migrant	-0.06**	0.02	-0.07***	0.00	-5.82	
Did your household receive any remittances in the past three years?	0.05**	0.01	0.09***	0.00	5.13	
Has anyone in your household experienced a natural shock in the past three years?	0.01	0.64	0.05***	0.00	0.00	
Has anyone in your household experienced a health shock in the past three years?	-0.01	0.47	-0.02	0.21	0.00	
Has anyone in your household experienced an economic shock in the past three years?	0.01	0.71	-0.01	0.71	0.00	
Number of shocks (earthquake excluded)	0.01	0.35	0.01	0.37	0.00	
Number of crimes	0.01	0.41	0.01	0.56	0.00	
In the last three years has there been fighting in this area?	0.01	0.29	0.01	0.65	0.00	
Feels safe in village	0.00	0.98	0.02	0.34	0.00	
Feels safe going out of village	0.02	0.46	-0.02	0.32	0.00	
Received social protection in last year	0.02	0.23	-0.01	0.66	0.00	
Received livelihood assistance in last year	0.05***	0.00	0.10***	0.00	5.13	
Coping strategies index	-0.01***	0.00	-0.01***	0.00	-1.00	
Do any of your household currently owe any money to anyone?	-0.03*	0.07	-0.01	0.28	-2.96	
Female-headed household fixed wave 1			-0.03*	0.08	-2.96	
Average household education = Read/write or primary			0.07***	0.00	7.25	
Average household education = Secondary or SLC passed			0.11***	0.00	11.63	
Average household education = Higher than SLC			0.28***	0.00	32.31	
Ethnicity fixed at wave 1 = Janajati			-0.04*	0.06	-3.92	
Ethnicity fixed at wave 1 = Dalit			-0.22***	0.00	-19.75	
Ethnicity fixed at wave 1 = Madhesi			-0.58***	0.00	-44.01	
Ethnicity fixed at wave 1 = Muslim			-0.48***	0.00	-38.12	
Ethnicity fixed at wave 1 = Other			-0.12**	0.02	-11.31	
District = Rolpa			0.27***	0.00	31.00	
District = Bardiya			0.05**	0.02	5.13	
Urban rural fixed wave 1			0.05**	0.01	5.13	
Displaced during conflict 1996–2006			0.00	0.96		
Moved to different house or village between waves			-0.14***	0.01		
Constant	2.05***	0.00	1.94***	0.00		
Observations	7,736		7,736			
R-squared	0.75					
r2	0.753					
Number of A4			2,814			

How long does it take to get to the nearest health clinic? (in minutes)	FE		RE	RE	
	coefficient	p value	coefficient	p value	
Household size	-0.22	0.83	1.15	0.13	
Household size squared	-0.02	0.77	-0.08	0.10	
Average age	0.12	0.76	-0.15	0.54	
Average age squared	-0.00	0.91	0.00	0.48	
Dependency ratio	-0.98	0.45	-0.58	0.51	
Any HH member in own cultivation	-0.75	0.76	3.66*	0.06	
Any HH member in casual labour (any)	-1.28	0.57	-1.43	0.45	
Any HH member in selling goods	-3.87**	0.04	-2.79*	0.08	
Any HH member in own business	-2.64	0.21	-5.74***	0.00	
Any HH member in private sector work (any)	-6.38***	0.00	-6.16***	0.00	
Number of livelihood activities	2.79**	0.04	1.68	0.16	
Any internal migrant	-5.55***	0.00	-6.04***	0.00	
Any international migrant	-1.93	0.39	0.43	0.81	
Did your household receive any remittances in the past three years?	0.55	0.74	0.52	0.66	
Has anyone in your household experienced a natural shock in the past three years?	5.26***	0.00	4.76***	0.00	
Has anyone in your household experienced a health shock in the past three years?	3.59**	0.04	2.79**	0.04	
Has anyone in your household experienced an economic shock in the past three years?	1.02	0.48	0.64	0.61	
Number of shocks (earthquake excluded)	-0.55	0.55	0.15	0.84	
Number of crimes	-1.28	0.22	-2.10**	0.03	
In the last three years has there been fighting in this area?	-5.11***	0.00	-5.71***	0.00	
Feels safe in village	-3.66	0.16	-2.00	0.34	
Feels safe going out of village	-1.01	0.69	-2.98*	0.08	
Natural log of Morris Index	0.10	0.94	3.05***	0.00	
Coping strategies index	0.23	0.14	0.43***	0.00	
How many times in the past year did your household use this service?	-0.08*	0.10	-0.14***	0.00	
Do you need to pay official fees for the service?	11.29***	0.00	10.96***	0.00	
Do you need to pay informal payments for using the service?	2.69	0.14	3.39**	0.03	
Government runs health centre (ref = anyone else)	-3.35**	0.02	-0.22	0.84	
Experienced a problem with health service in past year?	-1.16	0.35	1.74	0.10	
Has anyone consulted you about health service?	4.43**	0.02	4.68***	0.00	
HumMan-powered vehicles	-1.01	0.56	-2.15	0.14	
Petrol-powered vehicles	-0.68	0.71	-2.32	0.13	
Female-headed household fixed wave 1			-2.20	0.11	
Average household education = Read/write or primary			-6.26***	0.00	
Average household education = Secondary or SLC passed			-9.72***	0.00	
Average household education = Higher than SLC			-8.64***	0.00	
Ethnicity fixed at wave 1 = Janajati			0.90	0.53	
Ethnicity fixed at wave 1 = Dalit			-4.26*	0.08	
Ethnicity fixed at wave 1 = Madhesi			2.04	0.49	
Ethnicity fixed at wave 1 = Muslim			-5.24	0.18	
Ethnicity fixed at wave 1 = Other			-5.62	0.12	
District = Rolpa			3.50*	0.06	
District = Bardiya			-25.24***	0.00	
Urban rural fixed wave 1			-8.07***	0.00	
Displaced during conflict 1996–2006			0.05	0.99	
Moved to different house or village between waves			-5.71	0.12	
Switched health centre between waves			6.67***	0.00	
Constant	34.87***	0.00	40.52***	0.00	
Observations	7,461		7,461		
K-squared	0.61				
12 Number of A4	0.613				
			∠,805		
How long does a return journey to the drinking water source take?	FE		RE		
---	-------------	---------	-------------	---------	
	coefficient	p value	coefficient	p value	
Household size	0.05	0.94	0.37	0.18	
Household size squared	0.01	0.85	-0.02	0.22	
Average age	-0.15	0.51	-0.02	0.77	
Average age squared	0.00	0.60	0.00	0.96	
Dependency ratio	0.34	0.64	-0.02	0.94	
Any HH member in own cultivation	0.66	0.62	0.72	0.33	
Any HH member in casual labour (any)	-0.46	0.74	-0.73	0.30	
Any HH member in selling goods	-1.23	0.28	-2.29***	0.00	
Any HH member in own business	-0.22	0.86	-1.08*	0.08	
Any HH member in private sector work (any)	-0.64	0.67	0.05	0.93	
Number of livelihood activities	0.48	0.59	0.25	0.56	
Any internal migrant	-1.50	0.14	-1.36**	0.02	
Any international migrant	-0.58	0.64	0.85	0.17	
Did your household receive any remittances in the past three years?	1.39	0.16	-0.09	0.82	
Has anyone in your household experienced a natural shock in the past three years?	0.85	0.44	1.18**	0.03	
Has anyone in your household experienced a health shock in the past three years?	-0.72	0.48	-0.15	0.76	
Has anyone in your household experienced an economic shock in the past three years?	-1.82*	0.07	-0.89*	0.06	
Number of shocks (earthquake excluded)	-0.39	0.39	-0.54**	0.04	
Number of crimes	0.63	0.34	0.16	0.65	
In the last three years has there been fighting in this area?	-0.50	0.52	-0.11	0.78	
Feels safe in village	-1.77	0.25	-2.31***	0.00	
Feels safe going out of village	1.33	0.28	1.52**	0.01	
Natural log of Morris Index	-1.60**	0.05	-0.12	0.72	
Coping strategies index	0.12	0.28	0.04	0.47	
I11==Tube well	2.21	0.22	-0.32	0.61	
I11_6== River, well, bottled, other	6.49***	0.00	8.60***	0.00	
Do you have to queue for drinking water?	0.96	0.51	4.06***	0.00	
Do you have to pay for drinking water?	-0.08	0.88	-0.06	0.87	
Is your drinking water clean and safe?	0.51	0.62	0.90*	0.09	
Government provides water (ref = anyone else)	2.20*	0.06	2.69***	0.00	
Experienced a problem with water in past year?	2.81**	0.02	4.16***	0.00	
Has anyone consulted you about water?	1.05	0.35	0.07	0.88	
Human-powered vehicles	1.00	0.41	0.35	0.51	
Petrol-powered vehicles	0.31	0.79	-0.50	0.38	
Female-headed household fixed wave 1			0.12	0.77	
Average household education = Read/write or primary			0.85*	0.06	
Average household education = Secondary or SLC passed			0.08	0.88	
Average household education = Higher than SLC			-0.95	0.14	
Ethnicity fixed at wave 1 = Janajati			-0.09	0.83	
Ethnicity fixed at wave 1 = Dalit			0.29	0.67	
Ethnicity fixed at wave 1 = Madhesi			0.41	0.68	
Ethnicity fixed at wave 1 = Muslim			0.16	0.90	
Ethnicity fixed at wave 1 = Other			2.62**	0.01	
District = Rolpa			2.57***	0.00	
District = Bardiya			-4.41***	0.00	
Urban rural fixed wave 1			-0.65	0.21	
Displaced during conflict 1996–2006			0.23	0.79	
Moved to different house or village between waves			-0.17	0.88	
Switched water source between waves			-0.40	0.48	
Constant	12.20**	0.02	6.17***	0.01	
Observations	4.604		4.604		
R-squared	0.67		.,		
r2	0.671				
Number of A4			2.756		

How long does it take to get to the school (boys and girls)? (in minutes)	FE		RE	
	coefficient	p value	coefficient	p value
Household size	0.17	0.86	0.87	0.28
Household size squared	-0.02	0.60	-0.05	0.23
Average age	0.85	0.22	0.26	0.63
Average age squared	-0.01	0.47	-0.00	0.82
Dependency ratio	1.10	0.32	0.37	0.64
Any HH member in own cultivation	1.19	0.56	2.72	0.16
Any HH member in casual labour (any)	2.24	0.26	2.25	0.19
Any HH member in selling goods	-0.06	0.97	1.66	0.26
Any HH member in own business	-1.69	0.40	-2.53	0.13
Any HH member in private sector work (any)	1.34	0.51	-0.72	0.67
Number of livelihood activities	-1.17	0.37	-1.18	0.27
Any internal migrant	-5.16***	0.00	-1.88	0.26
Any international migrant	1.78	0.42	1.62	0.33
Did your household receive any remittances in the past three years?	1.51	0.32	1.94	0.11
Has anyone in your household experienced a natural shock in the past three years?	-0.10	0.95	-0.80	0.56
Has anyone in your household experienced a health shock in the past three years?	1.23	0.41	0.30	0.82
Has anyone in your household experienced an economic shock in the past three years?	0.35	0.78	0.36	0.76
Number of shocks (earthquake excluded)	0.08	0.93	0.28	0.68
Number of crimes	0.81	0.31	0.01	1.00
In the last three years has there been fighting in this area?	-0.37	0.73	-0.82	0.40
Feels safe in village	2.67	0.20	1.25	0.53
Feels safe going out of village	-1.15	0.49	0.54	0.73
Natural log of Morris Index	-2.06	0.11	-0.62	0.53
Coping strategies index	-0.03	0.78	0.03	0.81
Official fees for either school	3.08**	0.02	3.55***	0.00
Informal payments for either school	-1.69	0.16	-1.17	0.24
Government provides school (ref = anyone else)	-0.55	0.76	-1.25	0.36
Experienced a problem with education in past year?	2.79*	0.07	3.97***	0.00
Has anyone consulted you about education?	-1.85	0.13	-1.22	0.27
Human-powered vehicles	1.25	0.44	-0.86	0.57
Petrol-powered vehicles	1.84	0.35	0.01	0.99
Female-headed household fixed wave 1			-4.06**	0.03
Average household education = Read/write or primary			-1.12	0.59
Average household education = Secondary or SLC passed			-2.27	0.34
Average household education = Higher than SLC			-1.15	0.71
Ethnicity fixed at wave 1 = Janajati			0.59	0.78
Ethnicity fixed at wave 1 = Dalit			-3.43	0.26
Ethnicity fixed at wave 1 = Madhesi			-6.56*	0.09
Ethnicity fixed at wave 1 = Muslim			-8.01*	0.07
Ethnicity fixed at wave 1 = Other			-7.36	0.11
District = Rolpa			2.80	0.25
District = Bardiya			-9.01***	0.00
Urban rural fixed wave 1			3.99*	0.05
Displaced during conflict 1996–2006			4.14	0.33
Moved to different house or village between waves			-7.77	0.19
Switched school between waves			7.37***	0.00
Constant	12.80	0.18	19.10**	0.03
Observations	2,115		2,115	
R-squared	0.79			
r2	0.792			
Number of A4			955	

