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 Pakistan

Working Paper 52

Babar Shahbaz, Abid Suleri, Mohsin Ali and Huma Khan
With input from
Georgina Sturge, Richard Mallett and Jessica Hagen-Zanker

January 2017

SDPI
Sustainable Development Policy Institute

ODI

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

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

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

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

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

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

Contents

Tables

Figures

Acknowledgements

The authors gratefully acknowledge support received from Dr Rachel Slater at the Overseas Development Institute (ODI) for valuable contributions to the analysis workshop and oversight of the survey process. We also extend our gratitude to Paulina Pankowska, who carried out the quantitative analysis.

We are also thankful to the external peer reviewers, Dr Bernd Steimann, Saurabh Pant, and Dr Amina Yaqin for extensive comments on the draft report.

Thanks also go to Dr Stephen Commins for inputs to the writing, to David McDevitt for copy editing, and to Garth Stewart for formatting.

We also extend our sincerest appreciation to the enumerators, supervisors and trackers who made up the field team and through whose hard work we achieved an impressive response rate and high-quality data. Finally, we acknowledge most of all the respondents to this survey who gave us their time, allowed us insight into their lives and to whom we are accountable.

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 is 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 uniquely placed to contribute to understanding how change happens 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 in difficult environments is far from straightforward. For purposes of transparency and clarity, we highlight two major limitations of our research. The first was raised in the original baseline reports – namely, that in producing standardised regression analyses that allow comparisons to be made across countries, we lose flexibility in the country-specific variables we can include. The trade-off between comparative and country analysis is even more pronounced after two waves of data are collected because we require consistency in the choice of model (particularly the choice between Random Effects and Fixed Effects models) across countries. Second, panel analysis requires substantial numbers of respondents who change their responses between rounds (for example, from a negative to a positive view of a particular government actor). In some cases, there has simply not been 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.

Acronyms

ANP	Awami National Party
BMZ	German Development Ministry
CSI	Coping Strategies Index
DFID	Department for International Development (UK)
EU	European Union
FCS	Food Consumption Score
GOKP	Government of Khyber Pakhtunkhwa
JI	Jamaat-e-Islami (political party)
KP	Khyber Pakhtunkhwa
MSI	Morris Score Index
PaRRSA	Provincial Relief, Rehabilitation and Settlement Authority
PDMA	Provincial Disaster Management Authority
PKR	Pakistani Rupees
PML-N	Pakistan Muslim League (Nawaz)
PPP	Pakistan Peoples' Party
PTI	Pakistan Tekrik-e-Insaf
SDPI	Sustainable Development Policy Institute
SLRC	Sustainable Livelihoods Research Consortium
SSN	Social Safety Net
UC	Union Council

Executive summary

The Sustainable Livelihoods Research Consortium (SLRC) conducted two rounds of surveys in the conflict-affected Swat and Lower Dir districts in Khyber Pakhtunkhwa (KP) Province, Pakistan. The first round of surveys was implemented in 2012 and the second in 2015. The main objective of the survey is to produce information on changes in people's livelihoods, their access to basic services, social protection and livelihood assistance, and their perceptions of governance.

Swat and Lower Dir districts were severely affected by violent, armed, civil conflict, quickly followed by a series of natural disasters. The violent conflict was the result of the gradual infiltration of the area by the militant organisation, Tehrik-e-Taliban Pakistan (TTP), which had built up a presence in the region during the early 2000s. By 2007, through direct attacks on public institutions, they had managed to take control of most parts of Swat district, enforcing their particular version of Sharia law. Following their success in Swat, they also started to advance towards adjoining districts (particularly Lower Dir).

In response to this direct challenge to state authority, in 2008 the Government of Pakistan started a massive military operation after evacuating most of the civil population from the district. More than 2 million people were internally displaced (IDPs), resulting in both immediate hardship and longer-term loss of livelihoods. After a large-scale campaign, the Pakistani army was able to reassert state control over the TTP-occupied areas and most of the militants were either killed or escaped to Afghanistan.

Following the end of the military operations, the IDPs began to return home, but while they were returning devastating floods (July 2010) swept through KP, adding to their misery and vulnerability. Swat was particularly badly affected. War and the subsequent floods destroyed most of the infrastructure in Swat and Lower Dir districts and created one of the worst humanitarian crises in Pakistan's history. Most of the livelihood sources – such as casual labour, small businesses, farming, and fruit and vegetable markets – were severely affected.

A large number of international and national aid organisations responded to the humanitarian crises with a variety of aid programmes. These programmes provided immediate assistance to many of the returning IDPs but, by themselves, could not restore either livelihoods or basic services. The focus then shifted to long-term rehabilitation, implemented largely through local NGOs and government agencies. This paper explores people's perceptions of state legitimacy, at a point of transition from humanitarian to development assistance and from outside agencies to governmental programmes in the context of decentralisation.

The subject of this study is the relationship between the delivery of services, social protection and livelihoods assistance, and state legitimacy (measured here using perceptions of government performance) in a fragile and conflict-affected state. This has been the subject of extensive research and debate (Carpenter et al. 2012). We focus on two overarching questions relating to this topic:

- How does the way services are delivered and livelihoods are supported affect people's views on the legitimacy of the state?
- 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?

The research undertaken by SLRC contributes to understanding both of these questions in ways that are pertinent for national governments and for international organisations.

The survey sample

In the second round of surveys in 2015, trained trackers were deployed to trace the respondents from the first round in 2012. 1,762 of the initial 2,114 respondents were re-surveyed – an overall attrition of 17 percent. Nonetheless, because the initial sample had been inflated to allow for 'drop-out', the survey remained representative at the Union Council (UC) level. A total of 705 households from two UCs in Lower Dir and 1,057 from three UCs in Swat were included in the survey (34 percent of the respondents were female). The same set of questions was asked in both waves with some minor changes/adaptations in the second round.

