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

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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 one-year 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 conflict-affected situations
- Livelihood trajectories and economic activity under conflict

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

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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.

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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 income-generating 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 food-insecure 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:	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)* *5. Always (every day)*
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 war-affected 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 re-interview 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 indicators could be jeopardised by interviewing a different respondent, since responses to 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 Ilam 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]

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[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/

[8] https://ona.io

[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.

Table 2: Attrition by VDC

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
Ilam	Pasupatinagar	296	272	8.1
	Ilam	496	449	9.5
	Chulachuli	454	404	11.0
	Total	3,176	2,855	10.1

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.

Table 3: Summary of outcome variables

	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 basic services	Satisfaction with health centre	Overall satisfaction with the health centre.
9		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	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 actors	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?

[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 Mid-western hills, and Ilam in the Eastern hills (although one of the VDCs sampled in Ilam, Chulachuli, is on the Terai). Rolpa was selected for being remote and the district where the civil conflict originated, Ilam 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.

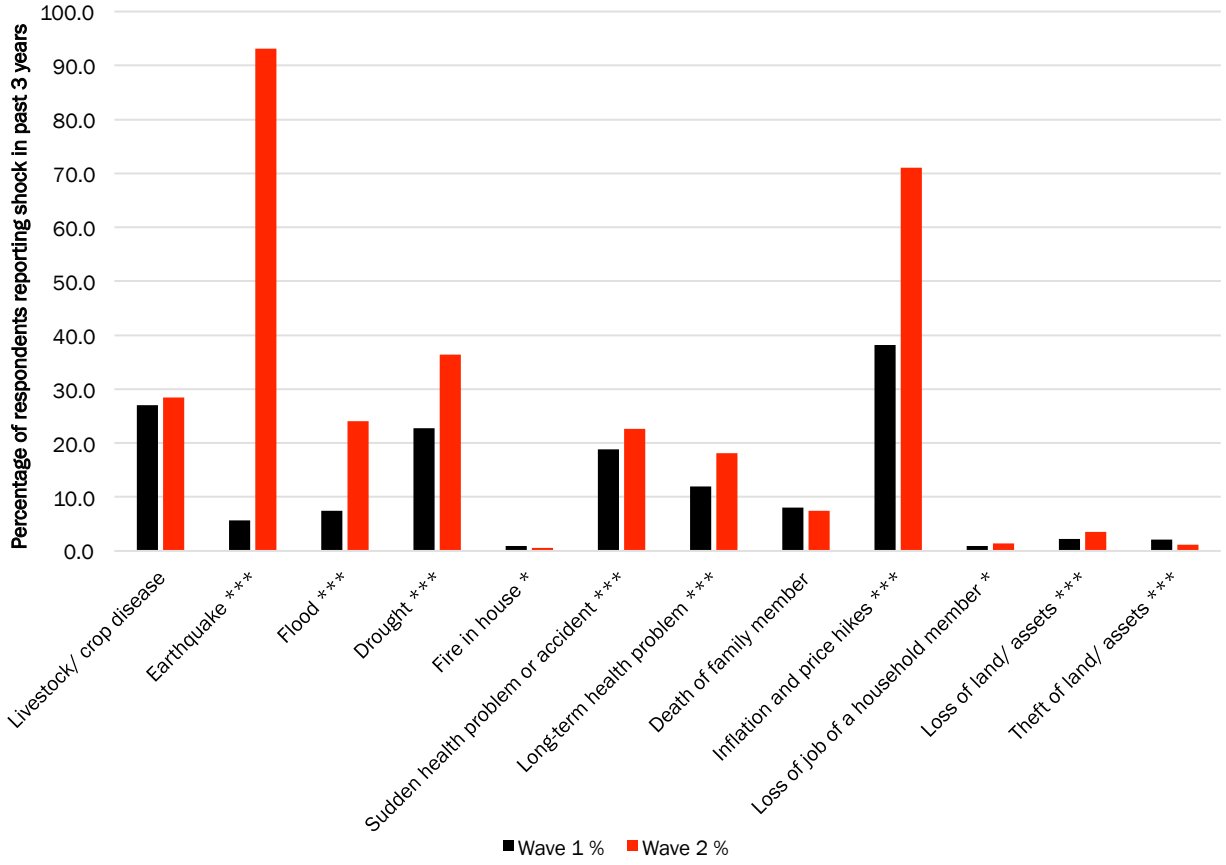
4.1.3 Flooding, landslides and drought

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).