Received social protection in last year	FE		RE	
	Odd ratios	p value	Odd ratios	p value
Household size	1.74***	0.00	2.27***	0.00
Household size squared	0.99**	0.02	0.97***	0.00
Average age	1.03	0.49	1.17***	0.00
Average age squared	1.00	0.39	1.00***	0.00
Dependency ratio	4.02***	0.00	4.76***	0.00
Any HH member in own cultivation	1.07	0.76	1.11	0.55
Any HH member in casual labour (any)	0.96	0.86	0.98	0.92
Any HH member in selling goods	0.82	0.24	0.87	0.32
Any HH member in own business	0.99	0.96	0.83	0.20
Any HH member in private sector work (any)	0.76	0.16	0.73**	0.04
Number of livelihood activities	1.11	0.41	1.14	0.21
Any internal migrant	1.11	0.55	1.04	0.77
Any international migrant	1.06	0.74	1.11	0.49
Did your household receive any remittances in the past three years?	0.93	0.59	0.75***	0.01
Has anyone in your household experienced a natural shock in the past three years?	1.40**	0.03	1.50***	0.00
Has anyone in your household experienced a health shock in the past three years?	0.91	0.52	1.08	0.54
Has anyone in your household experienced an economic shock in the past three years?	1.17	0.22	1.18	0.12
Number of shocks (earthquake excluded)	0.89	0.14	0.87**	0.03
Number of crimes	1.00	0.99	0.94	0.47
In the last three years has there been fighting in this area?	1.08	0.48	1.08	0.41
Feels safe in village	1.20	0.45	1.19	0.35
Feels safe going out of village	1.46**	0.04	1.14	0.39
Natural log of Morris Index	1.19	0.14	0.92	0.34
Coping strategies index	1.03**	0.02	1.03***	0.00
Received livelihood assistance in last year	1.22	0.11	1.39***	0.00
In the last year has there been a meeting about social protection?	1.24	0.28	1.40**	0.04
Female-headed household fixed wave 1			5.63***	0.00
Average household education = Read/write or primary			0.87	0.32
Average household education = Secondary or SLC passed			0.54***	0.00
Average household education = Higher than SLC			0.49***	0.00
Ethnicity fixed at wave 1 = Janajati			1.24	0.11
Ethnicity fixed at wave 1 = Dalit			6.15***	0.00
Ethnicity fixed at wave 1 = Madhesi			2.09***	0.00
Ethnicity fixed at wave 1 = Muslim			1.00	1.00
Ethnicity fixed at wave 1 = Other			0.72	0.35
District = Rolpa			1.88***	0.00
District = Bardiya			1.72***	0.00
Urban rural fixed wave 1			1.16	0.27
Displaced during conflict 1996–2006			0.51**	0.03
Moved to different house or village between waves			0.70	0.30
Constant			0.00***	0.00
Observations	2,422		7,062	
Number of A4	875		2,783	

Received livelihood assistance in last year	FE		RE	
	Odd ratios	p value	Odd ratios	p value
Household size	1.15	0.26	0.99	0.82
Household size squared	0.99	0.54	1.00	0.88
Average age	1.02	0.52	1.00	0.88
Average age squared	1.00	0.47	1.00	0.45
Dependency ratio	1.11	0.31	0.94	0.30
Any HH member in own cultivation	1.30	0.24	1.60***	0.00
Any HH member in casual labour (any)	0.95	0.78	0.98	0.86
Any HH member in selling goods	0.91	0.56	1.16	0.20
Any HH member in own business	0.87	0.42	0.94	0.58
Any HH member in private sector work (any)	0.85	0.35	1.08	0.52
Number of livelihood activities	1.21*	0.09	1.14	0.14
Any internal migrant	1.07	0.68	1.09	0.50
Any international migrant	1.19	0.28	1.09	0.51
Did your household receive any remittances in the past three years?	1.01	0.94	1.15*	0.09
Has anyone in your household experienced a natural shock in the past three years?	1.12	0.41	1.25**	0.03
Has anyone in your household experienced a health shock in the past three years?	0.98	0.88	0.83*	0.06
Has anyone in your household experienced an economic shock in the past three years?	1.02	0.85	0.98	0.84
Number of shocks (earthquake excluded)	1.10	0.15	1.18***	0.00
Number of crimes	1.05	0.58	1.06	0.39
In the last three years has there been fighting in this area?	0.92	0.41	1.01	0.86
Feels safe in village	0.92	0.67	0.93	0.61
Feels safe going out of village	0.98	0.92	0.87	0.26
Natural log of Morris Index	1.35***	0.00	1.63***	0.00
Coping strategies index	1.00	0.87	1.00	0.84
Received social protection in last year	1.25*	0.06	1.35***	0.00
In the last year has there been a meeting about social protection?	1.02	0.92	1.38**	0.02
Female-headed household fixed wave 1			1.18*	0.06
Average household education = Read/write or primary			1.12	0.26
Average household education = Secondary or SLC passed			1.27**	0.03
Average household education = Higher than SLC			1.25*	0.09
Ethnicity fixed at wave 1 = Janajati			0.94	0.48
Ethnicity fixed at wave 1 = Dalit			1.20	0.22
Ethnicity fixed at wave 1 = Madhesi			1.49**	0.03
Ethnicity fixed at wave 1 = Muslim			1.01	0.97
Ethnicity fixed at wave 1 = Other			0.65*	0.07
District = Rolpa			1.52***	0.00
District = Bardiya			0.86	0.12
Urban rural fixed wave 1			0.95	0.55
Displaced during conflict 1996-2006			1.21	0.30
Moved to different house or village between waves			0.73	0.27
Constant			0.01***	0.00
Observations	2,564		7,062	
Number of A4	932		2,783	

Satisfied overall with health centre (binary)	FE		RE	RE	
	Odd ratios	p value	Odd ratios	p value	
Dependency ratio	0.95	0.76	1.02	0.84	
Any HH member in own cultivation	1.73	0.16	0.80	0.26	
Any HH member in casual labour (any)	1.62	0.17	1.13	0.53	
Any HH member in selling goods	1.69*	0.08	1.00	0.98	
Any HH member in own business	2.30**	0.02	1.17	0.34	
Any HH member in private sector work (any)	1.83*	0.07	1.16	0.39	
Number of livelihood activities	0.64**	0.05	0.92	0.51	
Any internal migrant	1.54	0.16	1.31	0.15	
Any international migrant	1.35	0.35	1.11	0.60	
Did your household receive any remittances in the past three years?	1.05	0.84	1.14	0.24	
Natural log of Morris Index	1.28	0.20	1.15*	0.08	
Coping strategies index	0.96*	0.06	0.97**	0.03	
Has anyone in your household experienced a natural shock in the past three	1.06	0.82	1.02	0.90	
years?	0.01	0.72	0.02	0.61	
years?	0.91	0.72	0.93	0.61	
Has anyone in your household experienced an economic shock in the past three years?	0.72	0.16	1.05	0.69	
Did anyone from your household experience earthquake?	1.33*	0.08	1.33***	0.01	
Number of shocks (earthquake excluded)	1.04	0.76	1.05	0.47	
Number of crimes	0.63**	0.02	0.94	0.49	
In the last three years has there been fighting in this area?	0.76	0.16	0.79**	0.02	
Feels safe in village	1.29	0.49	0.99	0.98	
Feels safe going out of village	1.75*	0.09	1.50**	0.01	
How long does it take to get to the nearest health clinic? (in minutes)?	1.00	0.45	1.00*	0.07	
How many times in the past year did your household use this service?	1.01	0.33	1.00	0.51	
Do you need to pay official fees for the service?	0.90	0.64	1.01	0.91	
Do you need to pay informal payments for using the service?	1.13	0.69	1.02	0.90	
Government runs health centre (ref = anvone else)	0.58**	0.02	0.73***	0.01	
Satisfied with number of qualified personnel	19.63***	0.00	15.22***	0.00	
Satisfied with availability of medicine	8.15***	0.00	11.23***	0.00	
Satisfied with waiting times	3.65***	0.00	4.37***	0.00	
Experienced a problem with health service in past year?	0.73*	0.10	0.57***	0.00	
In the last year has there been a meeting about health service?	0.86	0.52	0.96	0.75	
Has anyone consulted you about health service?	1 20	0.51	1.05	0.78	
Switched health centre between waves	1.20	0.01	1.00	0.89	
Pespendent gender fixed wave 1			1.02	0.00	
Respondent education = Read/write or primary			1.10	0.97	
Respondent education = Read/ write of primary			1.03	0.80	
Respondent education = Secondary of SEC passed			0.94	0.03	
			0.96	0.04	
			0.98	0.37	
Respondent age fixed in wave 1 squared			1.00	0.29	
Ethnicity fixed at wave 1 = Janajati			1.08	0.50	
Ethnicity fixed at wave 1 = Dalit			1.14	0.50	
Ethnicity fixed at wave 1 = Madhesi			1.38	0.14	
Ethnicity fixed at wave 1 = Muslim			1.60	0.15	
Ethnicity fixed at wave 1 = Other			0.56**	0.04	
District = Rolpa			2.04***	0.00	
District = Bardiya			1.27*	0.06	
Urban rural fixed wave 1			1.19	0.17	
Displaced during conflict 1996–2006			0.88	0.60	
Moved to different house or village between waves			0.86	0.67	
Constant			0.03***	0.00	
Observations	2,903		6,785		
Number of A4	1,061		2,769		

Satisfied overall with school(s) (binary)	FE		RE	RE	
	Odd ratios	p value	Odd ratios	p value	
Dependency ratio	1.12	0.67	1.03	0.82	
Any HH member in own cultivation	1.96	0.43	1.10	0.81	
Any HH member in casual labour (any)	1.94	0.24	1.09	0.80	
Any HH member in selling goods	1.08	0.88	0.90	0.70	
Any HH member in own business	0.96	0.94	0.91	0.78	
Any HH member in private sector work (any)	1.16	0.82	0.96	0.90	
Number of livelihood activities	0.82	0.56	1.00	0.99	
Any internal migrant	2.13	0.24	1.16	0.65	
Any international migrant	1.86	0.29	1.41	0.32	
Did your household receive any remittances in the past three years?	0.55	0.18	0.86	0.47	
Natural log of Morris Index	1.24	0.57	0.97	0.86	
Coping strategies index	0.99	0.65	0.97*	0.09	
Has anyone in your household experienced a natural shock in the past three years?	0.64	0.33	0.73	0.25	
Has anyone in your household experienced a health shock in the past three years?	1.31	0.57	1.15	0.57	
Has anyone in your household experienced an economic shock in the past three years?	1.07	0.87	1.06	0.78	
Did anyone from your household experience earthquake?	2.21***	0.01	1.85***	0.00	
Number of shocks (earthquake excluded)	0.93	0.76	0.98	0.90	
Number of crimes	0.71	0.28	0.82	0.17	
In the last three years has there been fighting in this area?	0.62	0.17	0.80	0.22	
Feels safe in village	1.27	0.71	2.14**	0.01	
Feels safe going out of village	1.56	0.40	1.89**	0.01	
Average journey time to school	1.01	0.29	1.00	0.92	
Official fees for either school	3.37***	0.00	1.82***	0.00	
Informal payments for either school	0.90	0.77	1.00	0.98	
gov_school_both	1.05	0.93	0.55**	0.02	
Satisfied with number of teachers (both)	7.30*	0.08	2.70	0.12	
Satisfied with quality of teaching staff (both)	5.52*	0.08	3.69**	0.04	
Satisfied with teacher attendance (both)	1.96	0.28	1.36	0.40	
Satisfied with class size (both)	0.68	0.63	0.96	0.92	
Satisfied with quality of infrastructure (both)	0.65	0.62	2.38	0.12	
Satisfied with quality of equipment(both)	5.98*	0.08	4.97**	0.02	
Experienced a problem with education in past year?	0.43**	0.03	0.40***	0.00	
In the last year has there been a meeting about education?	1.55	0.29	1.43*	0.09	
Has anyone consulted you about education?	1.18	0.74	1.15	0.60	
switch_school_both			1.08	0.74	
Respondent gender fixed wave 1			1.34	0.14	
Respondent education = Read/write or primary			1.13	0.59	
Respondent education = Secondary or SLC passed			1.11	0.76	
Respondent education = Higher than SLC			1.13	0.80	
Respondent age fixed in wave 1			1.01	0.86	
Respondent age fixed in wave 1 squared			1.00	0.94	
Ethnicity fixed at wave 1 = Janajati			1.21	0.41	
Ethnicity fixed at wave 1 = Dalit			1.82*	0.08	
Ethnicity fixed at wave 1 = Madhesi			1.07	0.88	
Ethnicity fixed at wave 1 = Muslim			1.02	0.98	
Ethnicity fixed at wave 1 = Other			1.23	0.70	
District = Rolpa			1.09	0.73	
District = Bardiya			1.07	0.80	
Urban rural fixed wave 1			1.71**	0.04	
Displaced during conflict 1996–2006			1.09	0.85	
Moved to different house or village between waves			1.53	0.60	
Constant			0.92	0.94	
Observations	365		1,973		
Number of A4	144		943		

Is your drinking water clean and safe?	FE		RE	
	Odd ratios	p value	Odd ratios	p value
Dependency ratio	0.85	0.38	0.88	0.13
Any HH member in own cultivation	1.74	0.21	1.35	0.19
Any HH member in casual labour (any)	1.37	0.44	1.03	0.90
Any HH member in selling goods	0.88	0.70	0.97	0.88
Any HH member in own business	0.99	0.99	1.13	0.53
Any HH member in private sector work (any)	1.89	0.13	0.87	0.50
Number of livelihood activities	0.92	0.76	0.96	0.78
Any internal migrant	1.37	0.38	1.13	0.52
Any international migrant	0.98	0.96	1.14	0.50
Did your household receive any remittances in the past three years?	1.21	0.45	0.99	0.96
Natural log of Morris Index	0.92	0.72	0.92	0.40
Coping strategies index	0.99	0.76	1.00	0.78
Has anyone in your household experienced a natural shock in the past	0.89	0.66	0.84	0.31
three years?	1 1 2	0.66	1.02	0.02
years?	1.12	0.00	1.02	0.92
Has anyone in your household experienced an economic shock in the past three years?	1.42	0.17	1.12	0.46
Did anyone from your household experience earthquake?	1.21	0.25	1.12	0.34
Number of shocks (earthquake excluded)	0.97	0.79	0.88	0.10
Number of crimes	0.72*	0.07	0.82**	0.04
In the last three years has there been fighting in this area?	1.09	0.69	1.07	0.56
Feels safe in village	0.32***	0.01	0.60**	0.04
Feels safe going out of village	1.22	0.47	1.49**	0.02
How long does a return journey to the drinking water source take?	1.00	0.75	1.01	0.15
I11==Tube well	1.70	0.28	0.52***	0.00
I11_6== River, well, bottled, other	0.83	0.61	0.41***	0.00
Do you have to queue for drinking water?	1.64	0.12	1.90***	0.00
Do you have to pay for drinking water?	0.57***	0.00	0.60***	0.00
Government provides water (ref = anvone else)	1.20	0.49	0.90	0.47
Experienced a problem with water in past year?	0.34***	0.00	0.29***	0.00
In the last year has there been a meeting about water?	0.93	0.79	1.20	0.24
Has anyone consulted you about water?	1.46	0.20	1.31	0.13
Human-powered vehicles	0.90	0.78	0.68**	0.02
Petrol-powered vehicles	0.87	0.75	0.87	0.40
Switched water source between waves			1.10	0.61
Respondent gender fixed wave 1			0.91	0.48
Respondent education = Read/write or primary			0.92	0.58
Respondent education = Secondary or SLC passed			0.78	0.00
Respondent education = Higher than SLC			0.70	0.19
Respondent age fixed in wave 1			0.96*	0.10
Respondent age fixed in wave 1			1.00*	0.08
Ethnicity fixed at ways 1 = langiati			1.00	0.00
Ethnicity fixed at wave 1 = Dalia			0.80	0.42
Ethnicity fixed at wave 1 - Dalit			2.57***	0.00
Ethnicity fixed at wave 1 - Muclim			1.2/	0.00
Ethnicity fixed at wave 1 - Muslim			1.34	0.45
			1.23	0.01
District - Rolpa			1.00	0.01
District = Bardiya			1.09	0.00
			0.39^^*	0.00
Displaced during contilect 1996–2006			0.73	0.22
ivioved to different nouse or village between waves			1.06	0.89
Constant			181.14***	0.00
Ubservations	696		4,404	
Number of A4	304		2,704	