The changing context

The research targeted communities that had been affected by conflict and which had subsequently had some form of external assistance for livelihoods and service rehabilitation. Therefore, In Wave 1 (2012) we included only those UCs that had been affected by the war between the TTP and the Pakistani army. For this reason, almost all respondents (99 percent) in Wave 1 reported that they had experienced fighting during the previous three years. This decreased to only 4 percent in Wave 2.

Our survey revealed improvements in markets and reductions in inflation/price hikes, loss of crops/livestock and soil degradation. Similarly, there was a reduction in reported crime. However, an increase in health-related shocks was reported, probably due to the outbreak of dengue fever in KP during 2013 and 2014.

Interestingly, although there were fewer reported incidences of fighting and crime in Wave 2, substantially fewer respondents felt 'very safe' (in their village or outside). Perceptions differ between Swat and Lower Dir: comparatively more sampled households in Lower Dir feel 'less safe' outside their village. More female respondents in Wave 2 judged it to be 'very safe' in their village, but fewer felt 'very safe' outside.

Changing livelihoods and wellbeing

We asked respondents about livelihood activities, household assets, measured using the Morris Score Index (MSI), and food insecurity, measured using the Coping Strategies Index (CSI) and the Food Consumption Score (FCS). Then we compared the data with Wave 1 to identify the changes between waves. Five sets of key findings emerged.

First, migration continued to be the main livelihood activity (largest income source) reported in both waves and more than one third of the sampled households received remittances. However, significantly fewer households reported overseas labour as the main source of household income in Wave 2, even though the share of overseas labour in total household income increased slightly. The role of remittances in fulfilling basic needs (food, education) and in promoting and sustaining household wellbeing, became less significant during this period, with an increase in respondents changing from 'remittances helped a lot' to 'remittances helped a bit'.

Second, the number of households reporting non-farm based causal labour as the 'main source of income' decreased and more households reported agriculture-based causal labour (fruit picking, packaging) as their main source of livelihood. However, comparatively more households were earning income from non-farm based livelihoods such as skilled labour and government jobs in Wave 2.

Third, while borrowing (loans/credit) was an important coping strategy in both waves, more households were in debt in Wave 2. In particular, there was a considerable increase in the number of households which borrowed money to meet health-related expenses. Most of the respondents reported that their family/friends would lend them money in case of emergency health-related problems. Being indebted

has a significant association with food security and food consumption (food diversity). The sampled households which did not owe money during the first round of surveys but owed money in Wave 2, were likely to have higher food insecurity (CSI) and rely on a less diverse range of foods (most probably cheaper ones). However, it is not possible to determine whether food insecurity compels households to borrow money or whether being in debt leads to food insecurity.

Fourth, the results for the CSI indicate that there was an overall increase in food insecurity between waves. Despite this, food diversity improved and more than half of households switched to better food consumption patterns (higher FCS). Perceptions of safety are significantly linked to food security and improved perceptions of safety (from being unsafe to safe) appeared to have a positive impact. Education also emerged as an important variable: the higher the average education levels of households, the better off they tend to be in terms of food security and food diversity. Interestingly, overseas migration and remittances did not have a significant impact on either outcome. On the other hand, households which did not receive livelihood assistance in Wave 1 but did subsequently, were less food insecure (lower CSI) and tended to have a better FCS.

Fifth, household assets (MSI) increased on average in Wave 2. Households in Swat had a higher MSI in Wave 1, but were overtaken by households in Lower Dir in Wave 2. The households which did not own cultivable land in Wave 1 but did in Wave 2, were likely to have more assets (a higher MSI). Similarly, households which did not receive livelihood assistance (seeds and fertilisers) in Wave 1 but did in Wave 2, increased their assets. Education also has a significant impact on MSI: households whose average education level increased, were likely to increase their assets. However, primary education has no impact on MSI, and in fact, the results indicate that those households whose members have (on average) a primary-level education, have fewer assets than those with (on average) 'no education'.

Basic services, social protection and livelihood assistance

Changes in access to and satisfaction with basic services such as health, education, drinking water, social protection and livelihood assistance have been included in our analysis. We measure access to a service primarily using the time it takes to reach it (in minutes), and for social protection and livelihood assistance we measure whether or not a household received any assistance in the previous 3 years. The survey on the delivery of services also generated data on experiences of problems with basic services. Five sets of key findings emerged:

First, for health services, the average travel time to the nearest health centre/clinic increased slightly. The number of visits to a health centre by each household between the two waves also increased, which might be due to the outbreak of dengue fever in Swat during 2013 and 2014. Overall levels of satisfaction with health services increased and satisfaction with the availability of medicines, the number of qualified personnel and waiting times also improved. The respondents who were not satisfied with these variables in Wave 1 but were satisfied in Wave 2, tend to be satisfied with the overall quality of health centres. Perceptions of safety are also significantly associated with access to and satisfaction with health services – with improvements in neighbourhood safety, the households in our study area were more likely to reduce travel times to a health centre (they might be using a different clinic, or using the same clinic, but taking a different form of transport or using a more direct route). There was an increase in households who had to pay informal fees for health and educational services. The respondents who started to pay formal or informal fees between waves are likely to be less satisfied with the overall performance of health centres in Wave 2. Households which became more food insecure (in Wave 2) are likely to be less satisfied with health services, compared to those who did not.

Second, for educational services, there was also a slight overall increase in travel time to the nearest school. Levels of satisfaction with schools increased, particularly in terms of the number of teachers, the quality of teaching staff, teacher attendance, class size and the quality of school equipment.

Interestingly, perceived levels of safety are negatively correlated with satisfaction with schools. Respondents who saw improvements in safety in their area between waves were more likely to be dissatisfied with the school. The use of private schools increased. No significant association is found between awareness of meetings related to education and satisfaction with educational services.

Third, for drinking water, there was a significant increase in households whose source of drinking water is maintained by the community. Satisfaction with the quality of water increased and this is significantly and positively associated with perceptions of safety.