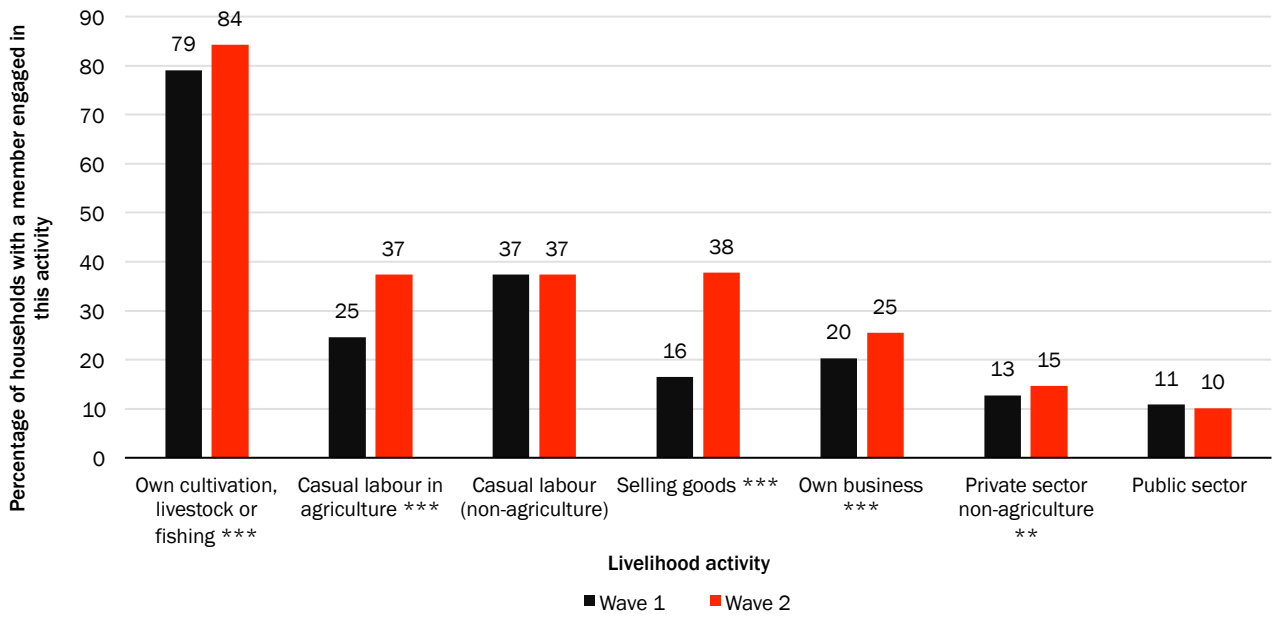
5 Changing livelihoods and wellbeing

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 Ilam 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 Ilam the least.

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

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

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 portfolio[14] 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 work[16] 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 *in*security 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.

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[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 households[18],[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

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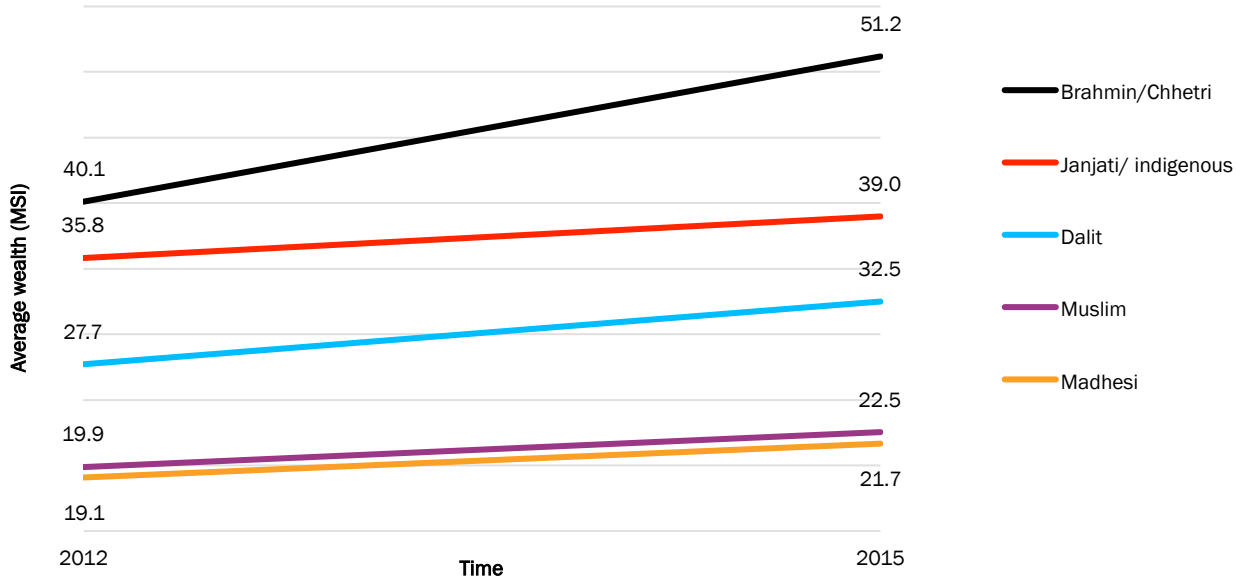
[17] The result for remittances, as for own business, CSI, ethnicity (other), and location are sensitive to model specification.