Extent that decisions of local government reflect priorities	FE		FE R		RE	RE	
	Odd ratios	p value	Odd ratios	p value			
Dependency ratio	0.94	0.82	0.98	0.83			
Any HH member in own cultivation	0.50	0.22	0.62**	0.03			
Any HH member in casual labour (any)	0.22***	0.01	0.77	0.20			
Any HH member in selling goods	0.52	0.13	1.17	0.36			
Any HH member in own business	0.55	0.26	0.87	0.45			
Any HH member in private sector work (any)	0.48	0.17	0.80	0.24			
Number of livelihood activities	2.38***	0.01	1.16	0.26			
Any internal migrant	0.80	0.60	1.10	0.61			
Any international migrant	2.95**	0.05	1.53**	0.03			
Did your household receive any remittances in the past three years?	1.13	0.70	1.10	0.40			
Natural log of Morris Index	2.24**	0.01	1.27***	0.01			
Coping strategies index	0.95	0.14	0.96***	0.00			
Has anyone in your household experienced a natural shock in the past three vears?	0.70	0.35	1.06	0.72			
Has anyone in your household experienced a health shock in the past three years?	0.92	0.81	1.14	0.36			
Has anyone in your household experienced an economic shock in the past three years?	1.91**	0.04	1.85***	0.00			
Did anyone from your household experience earthquake?	0.52***	0.00	0.80**	0.05			
Number of shocks (earthquake excluded)	0.93	0.72	0.89	0.13			
Number of crimes	0.73	0.21	1.04	0.68			
In the last three years has there been fighting in this area?	1.15	0.61	0.89	0.31			
Feels safe in village	0.48	0.14	0.81	0.35			
Feels safe going out of village	1.12	0.79	1.09	0.63			
Household size	0.96	0.89	1.14*	0.07			
Household size squared	1.00	0.99	0.99**	0.05			
How long does it take to get to the nearest health clinic? (in minutes)?	1.00	0.49	1.00	0.56			
Do you need to pay official fees for the service?	0.89	0.74	0.98	0.87			
Do you need to pay informal payments for using the service?	0.49*	0.06	0.52***	0.00			
Government runs health centre (ref = anyone else)	0.91	0.75	0.91	0.42			
Satisfied overall with health centre (binary)	1.76	0.10	1.15	0.26			
How long does a return journey to the drinking water source take?	1.00	0.99	0.99*	0.06			
I11==Tube well	3.04*	0.09	1.07	0.69			
I11 6== River, well, bottled, other	0.97	0.95	0.73	0.12			
Do you have to pay for drinking water?	1.10	0.67	1.42***	0.00			
Is your drinking water clean and safe?	0.66	0.26	1.21	0.20			
Government provides water (ref = anyone else)	0.85	0.72	0.96	0.76			
Received social protection in last year	0.76	0.38	0.93	0.55			
Received livelihood assistance in last year	1.50	0.15	1.60***	0.00			
Number of problems with services	1.11	0.45	1.04	0.42			
Number of grievance mechanisms known about	1.03	0.66	1.01	0.71			
Number of meetings known about	1.55***	0.01	1.30***	0.00			
Number of services consulted about	0.95	0.79	1.13	0.12			
Respondent gender fixed wave 1			0.86	0.23			
Respondent education = Read/write or primary			1.16	0.26			
Respondent education = Secondary or SLC passed			1.26	0.19			
Respondent education = Higher than SLC			2.21***	0.00			
Respondent age fixed in wave 1			1.02	0.24			
Respondent age fixed in wave 1 squared			1.00	0.46			
Ethnicity fixed at wave 1 = Janajati			1.16	0.24			
Ethnicity fixed at wave 1 = Dalit			1.07	0.75			
Ethnicity fixed at wave 1 = Madhesi			1.30	0.32			
Ethnicity fixed at wave 1 = Muslim			1.48	0.25			
Ethnicity fixed at wave 1 = Other			1.29	0.45			
District = Rolpa			0.63***	0.01			
District = Bardiya			1.00	0.99			
Urban rural fixed wave 1			0.52***	0.00			
Displaced during conflict 1996–2006			0.79	0.40			
Moved to different house or village between waves			0.35***	0.00			
Female-headed household fixed wave 1			1.13	0.38			
Constant			0.22**	0.03			
Observations	522		2,411				
Number of A4	244		1,821				

Local government cares about my opinions?	FE		RE	RE	
	Odd ratios	p value	Odd ratios	p value	
Dependency ratio	1.07	0.78	0.89	0.15	
Any HH member in own cultivation	0.23**	0.01	0.60**	0.01	
Any HH member in casual labour (any)	0.32**	0.03	0.71*	0.09	
Any HH member in selling goods	0.45*	0.06	0.98	0.93	
Any HH member in own business	0.49	0.17	0.88	0.45	
Any HH member in private sector work (any)	0.64	0.41	0.94	0.73	
Number of livelihood activities	2.34**	0.01	1.20	0.14	
Any internal migrant	1.33	0.51	0.87	0.45	
Any international migrant	1.72	0.23	1.29	0.17	
Did your household receive any remittances in the past three years?	1.83*	0.06	1.23*	0.07	
Natural log of Morris Index	2.38***	0.01	1.26***	0.01	
Coping strategies index	0.96	0.28	0.95***	0.00	
Has anyone in your household experienced a natural shock in the past three years?	1.66	0.20	1.39**	0.03	
Has anyone in your household experienced a health shock in the past three years?	1.35	0.41	1.20	0.19	
Has anyone in your household experienced an economic shock in the past three years?	1.56	0.16	1.67***	0.00	
Did anyone from your household experience earthquake?	0.69	0.11	0.85	0.11	
Number of shocks (earthquake excluded)	0.81	0.27	0.83**	0.02	
Number of crimes	0.71	0.20	0.88	0.23	
In the last three years has there been fighting in this area?	0.78	0.33	0.67***	0.00	
Feels safe in village	0.73	0.48	0.66*	0.06	
Feels safe going out of village	0.95	0.90	1.37*	0.08	
Household size	1.45	0.35	1.01	0.86	
Household size squared	0.98	0.60	1.00	0.83	
How long does it take to get to the nearest health clinic? (in minutes)?	1.00	0.29	1.00	0.25	
Do you need to pay official fees for the service?	0.51**	0.04	0.96	0.74	
Do you need to pay informal payments for using the service?	0.76	0.47	0.61***	0.00	
Government runs health centre (ref = anyone else)	0.80	0.43	1.09	0.47	
Satisfied overall with health centre (binary)	2.01**	0.04	1.43***	0.00	
How long does a return journey to the drinking water source take?	1.01	0.27	1.00	0.68	
I11==Tube well	3.80*	0.06	1.06	0.71	
I11_6== River, well, bottled, other	1.17	0.76	0.76	0.19	
Do you have to pay for drinking water?	1.40	0.11	1.30***	0.01	
Is your drinking water clean and safe?	1.31	0.46	1.19	0.23	
Government provides water (ref = anyone else)	0.63	0.24	0.94	0.67	
Received social protection in last year	0.90	0.76	0.94	0.56	
Received livelihood assistance in last year	1.45	0.19	1.67***	0.00	
Number of problems with services	1.05	0.71	0.97	0.56	
Number of grievance mechanisms known about	1.03	0.68	1.02	0.41	
Number of meetings known about	1.43**	0.02	1.34***	0.00	
Number of services consulted about	1.10	0.53	1.02	0.77	
Respondent gender fixed wave 1			1.08	0.53	
Respondent education = Read/write or primary			1.21	0.13	
Respondent education = Secondary or SLC passed			1.27	0.15	
Respondent education = Higher than SLC			1.93***	0.00	
Respondent age fixed in wave 1			1.01	0.77	
Respondent age fixed in wave 1 squared			1.00	0.74	
Ethnicity fixed at wave 1 = Janajati			1.01	0.91	
Ethnicity fixed at wave 1 = Dalit			1.03	0.87	
Ethnicity fixed at wave 1 = Madhesi			1.01	0.97	
Ethnicity fixed at wave 1 = Muslim			0.78	0.44	
Ethnicity fixed at wave 1 = Other			1.58	0.15	
District = Rolpa			0.73*	0.05	
District = Bardiya			0.84	0.27	
Urban rural fixed wave 1			0.57***	0.00	
Displaced during conflict 1996–2006			0.71	0.21	
Moved to different house or village between waves			0.51*	0.08	
Female-headed household fixed wave 1			0.85	0.23	
Constant			0.18**	0.01	
Observations	539		2,392		
Number of A4	248		1,811		

Extent that decisions of central government reflect priorities	FE		RE	Ē
	Odd ratios	p value	Odd ratios	p value
Dependency ratio	1.35	0.33	0.96	0.64
Any HH member in own cultivation	1.07	0.91	0.75	0.18
Any HH member in casual labour (any)	0.81	0.70	0.98	0.92
Any HH member in selling goods	2.35*	0.08	1.12	0.51
Any HH member in own business	1.04	0.94	1.13	0.47
Any HH member in private sector work (any)	1.86	0.28	1.20	0.31
Number of livelihood activities	0.85	0.64	1.02	0.90
Any internal migrant	0.69	0.41	0.87	0.43
Any international migrant	0.98	0.97	1.07	0.71
Did your household receive any remittances in the past three years?	1.29	0.44	1.17	0.17
Natural log of Morris Index	2.38**	0.02	1.09	0.33
Coping strategies index	0.96	0.19	0.98	0.10
Has anyone in your household experienced a natural shock in the past three years?	0.75	0.45	0.77*	0.09
Has anyone in your household experienced a health shock in the past three years?	1.58	0.21	1.09	0.54
Has anyone in your household experienced an economic shock in the past three years?	1.78*	0.07	1.21	0.16
Did anyone from your household experience earthquake?	0.47***	0.00	0.66***	0.00
Number of shocks (earthquake excluded)	0.84	0.34	0.99	0.90
Number of crimes	0.36***	0.00	0.94	0.51
In the last three years has there been fighting in this area?	1.40	0.24	1.25**	0.05
Feels safe in village	0.64	0.43	0.85	0.46
Feels safe going out of village	0.55	0.15	0.87	0.45
Household size	1.09	0.78	1.03	0.67
Household size squared	1.00	0.85	1.00	0.73
How long does it take to get to the nearest health clinic? (in minutes)?	1.00	0.57	1.00*	0.07
Do you need to pay official fees for the service?	0.94	0.85	0.73**	0.02
Do you need to pay informal payments for using the service?	0.92	0.85	0.99	0.94
Government runs health centre (ref = anyone else)	0.70	0.27	0.84	0.12
Satisfied overall with health centre (binary)	0.93	0.83	1.14	0.30
How long does a return journey to the drinking water source take?	0.99	0.44	0.99*	0.05
111==Tube well	1.91	0.35	1.29	0.13
<pre>l11_6== River, well, bottled, other</pre>	0.65	0.48	0.86	0.47
Do you have to pay for drinking water?	1.35	0.19	1.54***	0.00
Is your drinking water clean and safe?	0.64	0.22	1.15	0.33
Government provides water (ref = anyone else)	0.80	0.61	1.06	0.70
Received social protection in last year	0.53*	0.09	0.86	0.17
Received livelihood assistance in last year	1.63	0.11	1.44***	0.00
Number of problems with services	1.18	0.25	1.11**	0.04
Number of grievance mechanisms known about	1.01	0.93	1.08***	0.00
Number of meetings known about	1.19	0.19	1.06	0.27
Number of services consulted about	1.17	0.38	1.35***	0.00
Respondent gender fixed wave 1			0.70***	0.00
Respondent education = Read/write or primary			0.93	0.58
Respondent education = Secondary or SLC passed			1.23	0.22
Respondent education = Higher than SLC			1.35	0.17
Respondent age fixed in wave 1			1.00	0.97
Respondent age fixed in wave 1 squared			1.00	0.92
Ethnicity fixed at wave 1 = Janajati			1.10	0.44
Ethnicity fixed at wave 1 = Dalit			1.40	0.11
Ethnicity fixed at wave 1 = Madhesi			1.75**	0.03
Ethnicity fixed at wave 1 = Muslim			1.70	0.10
Ethnicity fixed at wave 1 = Other			1.84*	0.06
District = Rolpa			0.73*	0.07
District = Bardiya			0.62***	0.00
Urban rural fixed wave 1			0.72**	0.03
Displaced during conflict 1996–2006			0.66	0.13
Moved to different house or village between waves			0.43**	0.03
Female-headed household fixed wave 1			1.17	0.25
/				
Constant			0.72	0.64
Observations	F04		0.000	
Ubservations	504		2,309	
	230		1,114	