Fourth, recipients of social protection significantly increased in number. The perceived impact of transfers was high in both waves and the majority of households that received assistance from the Benazir Income Support Programme (BISP), Pakistan's main social protection programme, reported a positive impact. The households which did not receive income from farming (cultivating their own land) in Wave 1 but earned money from this source in Wave 2, were less likely to receive a social protection transfer. The same is true for households that earned income from selling goods, causal labour and skilled labour.

Migration and remittances are significantly associated with access to social protection. Households without a migrant family member in Wave 1 but with at least one in Wave 2, were less likely to be the recipient of any form of social protection. Similarly, households which did not report experiencing economic shocks in Wave 1 but did in Wave 2, were less likely to receive social assistance. Moving from a state of food insecurity to food security also implies a reduction in social protection transfers.

Fifth, there was a significant decrease in the number of households receiving livelihood assistance. Migration and remittances are significantly (but negatively) associated with access to livelihood assistance. Households that did not receive remittances during the previous 3 years in Wave 1 but did in Wave 2, were less likely to receive livelihood assistance. Thus, we can argue that migration tends to offset the need for social transfers and livelihood assistance.

Changing perceptions of governance

Changes in perceptions of governance from Wave 1 to Wave 2 were analysed in terms of trust and legitimacy. Respondents were asked whether 'the government cares about my opinions' and 'the decisions of government reflect my priorities', for both local and central government.

It is important to note that in each wave, different parties were in power, and the political and institutional context was very different. In Wave 1 there were no elected local governments in power but in Wave 2 both districts had a newly-elected government. At the federal and provincial level, the Pakistan People's Party (PPP) and the Awami National Party (ANP) were in power respectively during Wave 1. However, new elections were held in 2013 and the Pakistan Muslim League (PML- N) and the Pakistan Tehrik-e-Insaf (PTI) formed the governments at the federal and provincial level. The perceptions of local residents may, therefore, have been influenced by these changes.

Although the majority of respondents were satisfied with the provision of basic services (health, education, water, social protection), and levels of satisfaction actually increased in Wave 2, perceptions of local and central governments for most of the respondents remained negative – in other words, most people did not feel that local and central governments cared about their opinion / reflected their priorities. It is also interesting to note that female respondents were less positive, perhaps due to a lack of public representation.

The experience of shocks is an important determinant of perceptions of governance. Respondents in households which experienced agricultural and economic shocks in Wave 2 (but did not experience them Wave 1) were more likely say 'no' to the statement that 'local government cares about my opinions'. Those who did not experience shocks (in Wave 1) but who later experienced them in Wave 2 were more likely to feel that 'the decisions made by the central government do not reflect my priorities'.

The negative perceptions of central government in relation to economic shocks perhaps relate to expectations on the government to compensate.

Respondents who experienced more problems with basic services in Wave 2 (than in Wave 1) were likely to say 'no' to the statement 'local government cares about my opinion'. Payment of official fees is also significantly associated with perceptions of governance. Respondents who started paying official fees for health centres between waves were likely to have a negative response to the statement 'local government cares about my opinion' and 'decisions made by the local and central government reflect my priorities'.

Wealthier respondents (whose assets increased in Wave 2) were more likely to agree that the decisions taken by local government reflect their priorities. Similarly, respondents with household members who received a social protection transfer in Wave 2 tended to have a more positive opinion of local governments.

Findings

This project report is based on three core areas of interest:

- 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, perceptions of major political actors).

As noted earlier, there is a growing interest in the development literature in the potential connections between state-building, service delivery and state legitimacy in the fragile states. This study of the experiences in Swat and Lower Dir highlights the complexity of providing simple or clear answers to the relationships between livelihoods, services and governance.

A few key points can be summarised:

Some, though not all, education, water and health sector activities in post-conflict settings may contribute to perceptions of greater state legitimacy. This could be because they signal an increased willingness of the state to act positively on behalf of its citizens. This may lead to a virtuous circle, helping to strengthen the legitimacy of state institutions and improving citizen trust in the state. However, the perceptions reported in the surveys are more complex, and a range of issues, from the payment of fees to travel distance, some of which are outside the control/capacity of local governments, will have an impact. In addition, as noted earlier, the election of new national and provincial governments, and how people perceive their relationship with these parties, will also affect their judgement. In this context, how do we clarify citizens' expectations of the state, and vice-versa, and how can we make these expectations more realistic and manageable? These are questions worthy of further research.

Legitimacy is not just about services or livelihoods, but also about safety and security – and more broadly, the politics and deeply-rooted historical experiences and perspectives, of a district or region. The literature on building state–society relations in conflict-affected areas has grown (Oosterom, 2009), as has the work on better defining the different aspects of local government, local governance and relations with local communities.[1] Just as there are national political settlements (DFID, 2008), there are also local and regional political settlements as well (Parks et al. 2013). With the changes in political

[1] Local Government refers to the political and administrative authorities that have responsibility for specific roles within a specific geographic area, including both local staff and offices of central ministries and local municipal, village and district offices. (adapted from Dabo et al. 2010). The phrase 'Local Governance' more broadly covers the relations between citizens and local authorities, including the institutions, mechanisms and processes, through which citizens and their groups can articulate their interests and needs, mediate their differences and exercise their rights and obligations at the local level. (adapted from UNDP, ibid.)

parties, particularly at the provincial level, it is difficult to determine how changing perceptions of governance are related to past responses to the conflict and the subsequent disaster, to support for or opposition to the new government, or to changes in experiences of different services. What is notable in the study area is that security and safety are important for local communities and respondents.

In regards to the study area and state legitimacy, as well as livelihoods, people's perceptions of security/insecurity are an intriguing and important finding from this research. Frequently, issues of crime and violence have been treated as separate matters by international donors. The OECD INCAF have been slow to integrate new understandings of their interconnectedness into their formulation for assessing fragility and so have different donors (Scheye and McLain 2007).