[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).

Figure 3: Changes in average wealth (MSI score) over time, by ethnic group



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 receiving remittances in at least one wave.[21] Since the survey only records the migration of household 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).

Table 5: Migration at the household level

	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

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.

Table 6: Changes in service and service provider

	Still using same service as in wave 1?		Provider of service (as identified by respondent in waves 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

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]

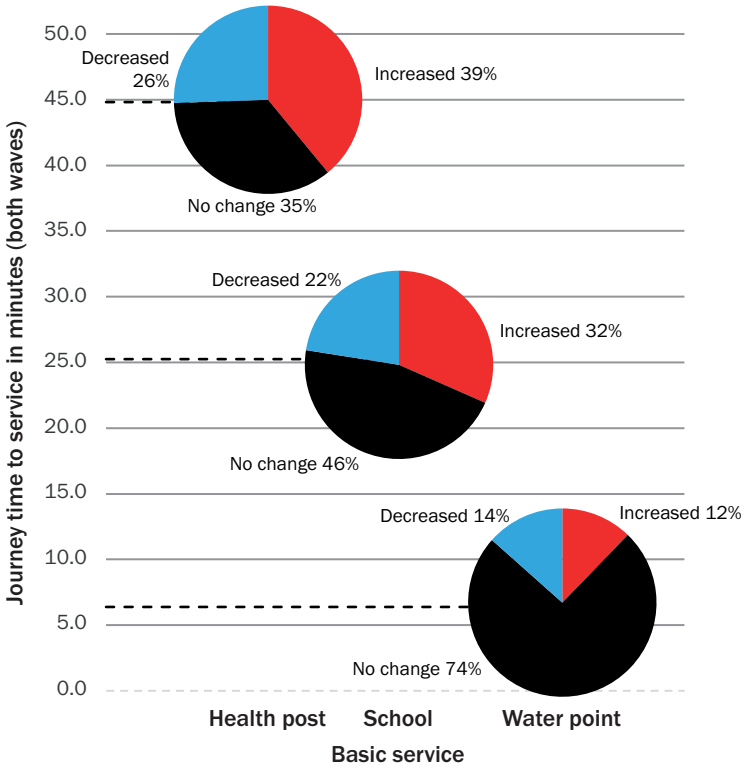
Table 7: Change in access to basic services

		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

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.

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

		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%

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'.

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

	Female-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**

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.

[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 job[24] 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. Female-headed 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 Ilam Bazaar, in the hilly Ilam 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.

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

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
Ilam	Pasupatinagar	13%	23%	**64%**	26.6
	Ilam	19%	37%	**44%**	35.8
	Chulachuli	24%	29%	**47%**	25.9
	Total	21%	33%	**45%**	24.4

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

	Pay formal fees (%)			Pay informal fees (%)		
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).

Table 12: School attendance over time, by school provider

	Switch in girls' attendance			
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
	Switch in boys' attendance			
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

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 Ilam we see journey times lengthening overall and knowledge of meetings about water increasing. In the case of Chulachuli VDC (within Ilam 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.

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[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.

Table 13: Changes in satisfaction with basic services over time

	Wave means		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

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.

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[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.

Table 14: Problems and knowledge of participatory procedures

	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

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 Ilam 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).