Central government cares about my opinions?	FE		RE	
	Odd ratios	p value	Odd ratios	p value
Dependency ratio	0.62	0.20	0.80**	0.03
Any HH member in own cultivation	0.21*	0.05	0.62**	0.04
Any HH member in casual labour (any)	0.35*	0.09	0.79	0.31
Any HH member in selling goods	0.55	0.26	0.95	0.78
Any HH member in own business	0.16***	0.00	0.85	0.40
Any HH member in private sector work (any)	0.31*	0.09	0.93	0.72
Number of livelihood activities	2.09*	0.06	1.17	0.28
Any internal migrant	0.77	0.64	0.87	0.48
Any international migrant	0.65	0.42	0.75	0.17
Did your household receive any remittances in the past three years?	0.89	0.79	1.16	0.27
Natural log of Morris Index	1.69	0.16	1.00	0.97
Coping strategies index	0.96	0.32	0.97*	0.09
Has anyone in your household experienced a natural shock in the past three years?	0.81	0.63	1.12	0.52
Has anyone in your household experienced a health shock in the past three years?	0.73	0.45	1.09	0.60
Has anyone in your household experienced an economic shock in the past three years?	1.24	0.60	1.22	0.19
Did anyone from your household experience earthquake?	0.50**	0.01	0.65***	0.00
Number of shocks (earthquake excluded)	1.02	0.93	0.95	0.57
Number of crimes	0.85	0.66	0.92	0.50
In the last three years has there been fighting in this area?	0.60*	0.09	0.75**	0.02
Feels safe in village	0.58	0.35	0.64*	0.06
Feels safe going out of village	1.18	0.72	1.29	0.21
Household size	0.98	0.96	1.05	0.52
Household size squared	1.01	0.75	1.00	0.99
How long does it take to get to the nearest health clinic? (in minutes)?	1.00	0.62	1.00	0.14
Do you need to pay official fees for the service?	0.28***	0.00	0.55***	0.00
Do you need to pay informal payments for using the service?	1.21	0.64	0.94	0.70
Government runs health centre (ref = anyone else)	0.79	0.52	0.87	0.27
Satisfied overall with health centre (binary)	2.44**	0.03	1.42**	0.02
How long does a return journey to the drinking water source take?	1.00	0.92	0.98**	0.02
I11==Tube well	2.65	0.12	1.54**	0.02
111 6== River, well, bottled, other	1.59	0.46	0.85	0.51
Do you have to pay for drinking water?	1.15	0.60	1.34**	0.01
Is your drinking water clean and safe?	1.83	0.17	1.21	0.27
Government provides water (ref = anyone else)	0.43*	0.09	1.07	0.70
Received social protection in last year	1.59	0.24	1.11	0.40
Received livelihood assistance in last year	1.42	0.33	1.65***	0.00
Number of problems with services	1.17	0.31	1.12**	0.05
Number of grievance mechanisms known about	1.21**	0.01	1.13***	0.00
Number of meetings known about	1.50**	0.02	1.08	0.22
Number of services consulted about	0.79	0.17	1 19**	0.02
Respondent gender fixed wave 1	0.10	0.11	0.58***	0.00
Respondent education = Read/write or primary			1 01	0.96
Respondent education = Secondary or SLC passed			1 35	0.12
Respondent education = Higher than SLC			1 44	0.12
Respondent age fixed in wave 1			1.01	0.69
Respondent age fixed in wave 1 squared			1.01	0.62
Ethnicity fixed at wave 1 = langiati			0.84	0.02
Ethnicity fixed at wave 1 = Dalit			1 1 2	0.20
Ethnicity fixed at wave 1 - Dalit			1.12	0.01
Ethnicity fixed at wave 1 - Muslim			0.85	0.17
Ethnicity fixed at wave 1 - Muslim			0.85	0.00
			2.29^^	0.01
			0.90	0.00
Uistriut – Dafulya			0.4/ ^ ^ ^	0.00
			0.51***	0.00
Displaced during conflict 1996–2006			0.56*	0.07
Invoved to different nouse or village between waves			0.45*	0.08
remaie-neaded household fixed wave 1			1.1/	0.31
				0.01
Constant			0.46	0.34
Observations	404		2,317	
Number of A4	190		1,778	

The ward-level government cares about my opinion: wave 3 only

	Odd ratios	p value
Respondent gender fixed wave 1	0.86	0.50
Respondent education = Read/write or primary	0.91	0.69
Respondent education = Secondary or SLC passed	0.72	0.31
Respondent education = Higher than SLC	0.88	0.78
Respondent age fixed in wave 1	0.95	0.24
Respondent age fixed in wave 1 squared	1 00	0.29
Dependency ratio	1.03	0.87
Any HH member in own cultivation	0.99	0.07
	0.33	0.53
	0.60	0.54
Any HH member in selling goods	0.05	0.15
Any HH member in own business	0.80	0.63
Any HH member in private sector work (any)	1.12	0.73
Number of livelihood activities	0.98	0.93
Any internal migrant	1.10	0.78
Any international migrant	0.99	0.99
Did your household receive any remittances in the past three years?	1.50*	0.05
Natural log of Morris Index	1.60***	0.00
Coping strategies index	0.98	0.56
Has anyone in your household experienced a natural shock in the past three years?	1.57	0.13
Has anyone in your household experienced a health shock in the past three years?	1.24	0.43
Has anyone in your household experienced an economic shock in the past three years?	0.72	0.23
Did anyone from your household experience earthquake?	0.83	0.45
Number of shocks (earthquake excluded)	0.90	0.49
Number of crimes	0.65	0.25
In the last three years has there been fighting in this area?	1.00	1.00
	1.00	0.42
Feels Sale III Village	0.07	0.42
The side going out of village	1.47	0.28
Ethnicity fixed at wave 3 = Hill Janajati/Adivasi	1.55^	0.09
Ethnicity fixed at wave 3 = Hill Dalit	1.22	0.59
Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi	1.02	0.96
Ethnicity fixed at wave 3 = Terai/Madhesi Dalit	0.37	0.36
Ethnicity fixed at wave 3 = Musalman	0.32	0.14
Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o,	-	-
Ethnicity fixed at wave 3 = Other	1.00	1.00
District = Rolpa	0.32***	0.00
District = Bardiya	0.88	0.76
Urban rural fixed wave 1	0.27***	0.00
Displaced during conflict 1996–2006	0.72	0.52
Moved to different house or village between waves	0.81	0.82
Female-headed household fixed wave 1	0.65*	0.10
Household size	1.06	0.62
Household size squared	1 00	0.78
How long does it take to get to the nearest health clinic? (in minutes)?	1.00	0.63
Do you need to nay official fees for the service?	0.86	0.58
Do you need to pay official rees for the service:	1.00	0.38
Covernment runs health centre (ref = anyone else)	1.20	0.40
Cotiefied everall with health centre (hiner)	1.23	0.39
Sausried overall with health centre (binary)	1.73^^	0.01
How long does a return journey to the drinking water source take?	1.00	0.84
	0.69	0.28
River, well, bottled, other	0.76	0.54
Do you have to pay for drinking water?	0.79	0.34
Is your drinking water clean and safe?	1.28	0.36
Government provides water (ref = anyone else)	0.90	0.70
Received social protection in last year	1.02	0.92
Received livelihood assistance in last year	1.43	0.12
Number of problems with services	0.76***	0.01
Number of grievance mechanisms known about	0.96	0.48
Number of meetings known about	1.21	0.11
Number of services consulted about	1.10	0,48
Constant	2.20	0.58
Observations	606	0.00
	030	

The provincial government cares a	bout my opir	nion: wave 3	only
-----------------------------------	--------------	--------------	------