Changes over time mean that government and donor programmes have to adjust – from a humanitarian response to an approach that addresses longer-term developmental challenges. This involves not only a transition in funding modalities and time frames, but also adjusting to how people in conflict-affected areas have agency and make decisions. For example, people are spatial and mobile (Hammer 2014), and thus there is an important spatial dimension to where and how displaced households move and return, as well as migrate for income, which has implications both for the vulnerability of affected (host) populations and for service delivery programmes. The study highlighted some aspects of different types of migration and the impact of remittances:

- Mobility
- Coping mechanisms, loans and remittances
- Access to services and markets
- Security and safety

The spatiality/mobility aspect has implications for how a mass displacement and return impacts existing livelihoods, markets and service delivery systems. Displaced households and communities actively develop livelihood and protection strategies to reduce risk (vulnerability) and increase their resilience. These strategies are developed in response to specific and spatially-related risk factors, and economic or social pull factors, which then requires the ability of government agencies and donors to engage with ongoing mobility and livelihood decisions.

In post-conflict situations, the return of displaced persons, together with the uncertainties of rural livelihoods, implies a likelihood of instability, insecurity and political tensions. There will be an increasing demand for functioning markets, livelihood opportunities, services, food security, and personal/community safety. The need to address post-conflict recovery in Swat and Lower Dir in an integrated manner is consistent with the experiences of other countries emerging from protracted conflict, with few remaining services or little infrastructure. In such situations, the interventions that work tend to be those that respond to basic livelihood needs while reinforcing services and promoting safety.

Opportunities arise from the creation of an enabling environment for a transition from a humanitarian-structured aid response to a longer-term approach, with an emphasis on creating and supporting local livelihood opportunities, while recognising the role of mobility and remittances. Initially, local livelihoods may be provided through targeted investment in labour-intensive building/rebuilding of basic rural infrastructure (schools, health centres/clinics, water sources and markets).

The need for investment is well recognised. The problem is implementing it in ways that address the urgent demand for post-conflict dividends that respond to community priorities, while recognising that communities and their organisations should take the lead in implementing post-conflict recovery efforts. However, civic engagement and participation – both of which are key for strengthening underlying institutions at the local level (SDPI, 2016) – are frequently ignored by both aid agencies and governments.

1 Introduction

In 2012/13, the Secure Livelihoods Research Consortium (SLRC) designed and implemented the first round of a panel survey in five conflict-affected countries[2], generating cross-country data on livelihoods, access to and experience of basic services, exposure to shocks and coping strategies, and people's perceptions of governance. In Pakistan, the first round of the survey was conducted during September and October 2012 in the conflict-affected Swat and Lower Dir districts in Khyber Pakhtunkhwa (KP) Province. In 2015, 1,762 of the original 2,114 respondents in the Pakistan sample were re-interviewed, providing a second wave of data for longitudinal analysis. This paper presents the findings of the panel survey across the two waves.

The survey was conducted in three Union Councils (UCs) in Swat (Baidara, Bar Aba Khel and Charbagh) and two UCs in Lower Dir (Haya Sarai and Lal Qilla) during August and September, 2015. All the settlements/villages in each UC were sampled and the same number of respondents was selected from each settlement/village. The aim was to interview the same respondents who had been interviewed in 2012, even if they had moved. The same methodology was used, with slight changes to the questionnaire. Interviewing the same people allows us to measure changes over time between the two waves.

The paper is structured as follows. Section 2 provides a background to the survey, situating it 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 survey data. Section 3 presents the survey methodology for Pakistan in greater detail, discussing the specific sampling methods used and describing the basic characteristics of the final sample. Section 4 describes some of the major changes that have taken place in Pakistan between the first and second waves of data collection that may have a bearing on changing livelihoods and wellbeing, access to and satisfaction with services, and perceptions of government actors. Sections 5 to 7 constitute the analytical core of the paper, exploring which factors influence livelihood status; which factors influence people's access to and experience of services and social protection; and which factors influence people's perceptions of governance. Section 8 concludes with preliminary policy implications and suggestions for further research.

[2] The Democratic Republic of Congo, Nepal, Pakistan, Sri Lanka, and Uganda.

2 Background, objectives and analytical frameworks

This section is split into three parts. The first provides some background to the survey by situating it in relation to SLRC's broader research agenda. The second outlines the objectives of the panel survey. The third describes the basic analytical frameworks used to analyse the survey data.

2.1 The SLRC research agenda

The cross-country panel survey is directly relevant to the first and third themes of SLRC's six-year global research programme:

1. *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?
2. *Capacity.* How do international actors interact with the state and local-level governance institutions? How successful are international attempts to build state capacity to deliver social protection, basic services and support to livelihoods?
3. *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?

2.1.1 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 Cooperation 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. For donors, while there is little they can do to influence state legitimacy, 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

Literature reviews carried out during SLRC's inception year 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,[3] it is both surprising and concerning that we have so little robust knowledge about what leads to state legitimacy.

The results from the first round of the SLRC survey in Pakistan, however, reveal that the more problems experienced by the respondent with a service, the worse their perception of the government. Similarly, the respondents in our study tend to think more positively about the government when there are proper mechanisms to address grievances and to make complaints. There is also a statistical relationship between participation in meetings and perceptions about government (Denney et al., 2015; Shahbaz et al., 2014).

[3] 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'.

In the context of conflict-affected regions in KP (particularly in Swat), some authors have argued that the decline in service delivery by the state – including access to justice – is the main factor in the rise of militancy (Hayat, 2014).[4] According to Slater et al. (2016: 1), 'In fragile contexts, service delivery gaps are often filled by non-state actors, including civil society organisations, armed groups and religious communities'. However, there is little evidence of whether improved service delivery results in state legitimacy (ibid).

Despite these gaps, state-building – which encompasses both legitimacy and capacity – provides the organising framework for much of the international engagement in conflict-affected situations. In tackling this question, we are thus taking up the OECD's 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' (OECD, 2010: 55).