Figure 5: Perceptions of local government by wave

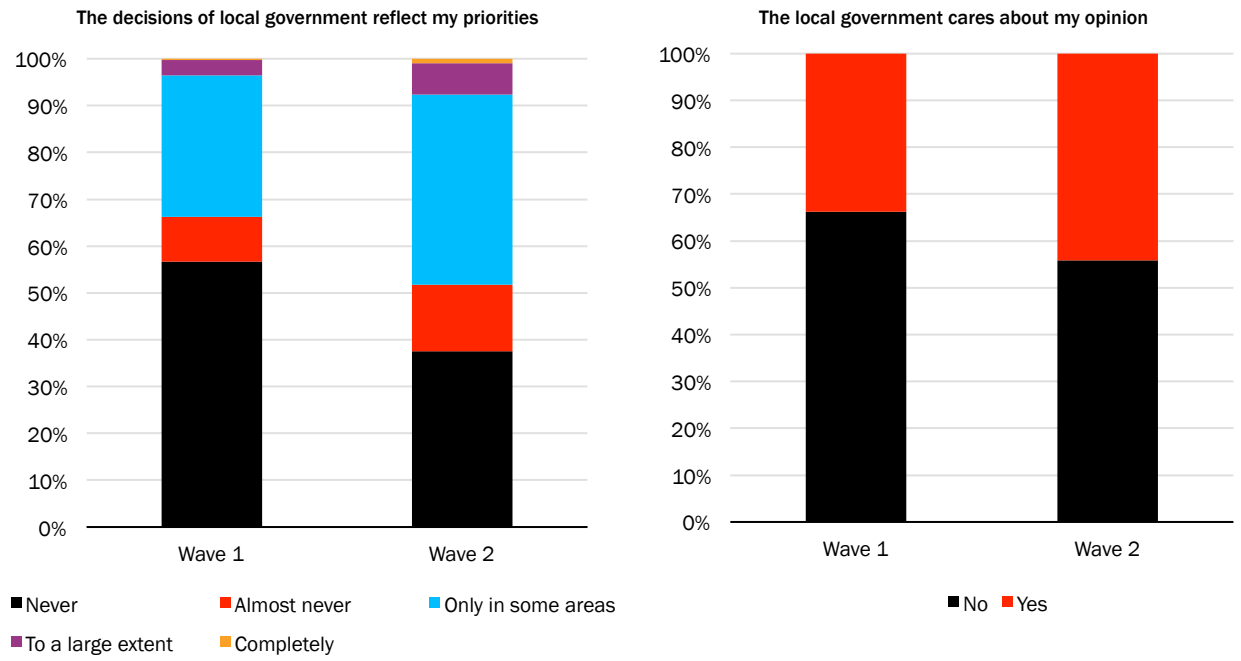

Table 15: Changes in perceptions of local government

	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

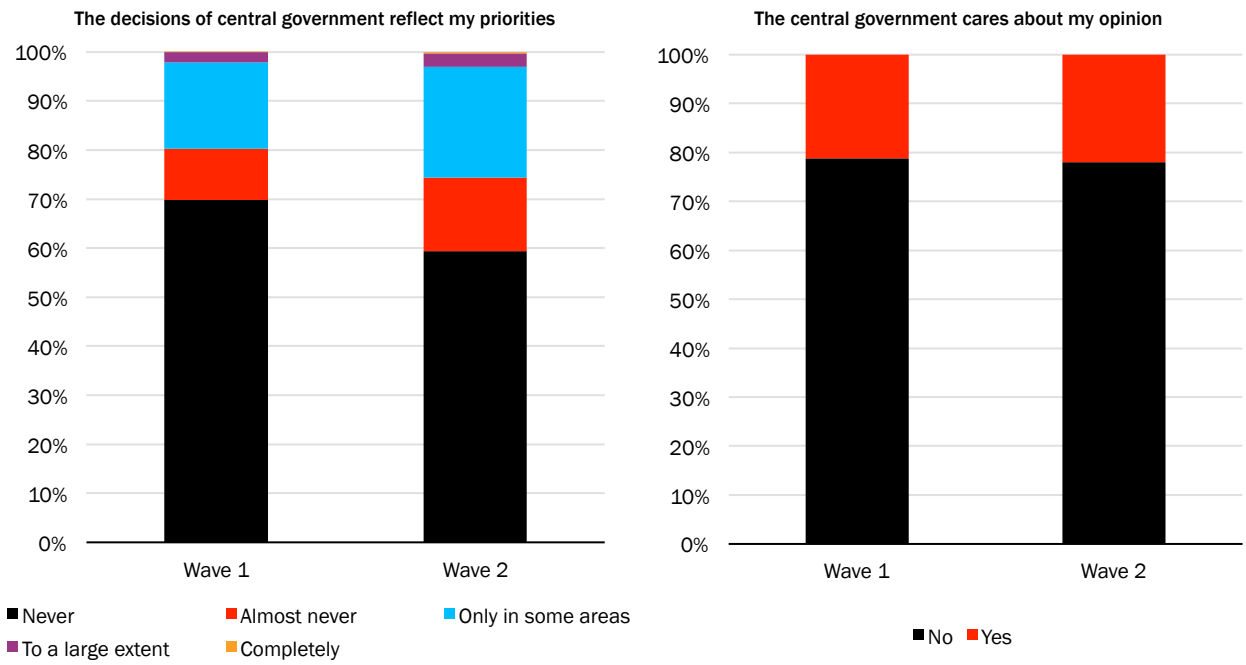

Table 16: Changes in perceptions of central government

	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).