Respondent gender fixed wave 1 0.55 ** 0.03 Respondent education = Respondent education = Higher than SLC 1.11 0.80 Respondent education = Negler than SLC 1.29 0.60 Respondent education = Higher than SLC 1.03 0.55 Respondent age fixed in wave 1 0.03 0.40 Dependency ratio 1.88 0.64 Ary HH member in casual labour (any) 1.24 0.63 Ary HH member in parkies excit work (any) 0.81 0.59 Number of livelihood activation 1.86 0.64 Ary HH member in parkate sector work (any) 0.81 0.59 Number of livelihood activation 0.99 0.98 Ary International migrant 1.18 0.68 Onjour busched dexperienced a natural shock in the past three years? 1.84 0.49 Naturation of trave busched dexperienced an extrave shock in the past three years? 1.84 0.49 Heas anyone in your busched dexperienced an extrave shock in the past three years? 0.81 0.49 Heas anyone in your busched dexperience antipulate shock in the past three years? 0.81 0.49		Odd ratios	p value
Respondent education = Secondary or SLC passed1.110.80Respondent education = % condary or SLC passed1.030.55Respondent education = % condary or SLC passed1.000.40Dependency ratio0.080.61Ary HH member in casual labour (any)1.230.64Ary HH member in casual labour (any)1.240.63Ary HH member in casual labour (any)0.810.89Ary HH member in own business0.990.99Ary HH member in own business0.990.99Ary IH member in private sector work (any)0.810.65Ary intranational migrant1.860.68Ary intranational migrant1.860.99Ary intranational migrant1.860.99Ary intranational migrant1.860.99Ary intranational migrant1.860.99Ary and the dynamic index0.980.59Did ayour household experienced a natural shock in the past three years?0.810.49Has anyone in your household experienced a natural shock in the past three years?0.810.99Did ayour household experienced a natural shock in the past three years?0.810.55Has anyone in your household experienced a natural shock in the past three years?0.810.61Number of rinkes (karthquake experienced an talual shock in the past three years?0.	Respondent gender fixed wave 1	0.55**	0.03
Respondent education = Ngenr Han SLC 1.11 0.60 Respondent age fixed in wave 1 0.30 0.55 Respondent age fixed in wave 1 squared 0.00 0.40 Dependency ratio 0.89 0.61 Any HH member in own cutivation 1.23 0.64 Any HH member in essual labour (any) 1.24 0.63 Any HH member in point sector work (any) 0.81 0.59 Number of lowithood activation 0.89 0.81 0.59 Number of lowithood activation 0.81 0.59 0.81 0.59 Number of lowithood activation 0.81 0.59 0.55 0.64 0.01 0.81 0.59 Number of lowithood activation 1.06 0.84 0.01 0.01 0.81 0.55 Hae anyone in your household experience antepast three years? 1.16 0.76 0.82 0.55 Hae anyone in your household experience antepast hock in the past three years? 0.81 0.49 0.49 0.40 0.40 0.40 0.40 0.55 0.53 0.51 0.53 <	Respondent education = Read/write or primary	0.56**	0.05
Respondent education = Higher than SLC 1.29 0.60 Respondent age fred in wave 1 squared 1.00 0.45 Respondent age fred in wave 1 squared 0.00 0.40 Ary HI member in casual labour (any) 1.23 0.64 Ary HI member in casual labour (any) 1.24 0.63 Ary HI member in casual labour (any) 0.81 0.59 Ary HI member in own business 0.96 0.91 Ary HI member in own business 0.96 0.98 Ary HI member in own business 0.96 0.98 Ary HI member in own business 0.99 0.98 Ary International migrant 1.18 0.88 Ary International migrant 1.07 0.87 Did your household experienced an natural shock in the past three years? 1.18 0.49 Has anyone in your household experience an economic shock in the past three years? 0.84 0.43 Has anyone in your household experience an economic shock in the past three years? 0.83 0.10 Number of shocks (earthquake excluded) 0.94 0.66 0.51 0.13 Daryone firmyou househo	Respondent education = Secondary or SLC passed	1.11	0.80
Responder äge fred in wave 1 0.03 0.40 Dependency ratio 0.89 0.61 Any HH member in own cultweision 1.23 0.64 Any HH member in own cultweision 1.24 0.63 Any HH member in own businesis 0.73 0.37 Any HH member in own businesis 0.99 0.98 Any HH member in own businesis 0.99 0.98 Any HH member in own businesis 0.99 0.98 Any HH member in migrant 1.18 0.68 Any international migrant 1.18 0.68 Any international migrant 1.36* 0.09 Coping strategies index 0.98 0.55 Hea anyone in your household experienced a natural shock in the past three years? 0.81 0.49 Hea anyone in your household experienced a natural shock in the past three years? 0.88 0.95 Did anyone from your household experienced a natural shock in the past three years? 0.84 0.49 Hea anyone in your household experienced a natural shock in the past three years? 0.88 0.95 Did anyone from your household experienced a natural shock in the past thre	Respondent education = Higher than SLC	1.29	0.60
Respondent age fixed in wave 1 squared 0.0 0.40 Dependency ratio 0.89 0.61 Any HH member in oxenu clubvation 1.24 0.63 Any HH member in casual labour (any) 1.24 0.63 Any HH member in own business 0.96 0.91 Any HH member in own business 0.96 0.91 Any HH member in own business 0.99 0.98 Any International migrant 1.18 0.68 Any International migrant 1.18 0.68 Any international experienced a natural shock in the past three years? 0.86 0.95 Has anyone in your household experience an each meant three years? 0.81 0.49 Has anyone in your household experience an each main shock in the past three years? 0.83 0.95 Has anyone in your household experience antrual shock in the past three years? 0.84 0.94 Did anyone from your household experience antrual shock in the past three years? 0.84 0.94 Did anyone from your household experience antrual shock in the past three years? 0.84 0.94 Did anyone from your household experience antrual shock in the past three years?	Respondent age fixed in wave 1	1.03	0.55
Dependency ratio 0.69 0.61 Any HH member in own cultivation 1.23 0.64 Any HH member in own cultivation 1.24 0.63 Any HH member in own business 0.73 0.37 Any HH member in private sector work (any) 0.81 0.59 Number of livelihood activities 0.99 0.88 0.59 Any IHT member in private sector work (any) 0.81 0.66 0.91 Any IHT member in private sector work (any) 0.81 0.66 0.99 0.88 Any International migrant 1.107 0.87 0.99 0.55 His anyone in your household experienced a netural shock in the past three years? 0.81 0.49 His anyone in your household experienced a netural shock in the past three years? 0.81 0.49 His anyone in your household experience antequake? 0.58 0.10 Number of shocks (anthuake experience antequake? 0.58 0.13 0.55 Has anyone in your household experience antequake? 0.54 0.13 0.55 0.43 0.66 Number of shocks (anthuake exolded) 0.44 0.66 Number	Respondent age fixed in wave 1 squared	1.00	0.40
Any HI member in own cultivation 1.23 0.64 Any HI member in casual labour (any) 1.24 0.63 Any HI member in own business 0.96 0.91 Any HI member in own business 0.96 0.91 Any HI member in own business 0.96 0.99 Any HI member in own business 0.99 0.98 Any International migrant 1.18 0.68 Any international migrant 1.86 0.68 Oping strategies index 0.98 0.98 Oping strategies index 0.98 0.98 Oping strategies index 0.98 0.55 Has anyone in your household experience an eatomatic back in the past three years? 0.81 0.49 Has anyone in your household experience an eatomatic back in the past three years? 0.83 0.10 Number of shocks (earthquake excluded) 0.49 0.66 0.13 Feels safe going out of village 0.51 0.13 1.56 0.57 Feels safe going out of village 1.57 0.58 0.34 0.36 0.34 0.57 Enhinity	Dependency ratio	0.89	0.61
Any HH member in easiling goods 0.73 0.37 Any HH member in easiling goods 0.37 0.37 Any HH member in own business 0.96 0.91 Any HH member in own business 0.99 0.98 Any HH member in own business 0.99 0.98 Any International migrant 1.16 0.68 Any international migrant 1.07 0.87 Did your household receive any remittances in the past three years? 1.86* 0.01 Startal log of Moris Index 0.98 0.55 Has anyone in your household experienced a natural shock in the past three years? 0.81 0.49 Has anyone in your household experienced a natural shock in the past three years? 0.84 0.65 Number of rolmes 0.63* 0.03 1.11 0.75 Has anyone in your household experienced an endural shock in the past three years? 0.84 0.66 Number of rolmes 0.63* 0.03 1.14 0.55 0.13 Presis ade in your household experienced an endural shock in the past three years? 0.51 0.13 Presis ade in your household superienced an e	Any HH member in own cultivation	1.23	0.64
Any HH member in selling goods 0.37 0.37 0.37 Any HH member in own business 0.96 0.91 Any HH member in own business 0.99 0.98 Any Internal inigrant 1.18 0.68 Ary Internal migrant 1.18 0.68 Ary Internal migrant 1.18 0.68 Ary Internal migrant 1.66** 0.01 Natural log of Morris Index 0.98 0.98 Coping strategies index 0.98 0.55 Has anyone in your household experience at health shock in the past three years? 0.81 0.49 Has anyone in your household experience at health shock in the past three years? 0.83 0.10 Number of shocks (earthquake excluded) 0.44 0.66 Number of shocks (earthquake excluded) 0.44 0.66 Number of shocks (earthquake excluded) 0.47 0.63 Number of shocks (earthquake excluded) 0.46 0.11 Feels safe going out of village 0.51 0.13 Enholity fixed at wave 3 = Hear (Madhesi Janajat/Adivasi 0.61 0.13 Enho	Any HH member in casual labour (any)	1.24	0.63
Ary HH member in oven business 0.96 0.91 Ary HH member in private sector work (any) 0.81 0.59 Number of livelihood activities 0.99 0.98 Ary international migrant 1.18 0.68 Ary international migrant 1.07 0.87 Did your household receive any remittances in the past three years? 1.86** 0.01 Kes anyone in your household experienced a natural shock in the past three years? 0.81 0.49 Hes anyone in your household experience activities of the past three years? 0.81 0.49 Hes anyone in your household experience activities of the past three years? 0.83 0.05 Did anyone from your household experience activities 0.53** 0.03 In the last three years has there been fighting in this area? 1.17 0.58 Feels safe yoing out of Willage 0.51 0.75 Ethnicity fixed at wave 3 = Hill Janjeti/Adivasi 0.67 0.61 Ethnicity fixed at wave 3 = Terai/Mathesi Janjeti/Adivasi 1.63 0.75 Ethnicity fixed at wave 3 = Terai/Mathesi Janjeti/Adivasi 0.63 0.44 Ethnicity fixed at wave 3 = Terai/Mathesi Janje	Any HH member in selling goods	0.73	0.37
Any HI member in private sector work (any) 0.81 0.59 Number of livelihood activities 0.99 0.88 Ary internal migrant 1.18 0.68 Ary internal migrant 1.18 0.68 Did your household er cevire any remittances in the past three years? 1.86** 0.09 Coping strategies index 0.98 0.55 Has anyone in your household experienced a health shock in the past three years? 0.81 0.49 Has anyone in your household experienced a neatin shock in the past three years? 0.81 0.49 Did anyone from your household experienced a neaconomic shock in the past three years? 0.83 0.95 Did anyone from your household experienced a neaconomic shock in the past three years? 0.83 0.03 Number of rimes 0.51 0.13 Feels safe in village 0.51 0.13 Feels safe in village 0.67 0.16 Ethnicity fixed at wave 3 = Hill Janajat/Advisai 1.63 0.34 Ethnicity fixed at wave 3 = Tera/Madheai Janajati/Advisai 1.63 0.34 Ethnicity fixed at wave 3 = Tera/Madheai Janajati/Advisai 0.62 0.59 Ethnicity fixed at wave 3	Any HH member in own business	0.96	0.91
Number of livelihood activities 0.99 0.88 Any internalional migrant 1.18 0.68 Any international migrant 1.07 0.87 Did your household receive any remittances in the past three years? 1.86** 0.01 Res anyoen in your household experienced a natural shock in the past three years? 0.81 0.49 Res anyoen in your household experienced a neotomic shock in the past three years? 0.81 0.49 Res anyoen in your household experience cancomic shock in the past three years? 0.83 0.95 Did anyone from your household experience cancomic shock in the past three years? 0.83 0.05 Number of shocks (eartinguake excluded) 0.94 0.66 Number of shocks (eartinguake excluded) 0.51 0.53 Number of willage 0.51 0.53 Feels safe in Willage 0.51 0.51 Desis safe in Willage 0.51 0.53 Ethnicity fixed at wave 3 = Tera/Madhesi Janajati/Adivasi 0.67 0.52 Ethnicity fixed at wave 3 = Tera/Madhesi Janajati/Adivasi 0.61 0.52 0.59 Ethnicity fixed at wave 3 = Tera/Madhesi Janajati/Adivasi	Any HH member in private sector work (any)	0.81	0.59
Any internal migrant 1.18 0.68 Any international migrant 1.07 0.87 Did your household receive any remittances in the past three years? 1.86** 0.01 Natural log of Morris Index 0.98 0.55 Did your household experienced a health shock in the past three years? 0.81 0.49 Has anyone in your household experienced a health shock in the past three years? 0.81 0.49 Has anyone in your household experience a health shock in the past three years? 0.83 0.55 Did anyone from your household experience anthquake? 0.63* 0.00 Number of shocks (earthquake excluded) 0.54 0.66 Number of orines 0.51 0.13 Feels safe in village 1.87* 0.08 Ethnicity fixed at wave 3 = Hill Janajati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Tera/Madhesi Janajati/Adivasi 0.52 0.59 Ethnicity fixed at wave 3 = Marwad/Bengai/Ounjabu (Sikh/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwad/Bengai/Ounjabu (Sikh/Jain (Balung) = 0, 1.3*** 0.00 District = Roipa 0.13**** <td< td=""><td>Number of livelihood activities</td><td>0.99</td><td>0.98</td></td<>	Number of livelihood activities	0.99	0.98
Ary international migrant 1.07 0.87 Did your household receive any remittances in the past three years? 1.86** 0.01 Natural log of Morris Index 1.36* 0.09 Coping strategies index 0.98 0.55 Has anyone in your household experience a neutral shock in the past three years? 0.81 0.49 Has anyone in your household experience an economic shock in the past three years? 0.84 0.49 Number of shocks (earthquake excluded) 0.94 0.66 Number of shocks (earthquake excluded) 0.94 0.66 Number of shocks (earthquake excluded) 0.94 0.66 Number of shocks (earthquake excluded) 0.51 0.13 Feels safe invillage 0.51 0.13 Feels safe invillage 0.51 0.13 Ethnicity fixed at wave 3 = Hill Jnajati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Teral/Madhesi Janjati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Teral/Madhesi Janjati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Teral/Madhesi Janjati/Adivasi 0.62 0.52 0.55	Any internal migrant	1.18	0.68
Did your household receive any remittances in the past three years? 1.86 ** 0.09 Coping strategies index 0.98 0.55 Has anyone in your household experienced a natural shock in the past three years? 0.81 0.49 Has anyone in your household experienced a neonomic shock in the past three years? 0.81 0.49 Has anyone in your household experienced a neonomic shock in the past three years? 0.83 0.10 Number of shocks (earthquake excluded) 0.94 0.66 Number of shocks (earthquake excluded) 0.94 0.66 Number of crimes 0.53 ** 0.03 In the last three years has three been fighting in this area? 1.17 0.55 Feels safe in village 0.67 0.13 Ethnicity fixed at wave 3 = Treal/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Treal/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Treal/Madhesi Janajati/Adivasi 0.00 0.13*** 0.00 District = Rolpa 0.13 0.52 0.59 Ethnicity fixed at wave 3 = Treal/Madhesi Janajati/Adivasi 0.61 0.13*** 0.00 District = Rolpa 0.13 0.24*** 0.00<	Any international migrant	1.07	0.87
Natural log of Morris Index 0.36* 0.09 Coping strategies index 0.98 0.55 Has anyone in your household experienced a natural shock in the past three years? 1.11 0.75 Has anyone in your household experience a neotomic shock in the past three years? 0.81 0.49 Has anyone in your household experience acconncic shock in the past three years? 0.98 0.95 Did anyone from your household experience acconncic shock in the past three years? 0.94 0.66 Number of shocks (earthquake excluded) 0.94 0.66 Number of shocks (earthquake excluded) 0.51 0.13 Feels safe in village 0.51 0.13 Feels safe going out of village 0.67 0.16 Ethnicity fixed at wave 3 = Hill Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Dalit = 0, - - Ethnicity fixed at wave 3 = Terai/Madhesi Dalit = 0, - - Ethnicity fixed at wave 3 = Other 0.52 0.59 District = Bardiya 0.13*** 0.00 District = Bardiya 0.24**** 0.00 Distric	Did your household receive any remittances in the past three years?	1.86**	0.01
Coping strategies index 0.98 0.55 Has anyone in your household experienced a netural shock in the past three years? 0.81 0.49 Has anyone in your household experienced an economic shock in the past three years? 0.83 0.05 Did anyone from your household experience earthquake? 0.63* 0.03 Number of shocks (carthquake excluded) 0.94 0.66 Number of orimes 0.53** 0.03 In the last three years has there been fighting in this area? 1.17 0.58 Feels safe join village 1.87* 0.08 Ethnicity fixed at wave 3 = Hill Janajati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o, - - District = Borigy 0.12 0.52 0.59 District = Rolpa 0.13** 0.00 0.04*** Ouco 0.44***	Natural log of Morris Index	1.36*	0.09
Has anyone in your household experienced a natural shock in the past three years? 1.11 0.75 Has anyone in your household experienced an economic shock in the past three years? 0.88 0.95 Did anyone from your household experience earthquake? 0.63* 0.10 Number of shocks (earthquake excluded) 0.54 0.66 Number of chocks (earthquake excluded) 0.54 0.61 Number of shocks (earthquake excluded) 0.51 0.13 Feels safe in village 0.61 0.13 Feels safe in village 0.67 0.16 Ethnicity fixed at wave 3 = Hill Janjaiti/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Hill Anajaiti/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Terai/Madhesi Dailt = 0, - - Ethnicity fixed at wave 3 = Musalman 0.52 0.59 District = Rolpa 0.13*** 0.00 District = Rolpa 0.14**** 0.00 District = Rolpa 0.12**** 0.00 Urban true of the earticle any earticle at wave 1 0.44*** 0.00 District = Rolpa 0.14*** 0.00 Outrist = Rolpa 0.12**** 0	Coping strategies index	0.98	0.55
Has anyone in your household experienced a health shock in the past three years? 0.81 0.49 Has anyone in your household experience anthquake? 0.63* 0.00 Number of shocks (earthquake excluded) 0.94 0.66 Number of shocks (earthquake excluded) 0.94 0.66 Number of shocks (earthquake excluded) 0.33** 0.03 In the last three years has there been fighting in this area? 1.17 0.58 Feels safe join village 0.13 0.67 0.16 Ethnicity fixed at wave 3 = Hill Janjait/Adivasi 0.67 0.16 1.15 0.75 Ethnicity fixed at wave 3 = Frai/Madhesi Janjait/Adivasi 1.63 0.34 24 24 Ethnicity fixed at wave 3 = Terai/Madhesi Janjait/Adivasi 1.63 0.34 24	Has anyone in your household experienced a natural shock in the past three years?	1.11	0.75
Has anyone in your household experience an economic shock in the past three years? 0.88 0.95 Did anyone from your household experience earthquake? 0.63* 0.10 Number of shocks (earthquake excluded) 0.94 0.66 Number of shocks (earthquake excluded) 0.53** 0.03 In the last three years has there been fighting in this area? 1.17 0.58 Feels safe in village 0.61 0.13 Ethnicity fixed at wave 3 = Hill Janajati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Hill Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Teral/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Teral/Madhesi Janajati/Adivasi 0.52 0.59 Ethnicity fixed at wave 3 = Musalman 0.52 0.59 District = Roipa 0.13*** 0.00 District = Roipa 0.14*** 0.00 District = Roipa 0.14*** 0.00 District = Roipa 0.44 0.82 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.99*	Has anyone in your household experienced a health shock in the past three years?	0.81	0.49
Did anyone from your household experience earthquake? 0.63* 0.10 Number of shocks (earthquake excluded) 0.94 0.66 Number of crimes 0.53** 0.03 In the last three years has there been fighting in this area? 1.17 0.58 Feels safe in village 0.51 0.13 Ethnicity fixed at wave 3 = Hill Janajati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/	Has anyone in your household experienced an economic shock in the past three years?	0.98	0.95
Number of shocks (earthquake excluded) 0.94 0.66 Number of crimes 0.53** 0.03 In the last three years has there been fighting in this area? 1.17 0.58 Feels safe going out of vilage 0.51 0.13 Feels safe going out of vilage 1.87* 0.08 Ethnicity fixed at wave 3 = Hill Janajati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Mavadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o, - - Ethnicity fixed at wave 3 = Mavadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o, - - Ethnicity fixed at wave 3 = Mavadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o, - - Ethnicity fixed at wave 3 = Other 7.58 0.24 District = Rolpa 0.13**** 0.00 District = Rolpa 0.14**** 0.00 District = Rolpa 0.14**** 0.00 District = Rolpa 0.90 0.44 Household size 0.90 0.44	Did anyone from your household experience earthquake?	0.63*	0.10