2.1.2 Livelihood trajectories: tracking change and identifying determinants

Literature reviews carried out during SLRC's inception year identified empirical and longitudinal research on livelihoods in conflict-affected situations as a key evidence gap. 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 quantitative survey data. The reviews also revealed 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 in people's livelihoods and compares the impact of different approaches.

The SLRC working paper by Suleri et al. (2016) – based on a qualitative study of the recovery of fruit and vegetable markets in post-conflict Swat – indicates some positive impacts of livelihood interventions by donor agencies on improving farming practices (new improved varieties, application of better fertilisers, pest control and trainings). Coupled with improved security, these have helped in re-establishing local markets. Another working paper by Shah and Shahbaz (2015), examined livelihood interventions in the conflict-affected areas in KP. The results indicate that short-term relief interventions helped address the immediate needs of conflict-affected communities. However, the lack of a systematic needs assessment remains a hurdle in the efficiency of long-term interventions. Elahi (2015) analysed societal changes in Swat in a post-disaster context (floods of 2010). He argued that the participatory practices of projects applied before the crisis resulted in some positive impacts on livelihood improvement, but post-disaster rehabilitation and reconstruction efforts did not generally adopt a similar participatory approach. He underlined the need to conduct more in-depth studies in crisis-affected areas to understand the impact of humanitarian aid on changes in livelihoods.

SLRC's research programme aims to fill some of these gaps by building a picture of how people make a living in particular contexts and tracking how this changes over time.

2.2 Objectives of the panel survey

Our approach to examining legitimacy centres on documenting and analysing people's views of governance actors in conflict-affected situations. A cross-country panel survey incorporating perception-based questions allows us to investigate difficult-to-measure, subjective issues such as trust and satisfaction, and provides both a comparative snapshot and a longitudinal perspective.

[4] http://ipr.org.pk/wp-content/uploads/2014/09/Strategy-not-Tactics-Final.pdf

To gain a deeper understanding of livelihood trajectories, SLRC is undertaking rigorous, longitudinal livelihoods research. Our aim is to build a picture of how people make a living in particular contexts, to track how this changes over time and to shed light on what causes change. We want to know whether people are recovering and starting to build stronger and more secure livelihoods; or whether they are stuck in difficult circumstances or sliding into destitution; and how the broader political, economic and security environment affects this. The SLRC cross-country panel survey therefore combines elements of both perception and livelihood surveys, enabling a dual focus on governance and legitimacy, and livelihood trajectories.

2.3 Analytical frameworks

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

2.3.1 Livelihood and wellbeing status

Livelihoods and wellbeing are broad concepts and cannot be meaningfully captured by a single indicator. We have chosen to measure it in two different ways, by looking at:

- Food security
- Household asset ownership as a proxy for wealth

We use two measures of food security: the Coping Strategies Index (CSI) and Food Consumption Score (FCS). A recent analysis of five food security indicators using 21 representative data sets spanning ten countries has shown that these two indicators capture different aspects of food security – considered them together, therefore, provides a more comprehensive picture (Vaitla et al., 2015).

The CSI, also sometimes referred to here as the food insecurity index, is a tool for measuring current food access and quantity: the higher the CSI the worse-off the household (Maxwell and Caldwell, 2008). Five coping strategies and their relative severity have been identified as (generally) internationally applicable and can be seen as proxies for food insecurity (Maxwell and Caldwell, 2008). The overall CSI score for each household is calculated by multiplying the number of times in the past month that each coping strategy was used by the severity of the coping strategy, and then summing the products. The final index score is a weighted sum reflecting the frequency with which households have adopted particular behaviours over the course of the previous 30 days. The survey questions, designed to capture these behaviours, are given in Table 1. Even though the food insecurity index was measured in exactly the same way in all countries, we will not be comparing average scores across countries, not least because the survey was conducted in different seasons. Rather, we will focus on the extent and direction of change in coping strategies, to explore where and why some households are on an upward trajectory, while others may be backsliding or static.

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 Food Consumption Score (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 the number of days that particular food groups were consumed in the last 30 days, weighted by the nutritional importance of each food group.

The second outcome indicator, household wealth, is proxied by the assets owned by the household 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 the asset. What this essentially means is 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; the assets differed across countries. The index has proved to be a good proxy for household expenditure 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).

It is also likely that relationships may exist between asset ownership and food security, our respective proxies for livelihood status and wellbeing. 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; and across the border in southern Zimbabwe, Scoones (1995) reports strong correlations between wealth rankings and livestock ownership, farm asset holdings and crop harvests. Further afield, Takasaki et al. (2001) observe strong associations between levels of household wealth and the kinds of livelihood activities engaged in by households in rural Peru. Similarly, during the SLRC Pakistan baseline survey we found significant negative association between assets (MSI) and food security (CSI): comparatively wealthier households (with more assets) tend to be less food insecure (Shahbaz et al., 2014).

Following a lengthy process of deliberation and expert consultation, we propose that changes in livelihoods and wellbeing can be explained, at least in part, by the sets of factors outlined below. Some basic hypotheses related to these factors are listed at the end of this sub-section.

In the panel synthesis report (forthcoming), we argue that changes in a number of different factors can explain changes in livelihood status:

- *Household factors*: These include household-level demographic, religious, ethnic and educational characteristics as well as histories of migration.
- *Contextual factors*: These include 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*: These include natural hazards and economic shocks, as well as crime and conflict as experienced by households.
- *Service access and quality factors:* These include the different levels of access to basic services, social protection and livelihood assistance, and the quality of these services or transfers.

The aim of the quantitative analysis is to estimate if and to what extent the above factors determine the main outcome (household assets/food insecurity) following the hypotheses shown in Box 1.

Box 1: Hypotheses on changing livelihoods and wellbeing

- Households which do not owe money (credit) in Wave 1, but owe money in Wave 2 will have a higher CSI score (i.e. higher food insecurity) and a lower FCS (they rely on less diverse food).
- Food security increases as perception of safety improves.
- Households in which a member has recently moved to another country (external migration) improve their assets and reduce food insecurity.
- The households which did not receive livelihood assistance in Wave 1 but received livelihood assistance in Wave 2 have improved food security and a higher FCS.
- Households which did not receive livelihood assistance (in the form of seeds and fertilisers) in Wave 1 but received assistance in Wave 2 have increased their assets.