Table 17: Perceptions of government by sex of respondent

	Decisions of local government do reflect my priorities (%)		Local government does care about my opinion (%)	
Sex of respondent	**Wave 1**	**Wave 2**	**Wave 1**	**Wave 2**
Male	47.5***	64.6**	35.7*	46.7**
Female	39.7***	60.6**	32.1*	42.2**
	Decisions of central government do reflect my priorities (%)		**Central government does care about my opinion (%)**	
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***

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.

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

	Decisions of central government do reflect my priorities (%)		Central government does care about 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

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 within-caste 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).

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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 VDCs[38] 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. $E(\varepsilon_{it} \mid X_i, u_i) = 0$ (errors are independent of the individual-level effects)
3. $Var(\varepsilon_{it} \mid X_i, u_i) = \sigma^2$ (the variance of the errors is homoscedastic)
4. $Cov(\varepsilon_{it}, \varepsilon_{is} \mid X_i, u_i) = 0 \; \forall \; t \neq s$ (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:

$E(u_i \mid X_i, \delta_i) = b$, 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 *is* 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.

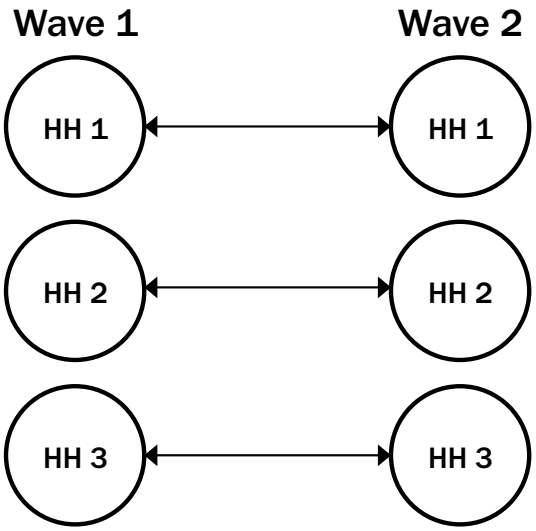
A drawback of the FE model is that it cannot estimate the effect of time-invariant variables. This is because when 'controlling for' the unobserved differences between individuals, the model can only estimate within-individual effects. These rely on there being a change between waves 1 and 2 for a given 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.

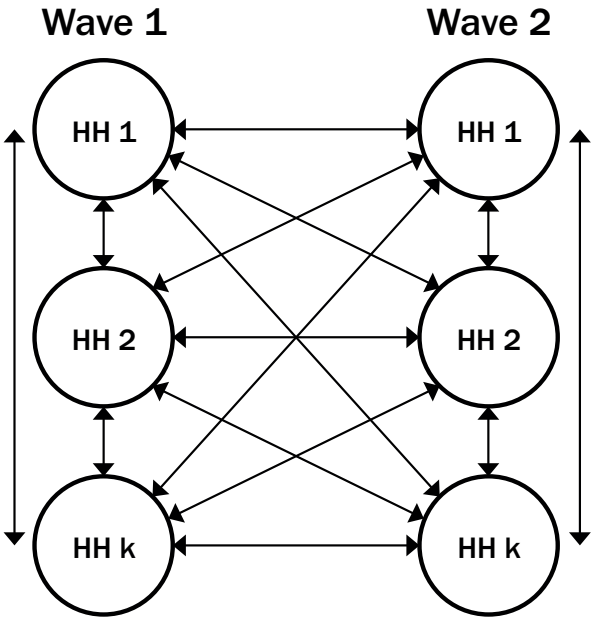
In this example there are 3 households, each represented by a circle. There are two panel waves and each household has an observation in both. Assume each household has a value for Coping Strategies Index (CSI) wherever that household appears. We are testing the effect of CSI on an outcome variable,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

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SDPI Sustainable Development Policy Institute

AREU Afghanistan Research and Evaluation Unit

cepa centre for poverty analysis

NCCR Nepal Center of Contemporary Research

Feinstein International Center

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