Number of crimes 0.53** 0.03 In the last three years has there been fighting in this area? 1.17 0.58 Feels safe in village 0.61 0.13 Feels safe in village 1.67* 0.08 Ethnicity fixed at wave 3 = Hill Dalit 1.15 0.75 Ethnicity fixed at wave 3 = Hill Dalit 1.63 0.34 Ethnicity fixed at wave 3 = Teral/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Musalman 0.52 0.59 Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Urban rural fixed wave 1 0.00 0.13*** 0.00 District = Rolpa 0.14*** 0.00 District = Rolpa 0.14*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Mowed to different house or village between waves 0.19 0.14 Household size squared 0.90 0.44 House	Number of shocks (earthquake excluded)	0.94	0.66
in the last three years has there been fighting in this area? 1.17 0.58 Feels safe in village 0.51 0.13 Feels safe ging out of village 1.87* 0.08 Ethnicity fixed at wave 3 = Hill Janjati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Hill Janjati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Janjati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Janjati/Adivasi 0.52 0.59 Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Other 7.58 0.24 District = Rolpa 0.21*** 0.00 District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.94 0.82 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Doyau need to pay official fees for the servi	Number of crimes	0.53**	0.03
Feels safe in village 0.51 0.13 Feels safe going out of village 1.87* 0.08 Ethnicity fixed at wave 3 = Hill Janjati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Hill Dalit 1.15 0.75 Ethnicity fixed at wave 3 = Terai/Machesi Janjati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Frai/Machesi Dalt = o, - - Ethnicity fixed at wave 3 = Maswadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o, - - Ethnicity fixed at wave 3 = Other 0.52 0.59 Ethnicity fixed at wave 3 = Other 0.58 0.42 District = Rolpa 0.13*** 0.00 District = Bardiya 0.24*** 0.00 Urban run fixed wave 1 0.44*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headehousehold fixed wave 1 0.94 0.82 How long does it take to get to the nearest health clinic? (in minutes)? 0.99 0.44 Household size squared <td< td=""><td>In the last three years has there been fighting in this area?</td><td>1.17</td><td>0.58</td></td<>	In the last three years has there been fighting in this area?	1.17	0.58
Feels safe going out of village 1.87* 0.08 Ethnicity fixed at wave 3 = Hill Janajati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.15 0.75 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Dalle = 0. - - Ethnicity fixed at wave 3 = Musalman 0.52 0.59 Ethnicity fixed at wave 3 = Musalman 0.52 0.59 Ethnicity fixed at wave 3 = Other 7.58 0.24 District = Rolpa 0.13*** 0.00 District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.16 0.68 0.45 Moved to different house or village between waves 0.90 0.44 0.90 0.44 Household size 0.90 0.44 0.90 0.44 0.90 0.44 Household size quared 1.00 1.00 0.00 0.76 0.00 0.00 0.82 Household size quared 0.90 0.44 0.90 0.44 0.90 0.44 0.90 0.44 0.90 0.44	Feels safe in village	0.51	0.13
Ethnicity fixed at wave 3 = Hill Janajati/Adivasi 0.67 0.16 Ethnicity fixed at wave 3 = Frai/Madhesi Janajati/Adivasi 1.15 0.75 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 0.52 0.59 Ethnicity fixed at wave 3 = Mawadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Mawadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Other 7.58 0.24 District = Rolpa 0.13*** 0.00 Urban rural fixed wave 1 0.14*** 0.00 District = Bardiya 0.21**** 0.00 Urban rural fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size 0.90 0.44 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay informal payments for using the service? 1.00 0.00 Satisfied overall with	Feels safe going out of village	1.87*	0.08
Ethnicity fixed at wave 3 = Hill Dalit 1.15 0.75 Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Dalit = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Other 7.58 0.24 District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.14*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08	Ethnicity fixed at wave 3 = Hill Janajati/Adivasi	0.67	0.16
Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi 1.63 0.34 Ethnicity fixed at wave 3 = Terai/Madhesi Dalit = 0, - - Ethnicity fixed at wave 3 = Musalman 0.52 0.59 Ethnicity fixed at wave 3 = Musalman 0.52 0.59 Ethnicity fixed at wave 3 = Musalman 0.52 0.59 District = Rolpa 0.13*** 0.00 District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.44*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size quared 1.01 0.18 Household size quared 1.01 0.14 Household size quared 1.01 0.88 Do you need to pay official fees for the service? 1.39 0.43 Government runs health centre (iref = anyone else) 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the	Ethnicity fixed at wave 3 = Hill Dalit	1.15	0.75
Ethnicity fixed at wave 3 = Teral/Madhesi Dalit = 0, - - Ethnicity fixed at wave 3 = Musalman 0.52 0.59 Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Other 0.13*** 0.00 District = Rolpa 0.13*** 0.00 District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.14*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.10 0.76 Do you need to pay official fees for the service? 1.00 1.00 Do you need to pay official fees for the service? 1.00 0.03 Statisfied overall with health centre (binary) 2.28*** 0.00 </td <td>Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi</td> <td>1.63</td> <td>0.34</td>	Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi	1.63	0.34
Ethnicity fixed at wave 3 = Musalman 0.52 0.59 Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o, - - Ethnicity fixed at wave 3 = Other 7.58 0.24 District = Rolpa 0.13*** 0.00 District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.14*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.00 1.00 Do you need to pay informal payments for using the service? 1.00 1.00 Scowernment runs health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.33 111==Tube well 0.41** 0.34 <t< td=""><td>Ethnicity fixed at wave 3 = Terai/Madhesi Dalit = o,</td><td>_</td><td>_</td></t<>	Ethnicity fixed at wave 3 = Terai/Madhesi Dalit = o,	_	_
Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = 0, - - Ethnicity fixed at wave 3 = Other 7.58 0.24 District = Rolpa 0.13*** 0.00 District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.14*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay informal payments for using the service? 1.10 0.76 Do you need to pay informal payments for using the service? 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.38 111==Tube well 0.41** 0.03 1.45 0.15 Received social protection in last y	Ethnicity fixed at wave 3 = Musalman	0.52	0.59
Ethnicity fixed at wave 3 = Other 7.58 0.24 District = Rolpa 0.13*** 0.00 District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.14*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size 0.90 0.44 Household size 0.99 0.08 Do you need to pay informal payments for using the service? 1.10 0.76 Do you need to pay informal payments for using the service? 1.39 0.43 Government runs health centre (ref = anyone else) 1.00 1.00 Stisfied overall with health centre (ref = anyone else) 1.00 0.83 I11==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 Is your drinking water clean and safe? 1.64 0.14 Government provides water (ref = anyone else) <td< td=""><td>Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o,</td><td>_</td><td>_</td></td<>	Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o,	_	_
District = Rolpa 0.13*** 0.00 District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.14*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.10 0.76 Do you need to pay informal payments for using the service? 1.39 0.43 Government runs health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.83 111==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 1.34 0.35 Received social protection in last year 1.45 0.15 Received	Ethnicity fixed at wave 3 = Other	7.58	0.24
District = Bardiya 0.21*** 0.00 Urban rural fixed wave 1 0.14*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.10 0.76 Do you need to pay official fees for the service? 1.39 0.43 Government runs health centre (binary) 2.28*** 0.00 Abw long does a return journey to the drinking water source take? 1.00 0.83 111==Tube well 0.41** 0.03 111==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 Is your drinking water clean and safe? 1.64 0.14 0.35 1.64 0.14	District = Rolpa	0.13***	0.00
Urban rural fixed wave 1 0.14*** 0.00 Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.10 0.76 Do you need to pay official fees for the service? 1.39 0.43 Government runs health centre (ref = anyone else) 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.83 111==Tube well 0.41** 0.03 0.36 Is your drinking water (ref = anyone else) 1.64 0.14 Government provides water (ref = anyone else) 1.34 0.35 Received loy of drinking water? 1.28 0.36 Is your drinking water (ref = anyone else)	District = Bardiya	0.21***	0.00
Displaced during conflict 1996-2006 0.68 0.45 Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.10 0.76 Do you need to pay informal payments for using the service? 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.83 111=Tube well 0.41** 0.03 1.026** 0.01 Do you have to pay for drinking water? 1.28 0.36 1.28 0.36 Is your drinking water clean and safe? 1.64 0.14 Government provides water (ref = anyone else) 1.45 0.15 Received social protection in last year 1.45 0.36 1.29 0.34 Number of problems with services 1.05	Urban rural fixed wave 1	0.14***	0.00
Moved to different house or village between waves 0.19 0.16 Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.10 0.76 Do you need to pay informal payments for using the service? 1.39 0.43 Government runs health centre (ff = anyone else) 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.83 111==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 Is your drinking water (ref = anyone else) 1.34 0.35 Received social protection in last year 1.29 0.34 Moumber of problems with services 1.05 0.69 Number of grievance mechanisms known about 0.90 <td>Displaced during conflict 1996–2006</td> <td>0.68</td> <td>0.45</td>	Displaced during conflict 1996–2006	0.68	0.45
Female-headed household fixed wave 1 0.94 0.82 Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.10 0.76 Do you need to pay informal payments for using the service? 1.39 0.43 Government runs health centre (ref = anyone else) 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.83 111==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 Is your drinking water (ref = anyone else) 1.34 0.35 Received social protection in last year 1.45 0.15 Received social protection in last year 1.45 0.15 Received livelihood assistance in last year 1.05 0.69 Number of grievance mechanisms known about 0.90 0.12 Number of meetings	Moved to different house or village between waves	0.19	0.16
Household size 0.90 0.44 Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.10 0.76 Do you need to pay informal payments for using the service? 1.39 0.43 Government runs health centre (ref = anyone else) 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.83 111==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 Is your drinking water (ref = anyone else) 1.34 0.35 Received social protection in last year 1.45 0.15 Received livelihood assistance in last year 1.05 0.69 Number of grievance mechanisms known about 0.90 0.12 Number of services consulted about 0.95 0.68 Number of services consulted about 0.76	Female-headed household fixed wave 1	0.94	0.82
Household size squared 1.01 0.18 How long does it take to get to the nearest health clinic? (in minutes)? 0.99* 0.08 Do you need to pay official fees for the service? 1.10 0.76 Do you need to pay informal payments for using the service? 1.39 0.43 Government runs health centre (ref = anyone else) 1.00 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.83 111=Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you dave to pay for drinking water? 1.28 0.36 Is your drinking water (ref = anyone else) 1.34 0.35 Received social protection in last year 1.45 0.15 Received social protection in last year 1.05 0.69 Number of grievance mechanisms known about 0.90 0.12 Number of services consulted about 1.41** 0.04 Constant 0.76 0.87 Observations 0.76 0.87	Household size	0.90	0.44
How long does it take to get to the nearest health clinic? (in minutes)?0.99*0.08Do you need to pay official fees for the service?1.100.76Do you need to pay informal payments for using the service?1.390.43Government runs health centre (ref = anyone else)1.001.00Satisfied overall with health centre (binary)2.28***0.00How long does a return journey to the drinking water source take?1.000.83111==Tube well0.41**0.03River, well, bottled, other0.26**0.01Do you have to pay for drinking water?1.280.36Is your drinking water (ref = anyone else)1.340.35Received social protection in last year1.450.15Received livelihood assistance in last year1.050.69Number of greivance mechanisms known about0.900.12Number of services consulted about1.41**0.04Constant0.760.87Observations632	Household size squared	1.01	0.18
Do you need to pay official fees for the service?1.100.76Do you need to pay informal payments for using the service?1.390.43Government runs health centre (ref = anyone else)1.001.00Satisfied overall with health centre (binary)2.28***0.00How long does a return journey to the drinking water source take?1.000.83111==Tube well0.41**0.03River, well, bottled, other0.26**0.01Do you have to pay for drinking water?1.280.36Is your drinking water clean and safe?1.640.14Government provides water (ref = anyone else)1.340.35Received social protection in last year1.450.15Received livelihood assistance in last year1.050.69Number of grievance mechanisms known about0.900.12Number of services consulted about0.950.68Number of services consulted about0.760.87Observations6320.760.87	How long does it take to get to the nearest health clinic? (in minutes)?	0.99*	0.08
Do you need to pay informal payments for using the service? 1.39 0.43 Government runs health centre (ref = anyone else) 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.83 11==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 Is your drinking water clean and safe? 1.64 0.14 Government provides water (ref = anyone else) 1.34 0.35 Received social protection in last year 1.45 0.15 Received livelihood assistance in last year 1.05 0.69 Number of problems with services 0.90 0.12 Number of meetings known about 0.95 0.68 Number of services consulted about 0.41** 0.04 Constant 0.76 0.87 Observations 632 0.87	Do you need to pay official fees for the service?	1.10	0.76
Government runs health centre (ref = anyone else) 1.00 1.00 Satisfied overall with health centre (binary) 2.28*** 0.00 How long does a return journey to the drinking water source take? 1.00 0.83 I11==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 Is your drinking water clean and safe? 1.64 0.14 Government provides water (ref = anyone else) 1.34 0.35 Received social protection in last year 1.45 0.15 Received livelihood assistance in last year 1.05 0.69 Number of problems with services 0.90 0.12 Number of meetings known about 0.95 0.68 Number of services consulted about 1.41** 0.04 Constant 0.76 0.87 Observations 632 0.76 0.87	Do you need to pay informal payments for using the service?	1.39	0.43
Satisfied overall with health centre (binary)2.28***0.00How long does a return journey to the drinking water source take?1.000.83I11==Tube well0.41**0.03River, well, bottled, other0.26**0.01Do you have to pay for drinking water?1.280.36Is your drinking water clean and safe?1.640.14Government provides water (ref = anyone else)1.340.35Received social protection in last year1.290.34Number of problems with services1.050.69Number of grievance mechanisms known about0.900.12Number of services consulted about1.41**0.04Constant0.760.87Observations632632	Government runs health centre (ref = anyone else)	1.00	1.00
How long does a return journey to the drinking water source take? 1.00 0.83 I11==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 Is your drinking water clean and safe? 1.64 0.14 Government provides water (ref = anyone else) 1.34 0.35 Received social protection in last year 1.45 0.15 Received livelihood assistance in last year 1.05 0.69 Number of problems with services 1.05 0.69 Number of grievance mechanisms known about 0.90 0.12 Number of services consulted about 1.41** 0.04 Constant 0.76 0.87 Observations 632 0.76 0.87	Satisfied overall with health centre (binary)	2.28***	0.00
111==Tube well 0.41** 0.03 River, well, bottled, other 0.26** 0.01 Do you have to pay for drinking water? 1.28 0.36 Is your drinking water clean and safe? 1.64 0.14 Government provides water (ref = anyone else) 1.34 0.35 Received social protection in last year 1.45 0.15 Received livelihood assistance in last year 1.29 0.34 Number of problems with services 1.05 0.69 Number of grievance mechanisms known about 0.90 0.12 Number of services consulted about 1.41** 0.04 Constant 0.76 0.87 Observations 632 0.76	How long does a return journey to the drinking water source take?	1.00	0.83
River, well, bottled, other0.26**0.01Do you have to pay for drinking water?1.280.36Is your drinking water clean and safe?1.640.14Government provides water (ref = anyone else)1.340.35Received social protection in last year1.450.15Received livelihood assistance in last year1.290.34Number of problems with services1.050.69Number of grievance mechanisms known about0.900.12Number of services consulted about1.41**0.04Constant0.760.87Observations6320.26**	I11==Tube well	0.41**	0.03
Do you have to pay for drinking water?1.280.36Is your drinking water clean and safe?1.640.14Government provides water (ref = anyone else)1.340.35Received social protection in last year1.450.15Received livelihood assistance in last year1.290.34Number of problems with services1.050.69Number of grievance mechanisms known about0.900.12Number of services consulted about1.41**0.04Constant0.760.87Observations632	River, well, bottled, other	0.26**	0.01
Is your drinking water clean and safe?1.640.14Government provides water (ref = anyone else)1.340.35Received social protection in last year1.450.15Received livelihood assistance in last year1.290.34Number of problems with services1.050.69Number of grievance mechanisms known about0.900.12Number of services consulted about0.950.68Number of services consulted about0.760.87Observations6320.760.87	Do you have to pay for drinking water?	1.28	0.36
Government provides water (ref = anyone else)1.340.35Received social protection in last year1.450.15Received livelihood assistance in last year1.290.34Number of problems with services1.050.69Number of grievance mechanisms known about0.900.12Number of meetings known about0.950.68Number of services consulted about1.41**0.04Constant0.760.87Observations632	Is your drinking water clean and safe?	1.64	0.14
Received social protection in last year1.450.15Received livelihood assistance in last year1.290.34Number of problems with services1.050.69Number of grievance mechanisms known about0.900.12Number of meetings known about0.950.68Number of services consulted about1.41**0.04Constant0.760.87Observations632	Government provides water (ref = anyone else)	1.34	0.35
Received livelihood assistance in last year1.290.34Number of problems with services1.050.69Number of grievance mechanisms known about0.900.12Number of meetings known about0.950.68Number of services consulted about1.41**0.04Constant0.760.87Observations632	Received social protection in last year	1.45	0.15
Number of problems with services1.050.69Number of grievance mechanisms known about0.900.12Number of meetings known about0.950.68Number of services consulted about1.41**0.04Constant0.760.87Observations632	Received livelihood assistance in last year	1.29	0.34
Number of grievance mechanisms known about0.900.12Number of meetings known about0.950.68Number of services consulted about1.41**0.04Constant0.760.87Observations632	Number of problems with services	1.05	0.69
Number of meetings known about0.950.68Number of services consulted about1.41**0.04Constant0.760.87Observations632	Number of grievance mechanisms known about	0.90	0.12
Number of services consulted about1.41**0.04Constant0.760.87Observations632	Number of meetings known about	0.95	0.68
Constant 0.76 0.87 Observations 632	Number of services consulted about	1.41**	0.04
Observations 632	Constant	0.76	0.87
	Observations	632	