2.3.2 Access to and experience of services, social protection and livelihood assistance

We are interested in which factors determine access to and experience of services. Because the survey covered a large range of services, we made use of simple, relatively blunt, proxies for access. In the case of health, education and water, we considered return journey times (in minutes) to health centres or hospitals, primary schools and water sources. Respondents were asked about the distance to boys' and girls' schools separately (to account for the possibility of boys and girls using different schools). The average (mean) distance was used where appropriate. For social protection and livelihood assistance, we considered whether households had received any form of support in the past year – support in the form of seeds, agricultural tools, fertilisers, pesticides, extension services, etc., is considered as livelihood assistance, and support in the form of cash transfers, pensions, social security networks (SSN), etc., is seen as social protection.

Variations in access to services can be explained by a number of different factors. These include:

- *Individual and household factors*
- *Contextual factors*
- *Shock factors*
- *Service access and quality factors:* Implementation and performance (for example, regularity of provision or who provides the service) may affect access to basic services, social protection and livelihood assistance. We expect that distance to basic services is likely to affect experience of services.
- *Service implementation and performance features*: These include 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.

The aim of the analysis is to test the hypotheses in Box 2, to determine if and to what extent changes in the above factors change access to and experience of services, social protection and livelihood assistance. We measure experience in terms of overall satisfaction with the service provided and how respondents themselves perceived the impact of the service (in terms of social protection and livelihoods assistance).

Box 2: Hypotheses on changing access to and satisfaction with services

- Respondents with increased knowledge of community meetings (between Wave 1 and Wave 2) related to basic services, social protection and livelihood assistance, are more satisfied with these services.
- An increase in satisfaction with the number of teachers, quality of teaching staff, teacher attendance, class size and the quality of school equipment is positively associated with satisfaction with schools.
- Starting to pay fees (between Wave 1 and Wave 2) for the health centre is negatively associated with satisfaction with the health centre.
- An improvement in perceived safety is associated with an increase in household satisfaction with basic services.
- Households without a migrant family member in Wave 1 but with at least one member who has migrated to a foreign country in Wave 2, are less likely to be the recipient of social protection.

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

Pakistan has a three-tier governance structure: national (or federal), provincial and local. It is important to note that the Pakistan Muslim League (PML-N) is the ruling party at the federal level but the Pakistan Tehrik-e-Insaf (PTI) holds power at the provincial, and at the local level in most of the districts of Khyber Pakhtunkhwa.

The analysis of what influences people's perceptions of governance is complicated. We propose that perceptions of governance be determined by individual and household characteristics, context and shocks experienced. To examine these perceptions, we used two main indicators:

> *'To what extent do you feel that the decisions of those in power at the local/central government reflect your own priorities?'*
>
> *'Do you agree with the following statement: the local/central government cares about my opinions?'*

We explored governance on two levels[5] – in this case, local[6] and national. We then look at the explanatory role of basic services, social protection and livelihood assistance, specifically in terms of: 1) access, 2) user experience and 3) implementation and performance.

We propose that changes in the following factors (all discussed above) may determine changes in people's perceptions of governance (see also Box 3):

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

[5] For the purposes of cross-country comparison, we looked at local and central governments (ignoring the provincial government).

[6] By local government we mean the government at the district or Union Council level (UC members are elected at the village level).

Box 3: Hypotheses about changing perceptions of government

- Respondents whose household assets have increased have more positive perceptions of local and central government; and respondents from households with increased food insecurity have worse perceptions of local and central government over time.
- Respondents who now feel safer in Wave 2 (as compared to Wave 1) have more trust (positive perceptions) in central and local governments.
- Respondents in households which experienced shocks (agricultural and economic) in Wave 2 have more negative perceptions about local and central governments. Similarly, an increase in the local crime rate leads to more negative perceptions of governance.
- The respondents in households who had to pay fees for health services in Wave 2 (but did not pay in Wave 1) have more negative perceptions of governance.
- Respondents who experienced more problems with basic services in Wave 2 (as compared to Wave 1) have more negative opinions about local and central governments.
- Respondents who know about more service-related meetings in Wave 2 (as compared to Wave 1) are more likely to have a positive perception of central government.
- Experiencing more problems with basic services over time is linked to worsening perceptions of governance.
- Respondents in households which started receiving livelihood assistance in Wave 2 (and who did not in Wave 1) have better perceptions of government.

3 Methods

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, a particular type of longitudinal survey where the same individuals are followed over a succession of survey rounds – in our case 2012/13 and 2015. The main advantage of panel surveys is that they allow for the direct study of change for individuals or within households. This method enables us to examine relationships between events and developments and see if they remain consistent over time, thus facilitating an understanding of causality. This is substantially different to observing an event and people's circumstances only at a single point in time.

However, panel surveys present their own set of methodological challenges. Some of these challenges are similar to those of other types of surveys -- non-response to some of the questions within a survey, for example. Attrition (drop out from the sample) is perhaps the major threat, but there are others. In this section, we discuss the challenges and how we dealt with them. The section is split into four parts, focusing respectively on: design, data collection, sampling and weighting, and analysis.

3.1 Design process

The first wave of the SLRC survey took place in 2012. Details on the methods can be found in the SLRC process paper and baseline synthesis report (SLRC, 2015; Mallett et al., 2015). The survey was designed partly with the objective of looking for similarities and differences across the five survey countries. This meant that consistency was a key consideration throughout the survey process. The same principle also guided our approach to the second wave, where we tried to stay as true to Wave 1 as possible. Nonetheless, we still faced a number of methodological challenges the second time around. These are described in detail in this section.

3.1.1 Deciding who to track

The SLRC survey incorporates elements of both a livelihood and a perception survey, which raises an important methodological issue: while the ideal unit of analysis for the livelihoods survey is the household (e.g. how much land does *your household* own?), for the perception survey it is the individual (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.

Roughly half of the baseline analysis focused on household-level indicators and half on individual-level data. In planning for the second wave, a key question was whether to re-interview the same respondent as in Wave 1 or whether it would be sufficient to interview anyone else from the original household. It is much harder to find the same individuals than it is to find *anyone* from their household, three years on. We expected high attrition rates, partly as a result of labour migration and displacement (due to natural disasters and insecurity). However, to interview someone other than the original respondent would mean we would not have a panel dataset for the important individual-level characteristics (e.g. 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 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 same respondent within households. We could then be more certain that any changes over time are 'true' changes rather than the result of changing to a respondent with a different perspective.

3.1.2 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 Pakistan survey instrument can be found in the Pakistan baseline report (Shahbaz et al., 2014).

Conducting a panel survey implies asking the same questions so that changes can be measured over time. In each of the SLRC panel survey countries, some adaptations were made to the survey instrument between waves. These were of two types: (1) the addition of questions to capture changes in context or circumstances; and (2) the removal of redundant questions.

Table 2 shows an example of a type 1 question added to the Pakistan survey instrument. The purpose of this particular addition was to help us identify which changes in access to health services are due to a switch in health centre as opposed to a road improvement or some other explanation. However, such changes and additions were quite exceptional: more than 90% of the original survey instrument remained unchanged.

Table 2: Example of question added to survey instrument

I.2	Is this the same health centre or clinic that you were using three years ago? *No =0* *Yes =1 (go to I.4)*
I.3	Why did you switch to this health centre? *Previous one no longer exists =1* *This one is closer =2* *This one is cheaper =3* *This one has better service quality =4* *Other (specify) =5*

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). Maintaining the original sequencing was another way of ensuring that the research design itself – or rather changes to the design – did not influence people's responses to the survey.

3.1.3 Timing of survey

The baseline survey was conducted in September and October 2012. Fieldwork for the second wave took place earlier in 2015, beginning on 8 August, and was mostly completed by mid-September. The tracking of missing respondents continued at irregular intervals until December 2012. The two surveys were conducted at different times of the year to work around religious holidays. An earthquake in north-western Pakistan also delayed the tracking process. Box 4 describes the differences and the implications of moving the timing of fieldwork.

Box 4: Religious holidays and the timing of the survey

In 2012, Eid al-Fitr, which marks the end of Ramadan, fell on 18 August and Eid al-Adha on 26 October. Fieldwork on the survey commenced on 10 September and finished on 22 October, fitting between the two festivals.

In 2015, Eid al-Fitr fell on 17 July and Eid al-Adha on 24 September. Fieldwork commenced on 8 August and although most of it had been completed by 10 September, the last interview was conducted on 11 December.

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. This means that in Wave 2, those interviewed in the first 10 days of fieldwork would have been asked to recall food consumption during a period that included Ramadan and Eid al-Fitr (this applied to 56% of the Wave 2 sample). Since these religious observances involve patterns of eating that differ from normal, our consumption-related indicators are likely to be affected. For this reason, the regressions on the CSI and FCS control for whether the respondent was interviewed during the weeks when Eid al-Fitr was within the recall period.

3.2 Data collection

In 2012, a team of 20 enumerators (12 male and 8 female) were employed to carry out the interviews. In 2015, the same number of enumerators were used but 5 trackers were added, to trace the respondents interviewed earlier in 2012. Preparation for the data collection consisted of a 5-day training to familiarise enumerators with the objectives of the survey and the content of the survey instrument, and to give them interview practice.

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 used information collected in the baseline survey to track down respondents. This included their address, phone number and the household roster (to describe the household to others living in the same community). Furthermore, to get a sense of how much attrition to expect, a pre-fieldwork test was conducted in Lal Qila (Lower Dir) and Charbagh (Swat) in March 2015. A small team of enumerators attempted to establish the whereabouts of all respondents in those sub-samples within a period of a few days. The pre-test found a high attrition rate (19%) and although there was little difference in overall attrition by survey site, female respondents proved much harder to find (female attrition was 27%). This was in part a result of the decision to send female trackers to locate female respondents; the presence of these female trackers without a male accompaniment provoked suspicion in some areas. Females trackers were found to be less effective for two main reasons: 1) cultural constraints made it difficult for them to move around freely, and 2) it was considered culturally inappropriate for female trackers to ask men about women in the community; they would only question women, who tend to have less knowledge of their communities.

The sample size in 2012 was inflated (by 20%) to allow for attrition so that, even with some respondents dropping out in the second wave of the survey, the sample in 2015 would retain statistical significance at the Union Council level. This meant that it would be necessary to find approximately 83% of the original respondents (this equates to an attrition rate of 17%). Given the expectation of high attrition established by the pre-test, local consultants were hired to locate respondents and to establish trust among locals prior to the enumerators arriving in the field. During the first 'phase' of fieldwork, enumerators tried to locate each respondent at least once. The reasons for not being able to find respondents included: incorrect data on the respondent recorded at baseline (for example, in 11 cases the respondent's gender was marked down incorrectly), suspicion and security threats (both general and directed at the field team), and the difficulty of locating male respondents during business hours.

Not all missing respondents could be intensively tracked due to resource constraints. Ideally, a random selection would have been tracked, to minimise the risk of bias from convenience sampling, but in practice there was no alternative but to track those located in the most accessible locations.

3.3 Sampling and weighting for non-response

The first round of the survey was conducted in Swat and Lower Dir districts between September and October 2012. These districts were selected because they were both engulfed by violent conflict[7] between 2007 and 2009 and immediately after the war, in 2010, they were severely affected by flooding. They were also subject to extensive rehabilitation efforts by international and national aid agencies. From each of the two districts, five union councils (UCs) were selected: three from Swat (Char Bagh, Baidara and Bar Abakhel) and two from Lower Dir (Haya Serai and Lal Qila), based on similar criteria. The baseline survey was representative at the UC level and the sample size was calculated using a 95% confidence level and a confidence interval of 5. The baseline sample was increased by 20% to account for possible attrition between 2012 and 2015, so that the sample size in 2015 remained statistically significant. Households were selected randomly and about 34% of the respondents were females.