Extent the decisions of the provincial government reflects own priorities: wave 3

	Odd ratios	p value
Respondent gender fixed wave 1	0.58**	0.04
Respondent education = Read/write or primary	0.82	0.47
Respondent education = Secondary or SLC passed	0.99	0.97
Respondent education = Higher than SLC	0.65	0.36
Respondent age fixed in wave 1	0.99	0.76
Respondent age fixed in wave 1 squared	1.00	0.96
Dependency ratio	1.35*	0.10
Any HH member in own cultivation	1.40	0.40
Any HH member in casual labour (any)	0.77	0.53
Any HH member in selling goods	1.12	0.75
Any HH member in own business	1.11	0.75
Any HH member in private sector work (any)	1.31	0.49
Number of livelihood activities	1.03	0.90
Anv internal migrant	0.76	0.52
Any international migrant	1 34	0.49
Did your household receive any remittances in the past three years?	1 51*	0.07
Natural log of Morrie Indox	1.01	0.07
	0.04*	0.77
Log anyong in your bouggheld experienced a natural sheek in the past three years?	1.02	0.07
Has anyone in your household experienced a hastin shock in the past three years?	1.02	0.95
Has anyone in your nousehold experienced a nearth shock in the past three years?	1.69^	0.07
Has anyone in your nousehold experienced an economic shock in the past three years?	1.65*	0.08
Did anyone from your household experience earthquake?	0.96	0.87
Number of shocks (earthquake excluded)	0.68**	0.01
Number of crimes	0.76	0.19
In the last three years has there been fighting in this area?	1.18	0.51
Feels safe in village	0.38**	0.03
Feels safe going out of village	1.14	0.72
Ethnicity fixed at wave 3 = Hill Janajati/Adivasi	0.84	0.54
Ethnicity fixed at wave 3 = Hill Dalit	0.98	0.97
Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi	1.66	0.23
Ethnicity fixed at wave 3 = Terai/Madhesi Dalit	2.08	0.48
Ethnicity fixed at wave 3 = Musalman	2.17	0.24
Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung) = o,	-	-
Ethnicity fixed at wave 3 = Other	1.91	0.64
District = Rolpa	0.23***	0.00
District = Bardiya	0.74	0.48
Urban rural fixed wave 1	0.47**	0.02
Displaced during conflict 1996–2006	0.33***	0.01
Moved to different house or village between waves	1.41	0.76
Female-headed household fixed wave 1	1.14	0.64
Household size	1.10	0.46
Household size squared	0.99	0.52
How long does it take to get to the nearest health clinic? (in minutes)?	1.00	0.57
Do you need to pay official fees for the service?	1.75*	0.05
Do you need to pay informal payments for using the service?	1.72	0.16
Government runs health centre (ref = anyone else)	1 36	0.25
Satisfied overall with health centre (hinary)	2 20***	0.00
How long does a return journey to the drinking water source take?	1.02	0.00
	0.46*	0.20
Piver well bettled other	0.40	0.03
The year base to new for drinking weter?	1.90**	0.03
buy you have to pay for uninking water?	1.00	0.02
	1.15	0.84
Government provides water (rei – anyone else)	1.25	0.45
Received social protection in last year	1.09	0.73
Received livelinood assistance in last year	1.99***	0.01
Number of problems with services	1.23*	0.06
Number of grievance mechanisms known about	0.76***	0.00
Number of meetings known about	1.03	0.82
Number of services consulted about	1.42*	0.05
Constant	2.47	0.56
Observations	624	

Government Perceptions Index (GPI) for waves 1, 2 and 3	FE		RE	
	coefficient	p value	coefficient	p value
Dependency ratio	-0.02	0.74	-0.03	0.11
Any HH member in own cultivation	-0.19	0.27	-0.11**	0.01
Any HH member in casual labour (any)	-0.19	0.18	-0.06	0.15
Any HH member in selling goods	-0.07	0.60	0.01	0.71
Any HH member in own business	-0.14	0.33	-0.02	0.61
Any HH member in private sector work (any)	-0.09	0.58	0.01	0.77
Number of livelihood activities	0.11	0.23	0.03	0.20
Any internal migrant	-0.04	0.72	-0.02	0.64
Any international migrant	0.08	0.55	0.01	0.73
Did your household receive any remittances in the past three years?	0.07	0.43	0.05**	0.04
Natural log of Morris Index	0.10	0.16	0.03	0.12
Coping strategies index	-0.01	0.28	-0.01***	0.00
Has anyone in your household experienced a natural shock in the past three years?	-0.02	0.85	0.05	0.14
Has anyone in your household experienced a health shock in the past three years?	0.01	0.93	0.03	0.27
Has anyone in your household experienced an economic shock in the past three years?	0.11	0.25	0.09***	0.00
Did anyone from your household experience earthquake?	-0.12**	0.03	-0.08***	0.00
Number of shocks (earthquake excluded)	-0.01	0.82	-0.03*	0.10
Number of crimes	-0.07	0.31	-0.03	0.16
In the last three years has there been fighting in this area?	-0.07	0.42	-0.05**	0.03
Feels safe in village	-0.10	0.47	-0.08*	0.08
Feels safe going out of village	0.04	0.70	0.05	0.23
Household size	0.06	0.30	0.02	0.26
Household size squared	_0.00	0.30	_0.02	0.20
How long does it take to get to the pearest health clinic? (in minutes)?	0.00	0.77	_0.00	0.01
Do you need to pay official fees for the service?		0.77	_0.07**	0.10
Do you need to pay informal payments for using the service?		0.37	_0.07	0.02
Covernment runs boolth contro (rof = anyong also)	-0.10	0.33	-0.10	0.00
Cotiefied everall with health centre (hinory)	-0.00	0.40	-0.01	0.77
Jausheu Overall with health centre (billary)	0.00	0.40	0.08	0.00
	-0.00	0.07	-0.00	0.11
	0.26	0.14	0.05	0.18
111_6== River, well, bottled, other	0.02	0.92	-0.07	0.11
Do you have to pay for drinking water?	0.03	0.57	0.08***	0.00
Is your drinking water clean and safe?	0.01	0.88	0.03	0.31
Government provides water (ref = anyone else)	-0.06	0.61	0.00	0.90
Received social protection in last year	0.05	0.64	-0.01	0.82
Received livelihood assistance in last year	0.14*	0.07	0.15***	0.00
Number of problems with services	0.02	0.57	0.02*	0.06
Number of grievance mechanisms known about	0.02	0.30	0.01***	0.01
Number of meetings known about	0.07*	0.08	0.05***	0.00
Number of services consulted about	-0.00	0.93	0.04***	0.01
Respondent gender fixed wave 1			-0.05**	0.05
Respondent education = Read/write or primary			0.03	0.24
Respondent education = Secondary or SLC passed			0.10***	0.00
Respondent education = Higher than SLC			0.17***	0.00
Respondent age fixed in wave 1			0.00	0.32
Respondent age fixed in wave 1 squared			-0.00	0.64
Ethnicity fixed at wave 1 = lanaiati			0.01	0.61
Ethnicity fixed at wave 1 = Dalit			0.01	0.01
Ethnicity fixed at wave 1 = Madheei			0.00	0.23
Ethnicity fixed at wave 1 - Muclim			0.12	0.03
Ethnicity fixed at wave 1 - Other			0.05	0.47
Etimicity fixed at wave 1 = Other			0.17 ^ ^	0.02
District = Rolpa			-0.09**	0.01
District = Bardiya			-0.10***	0.00
Urban rural fixed wave 1			-0.16***	0.00
Displaced during conflict 1996–2006			-0.09	0.12
Moved to different house or village between waves			-0.19***	0.01
Female-headed household fixed wave 1			0.01	0.82
Constant	-1.09***	0.00	-0.76***	0.00
Observations	2,216		2,216	
R-squared	0.84		1,720	
r2	0.839			

Government Perceptions Index (GPI3) for wave 3 only	ns Index (GPI3) for wave 3 only Ethnicity wave 1		Ethnicity wave 3	
	coefficient	p value	coefficient	p value
Dependency ratio	-0.04	0.32	-0.04	0.32
Any HH member in own cultivation	0.05	0.48	0.04	0.59
Any HH member in casual labour (any)	-0.01	0.91	0.02	0.83
Any HH member in selling goods	-0.01	0.87	0.02	0.74
Any HH member in own business	-0.01	0.93	0.03	0.65
Any HH member in private sector work (any)	0.06	0.39	0.07	0.34
Number of livelihood activities	-0.03	0.57	-0.05	0.33
Any internal migrant	0.02	0.82	0.01	0.93
Any international migrant	0.10	0.22	0.10	0.20
Did your household receive any remittances in the past three years?	0.05	0.23	0.04	0.44
Natural log of Morris Index	0.09**	0.01	0.07**	0.04
Coping strategies index	-0.01	0.19	-0.01	0.18
Has anyone in your household experienced a natural shock in the past three years?	0.08	0.24	0.08	0.24
Has anyone in your household experienced a health shock in the past three years?	0.00	0.5/	0.00	0.52
Has anyone in your household experienced an economic shock in the past three years?	-0.04	0.53	_0.03	0.52
Thas anyone in your household experienced an economic shock in the past three years:	0.04	0.33	-0.03	0.30
Number of checks (continuity or voluded)	-0.00	0.10	-0.00	0.15
Number of stimes	-0.04	0.27	-0.04	0.25
Number of climes	-0.00	1.00	-0.00	0.22
In the last three years has there been righting in this area?	-0.00	1.00	0.02	0.66
Feels Sale in village	-0.11	0.29	-0.11	0.29
reels safe going out of village	0.07	0.31	0.08	0.27
Household size	-0.02	0.58	-0.00	0.91
Household size squared	0.00	0.70	0.00	0.82
How long does it take to get to the nearest health clinic? (in minutes)?	-0.00	0.56	-0.00	0.51
Do you need to pay official fees for the service?	0.01	0.91	0.00	0.95
Do you need to pay informal payments for using the service?	0.05	0.54	0.07	0.37
Government runs health centre (ref = anyone else)	0.07	0.20	0.06	0.25
Satisfied overall with health centre (binary)	0.18***	0.00	0.18***	0.00
How long does a return journey to the drinking water source take?	-0.00	0.68	-0.00	0.61
I11==Tube well	-0.11	0.14	-0.08	0.31
111_6== River, well, bottled, other	-0.13	0.24	-0.11	0.29
Do you have to pay for drinking water?	0.01	0.91	0.01	0.86
Is your drinking water clean and safe?	0.09*	0.06	0.09*	0.07
Government provides water (ref = anyone else)	-0.04	0.54	-0.03	0.64
Received social protection in last year	0.08	0.11	0.08	0.13
Received livelihood assistance in last year	0.12**	0.03	0.12**	0.02
Number of problems with services	0.02	0.41	0.02	0.35
Number of grievance mechanisms known about	-0.02	0.20	-0.02	0.18
Number of meetings known about	0.03	0.24	0.03	0.26
Number of services consulted about	0.06**	0.03	0.07**	0.03
Respondent gender fixed wave 1	_0.00	0.00	_0.07	0.00
Respondent education = Read/write or primary	_0.05	0.00	_0.08	0.00
Respondent education = Neda/ whee or primary	0.02	0.8/	-0.03	0.13
Respondent education = Decondary of SEO passed	0.02	0.04	-0.03	0.75
Respondent age fixed in wave 1	0.11	0.24	0.04	0.03
Respondent age fixed in wave 1	-0.01	0.55	-0.01	0.51
The spondence age inter in wave 1 squared	0.00	0.50	0.00	0.56
Ethnicity fixed at wave 1 - Janajati	0.01	0.78		
Ethnicity fixed at wave $1 = Dalit$	0.02	0.79		
Ethnicity fixed at wave 1 = Machesi	0.18^	0.06		
Ethnicity fixed at wave 1 = Muslim	0.08	0.53		
Ethnicity fixed at wave 1 = Other	0.24**	0.03		
Ethnicity fixed at wave 3 = Hill Janajati/Adivasi			0.00	1.00
Ethnicity fixed at wave 3 = Hill Dalit			0.00	0.98
Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi			-0.06	0.48
Ethnicity fixed at wave 3 = Terai/Madhesi Dalit			-0.17	0.32
Ethnicity fixed at wave 3 = Musalman			-0.16	0.24
Ethnicity fixed at wave 3 = Marwadi/Bengali/Ounjabu (Sikh)/Jain (Balung)			-	-
Ethnicity fixed at wave 3 = Other			0.10	0.82
District = Rolpa	-0.46***	0.00	-0.43***	0.00
District = Bardiya	-0.15**	0.04	-0.09	0.29
Urban rural fixed wave 1	-0.42***	0.00	-0.38***	0.00
Displaced during conflict 1996-2006	-0.16	0.13	-0.14	0.16
Moved to different house or village between waves	0.12	0.39	0.13	0.35
Female-headed household fixed wave 1	0.01	0.83	0.01	0.91
Constant	-0.07	0.82	0.03	0.93
Observations	582		582	
R-squared	0.36		0.36	
r2	0.363		0.357	

e legitimacy index (Consent, Legality, Justification) Ethnic		vave 1	Ethnicity v	wave 3
	coefficient	p value	coefficient	p value
Dependency ratio	0.03	0.37	0.03	0.37
Any HH member in own cultivation	-0.05	0.38	-0.05	0.38
Any HH member in casual labour (any)	-0.05	0.45	-0.04	0.51
Any HH member in selling goods	0.05	0.35	0.06	0.28
Any HH member in own business	0.04	0.45	0.05	0.34
Any HH member in private sector work (any)	0.06	0.28	0.07	0.21
Number of livelihood activities	0.01	0.78	0.00	0.91
Any internal migrant	-0.05	0.36	-0.05	0.38
Any international migrant	-0.01	0.83	-0.02	0.78
Did your household receive any remittances in the past three years?	0.07**	0.05	0.07*	0.07
Natural log of Morris Index	0.02	0.38	0.02	0.52
Coping strategies index	-0.00	0.44	-0.00	0.43
Has anyone in your household experienced a natural shock in the past three years?	0.03	0.48	0.03	0.52
Has anyone in your household experienced a health shock in the past three years?	0.04	0.40	0.04	0.38
Has anyone in your household experienced an economic shock in the past three years?	0.03	0.50	0.04	0.45
Did anyone from your household experience earthquake?	-0.04	0.35	-0.04	0.35
Number of shocks (earthquake excluded)	-0.02	0.35	-0.02	0.38
Number of crimes	-0.06*	0.09	-0.07*	0.09
In the last three years has there been fighting in this area?	-0.09**	0.02	-0.09**	0.02
Feels safe in village	0.03	0.61	0.04	0.49
Feels safe going out of village	0.05	0.27	0.05	0.26
Household size	-0.04*	0.05	-0.03*	0.09
Household size squared	0.00**	0.02	0.00**	0.00
How long does it take to get to the nearest health clinic? (in minutes)?	-0.00	0.02	-0.00	0.30
Do you nood to pay official foos for the convice?	-0.00	0.34	-0.00	0.30
Do you need to pay official rees for the service?	-0.05	0.20	-0.05	0.29
Covernment rune health centre (ref = envire alea)	0.00	0.23	0.07	0.13
Government runs nearth centre (rei = anyone eise)	0.03	0.49	0.03	0.49
Saushed overall with health centre (binary)	-0.00	0.97	0.00	0.95
How long does a return journey to the drinking water source take?	-0.00	0.71	-0.00	0.67
111==Tube well	-0.02	0.73	-0.01	0.80
111_6== River, well, bottled, other	0.04	0.58	0.05	0.54
Do you have to pay for drinking water?	-0.01	0.83	-0.01	0.81
Is your drinking water clean and safe?	0.08*	0.09	0.08*	0.09
Government provides water (ref = anyone else)	-0.01	0.87	-0.01	0.79
Received social protection in last year	-0.00	0.97	0.00	0.96
Received livelihood assistance in last year	0.06*	0.08	0.07*	0.07
Number of problems with services	-0.01	0.71	-0.01	0.74
Number of grievance mechanisms known about	0.01	0.48	0.01	0.43
Number of meetings known about	0.01	0.55	0.01	0.57
Number of services consulted about	0.02	0.41	0.02	0.33
Respondent gender fixed wave 1	-0.09**	0.03	-0.09**	0.02
Respondent education = Read/write or primary	-0.05	0.23	-0.05	0.17
Respondent education = Secondary or SLC passed	-0.11*	0.06	-0.12**	0.03
Respondent education = Higher than SLC	-0.05	0.52	-0.07	0.34
Respondent age fixed in wave 1	-0.00	0.51	-0.00	0.63
Respondent age fixed in wave 1 squared	0.00	0.62	0.00	0.77
Ethnicity fixed at wave 1 = Janajati	-0.03	0.42		
Ethnicity fixed at wave 1 = Dalit	-0.07	0.28		
Ethnicity fixed at wave 1 = Madhesi	0.03	0.74		
Ethnicity fixed at wave 1 = Muslim	-0.09	0.53		
Ethnicity fixed at wave 1 = Other	0.05	0.67		
Ethnicity fixed at wave 3 = Hill Janajati/Adivasi			-0.05	0.35
Ethnicity fixed at wave 3 = Hill Dalit			-0.13*	0.08
Ethnicity fixed at wave 3 = Terai/Madhesi Janajati/Adivasi			-0.04	0.54
Ethnicity fixed at wave 3 = Terai/Madhesi Dalit			-0.16	0.19
Ethnicity fixed at wave 3 = Musalman			0.01	0.96
Ethnicity fixed at wave 3 = Marwadi/Bengali Ounjabu (Sikh)/Jain (Balung) = o,			-	-
Ethnicity fixed at wave 3 = Other			-0.24*	0.06
Religion = Muslim	-0.04	0.77	-0.16	0.36
Religion = Buddhist	0.00	0.98	0.02	0.82
Religion = Christian	-0.05	0.66	-0.02	0.84
Religion = Kirat	0.07	0.33	0.08	0.32
Religion = None = o,	-	-	-	-
Religion = Mixed	-0.25***	0.01	-0.26**	0.01
Religion = Other	-0.05	0.69	-0.01	0.95
Female-headed household fixed wave 1	0.03	0.55	0.03	0.48
District = Rolpa	-0.16**	0.01	-0.15**	0.03
District = Bardiva	-0.00	1.00	0.01	0.90
Urban rural fixed wave 1	-0.22***	0.00	-0.22***	0.00
Displaced during conflict 1996–2006	0.15**	0.03	0.15**	0.03
Moved to different house or village between waves	-0.00	0.99	-0.01	0.92
Constant	5 22***	0.00	5 21***	0.00
	0.22	0.00	0.21	0.00
Observations	198		198	
R-squared	0.21		0.31	
r2	0.308		0.312	
<u>·-</u>	0.000		0.012	

Appendix 4: Construction of the government perception indices

The government perception index (GPI) aims at summarising the different government perception questions. The four questions covered by the index are:

- To what extent do you feel that the decisions of those in power at the local government reflect your own priorities?
- Do you agree with the following statement: The local government cares about my opinions?
- To what extent do you feel that the decisions of the previous central government reflect your own priorities?
- Do you agree with the following statement: The previous central government cared about my opinions?

The index has been created using principal component analysis (PCA). The government perception index is defined as the first component of the PCA of the four questions listed above. The first component of a PCA is the linear combination of the based variables that best summarises the information of the variables. Hence, the first component is the constructed variable that best reflects all the variation of the four original variables. The index computed can therefore be seen as the element common to all the government variables, a latent variable capturing the general view about government as a whole.

An analysis of correlation of the four questions showed that they were all highly mutually correlated. As a consequence, the index created captures 80% of the variations of the four original government variables.

As government-related questions were added in the last wave, another index has been created. It has been analysed as a specification check only for the last wave of the panel. This new version included the following variables:

- To what extent do you feel that the decisions of the previous provincial government reflect your own priorities?
- Do you agree with the following statement: The previous provincial government cares about my opinions?

Appendix 5: Construction of the state legitimacy index

As discussed in Section 6.4 wave 3 of the survey included an additional module on legitimacy of the state. Questions were designed around Beetham's (1991) conceptualisation of state legitimacy as threefold, including views of consent, legality and justification of the state (Figure A1). In analysis, a state legitimacy index (SLI) was created based on the method by Gilley (2006), which takes into consideration Beetham's three aspects or 'sub-types' of state legitimacy.



According to Gilley, there are four steps in creating the SLI. Firstly, the variables are selected, according to the three sub-types (consent, legality, or justification). Not all variables from the state legitimacy module were included. Analysis of the descriptive statistics as well as theory instructed which variables should be included, and in sub-type justification, variables were included from the governance module. Secondly, the variables are transformed or standardised in order to be aggregated. Thirdly, variables from each sub-type are aggregated into three mean indices. Fourthly, the three sub-type indices are aggregated to create the single SLI, with each sub-type amounting to a third of the SLI each. The variables selected to create the index are shown in Table A2.

Legitimacy sub-type	Variable				
Views of consent	Have you heard any of any peaceful protests against the government taking place in your area (in the last three years)?				
	If there was a protest in your area, how likely is it that you would take part?				
	Did you vote in the 2017 national elections?				
Views of	To what extent do you trust the armed forces				
legality	To what extent do you trust the police				
	To what extent do you trust the courts				
	To what extent do you agree the news treats opposition candidates fairly				
	How often during national elections are voters threatened with violence during election process during the campaign and/or on the day of the vote				
	How often during national elections are voters offered money to vote for a candidate				
	How often during national elections is the vote count done fairly				
Views of justification	To what extent do you agree if I want to register my child, (when I get to the govt office) it takes the same amount of time and money for me as for everyone else				
	To what extent do you agree I can get Nepali citizenship as easily as other Nepalis, regardless of my caste and ethnicity				
	To what extent do you agree if someone is caught not paying taxes, they should be fined				
	To what extent do you agree if someone is trying to convert a Nepali from one religion to another, then he/she should not be punished by the state				
	Do you agree with the following statement: The central government cares about my opinions.				
	Do you agree with the following statement: The provincial government cares about my opinions.				
	Do you agree with the following statement: The local government cares about my opinions.				
	Do you agree with the following statement: The ward-level government cares about my opinions.				

Gilley's constitutive approach is theory driven, rather than statistically driven and 'makes no assumptions about what makes states legitimate, but rather seek[s] to measure what legitimacy is' (2006: 2–3).

The final dataset includes the SLI, as well three additional indices: consent-only, legality-only and justification-only legitimacy indices (Figure A2).





There are interesting differences across the three sub-type indices, for instance Bardiya has the highest average SLI, but the lowest justification-only score (Table A3).

Table A3: Mean state legitimacy, by district

	SLI	Consent-only	Legality-only	Justification-only
Mean (total)	5.04	4.99	5.00	5.07
Rolpa	4.95	4.87	4.72	5.07
Bardiya	5.07	5.10	5.11	5.02
llam	5.04	4.94	5.04	5.12

There are also differences across the four legitimacy indices based on ethnicity (Figure A3).



Figure A3: Mean state legitimacy, by ethnicity

Separate regressions were run with all four legitimacy indices (the SLI, consent-only, legality-only and justification-only) as the outcome variables, to identify explanatory factors associated with state legitimacy. There are some interesting differences among the indices. For instance, for consent-only, economic and shocks/safety-related variables are not important, while several service-related explanatory factors are. Table A4 gives an overview of statistically significant explanatory factors.

Table A4: State legitimacy indices: comparison of statistically significant results

	SLI	Consent-only	Legality-only	Justification-only
Services				
Satisfaction water	Х			Х
Government provides water				Х
Satisfaction health centre		Х	Х	
Government-run health centre		Х		
Informal fees for health		Х		
Distance to health centre			Х	
Water source (tube or well; reference category tap)		Х		
Livelihood assistance	Х	Х		
Number of services consulted about		Х		
Number of problems with services				Х
Economic				
Receive remittances	Х			Х
Type of livelihood			Х	
Wealth (Morris)				Х
Shocks and crimes				
Number of crimes	Х		Х	Х
Fighting in area	Х		Х	
Feel safe in village				Х
Economic shock			Х	
Natural shock				Х
Earthquake				Х
Individual and household characteristics				
Dependency ratio		Х		
Household size	Х	Х		
Gender	Х		Х	Х
Education	Х	Х	Х	
Ethnicity	Х		Х	Х
Age		Х		
Religion	Х	Х	Х	Х
Location	Х	Х	Х	Х
Urban	Х		Х	Х
Displaced in conflict	Х	Х		