At baseline there were 2,114 completed surveys (or responses). In the second wave, we were able to complete 1,762 surveys (4 additional respondents were found but did not consent to be interviewed). Overall attrition was 17% and non-random, partly because it had not been possible to randomise the tracking of respondents who had moved house between waves. As Table 3 illustrates, attrition levels differed between UCs (Charbagh exceeded the 18% attrition limit).

Table 3: Attrition by Union Council

District	Union Council	Wave 1	Wave 2	Attrition (%)
Lower Dir	Haya Serai	421	348	17
	Lal Qila	423	357	16
Swat	Charbagh	414	334	19
	Baidara	433	374	14
	Bar Abakhel	423	349	17
Total		2,114	1,762	17

Tests were run to determine whether any observed characteristics from Wave 1 could predict attrition in Wave 2. Males were more likely to drop out of the sample, with an attrition rate of 19% compared to 14% for females. The oldest and youngest were more likely to drop out, as were respondents who were unmarried at baseline, who had received remittances, or who had been engaged in casual labour or ran their own business. There was also a subgroup of women listing no paid activity at baseline who were more likely to drop out, although the reasons for this are not clear. Respondents primarily engaged in farming and those from larger households were the most likely to be found.

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. Although our data can be aggregated at higher levels (e.g. the regional level) 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).

[7] The occupation of Swat by the Taliban and then war between the Pakistani army and Taliban militants.

Using Wave 1 data, a probit regression was run with the outcome variable 'response in Wave 2' (respondent in Wave 2=1, non-respondent in Wave 2=0). This included a list of covariates that proved at least partly to explain non-response in Wave 2 (see list 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, 2006; Brick, 2013). The results of this regression are shown in Table 1 in Annex. Following the probit regression, the probability of response is calculated for each individual. Then the inverse of the probability is taken, which becomes 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.

3.4 Analytical methods

When it comes to analysing the data, the complexity of the dataset poses serious challenges. 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 which have an influence on an individual's outcomes over time. To put it in different terms, whether or not a respondent believes that the government cares about their opinion, is 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 – but most of these factors remain unobserved. In the context of panel data, there is a danger that these will be correlated over time. Some people will always be more negative than others, for example, and the models used in cross-sectional analysis may not account for this.

When it comes to modelling such a relationship, there are ways of addressing this bias. One approach is to assume that these individual differences are 'randomly' distributed across individuals and uncorrelated with everything else in the model. This is known as the Random Effects (RE) model. An alternative model, the Fixed Effects (FE) model rejects this assumption and 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 that in our case the assumptions implied in the RE model could be met. The FE model still leaves us with the problem of how to estimate the effect of time-invariant factors such as gender or displacement in a conflict prior to baseline (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 the Appendix.

Sensitivity checks were run after the main analysis which consisted of two steps: (1) testing the robustness of the results using a different model (this applied only for binary outcome variables), and (2) re-running the regressions with standard errors clustered at the village level.

3.4.1 Outline of the analysis

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 gave the same answer to a given question between waves and those who 'switched' their answer. Switching is often further disaggregated into an 'upward' or 'downward' switch, or a similar switch. The outcome variables of interest are broadly the same as in the baseline analysis (Shahbaz et al., 2014) and are shown below.

Table 4: Summary of outcome variables

Topic	Outcome variable	Explanation/ exact indicator
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 quality of food (see Maxwell and Caldwell 2008 and Vaitla et al., 2015).
	Morris Index (MSI)	An index measuring household asset wealth (see Morris et al. 1999).
Access to basic services	Access to health centre	Journey time (in minutes) to reach the health centre that the respondent typically uses.
	Access to school (boys/ girls)	Journey time to reach the primary school that children attend.
	Access to principal water source	Time (in minutes) taken for a return journey to the household's main source of drinking water.
	Access to social protection	Has anyone in the household received a social protection transfer in the past year?
	Access to livelihood assistance	Has anyone in the household received a livelihood assistance transfer in the past year?
Experience of basic services	Satisfaction with health centre	Overall satisfaction with the health centre.
	Satisfaction with school (boys/ girls)	Overall satisfaction with the school. (Only possible to run regression for boys' schooling)
	Perception of water quality	Is your drinking water clean and safe? (yes/ no)
	Impact of livelihood assistance	Did the assistance increase your agricultural/ other livelihood productivity?
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 you feel that the decisions of those in power at the local government reflect your own priorities? ('Never' to 'Completely')
	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 you feel that the decisions of those in power at the central government reflect your own priorities? ('Never' to 'Completely')

4 The changing context in Pakistan

In the period covered by our survey, Swat and Lower Dir districts in Khyber Pakhtunkhwa (KP) Province were severely affected by militancy and natural disasters. Tehrik-e-Taliban Pakistan gradually started to infiltrate the region during the early 2000s and by 2007 they controlled most parts of Swat district, enforcing their version of Sharia law. They also started to advance towards adjoining districts (particularly Lower Dir). In 2008, the Government of Pakistan started a large-scale military operation after evacuating most of the civil population from the district. More than 2 million people were internally displaced during the operation (Nyborg et al., 2013). After a fierce war, the Pakistani army was able to recapture the occupied areas and most of the militants were either killed or escaped to Afghanistan. Immediately after the operation, the internally displaced people (IDPs) began to return to their homes, but while they were returning devastating floods (July 2010) inundated the province, added to their miseries. Swat was particularly badly affected. War and floods destroyed most of the infrastructure in Swat and Lower Dir districts and created one of the worst humanitarian crises in Pakistan's history. Most of the livelihood sources – such as causal labour, small businesses, farming, and fruit and vegetable markets – were severely affected (Suleri et al., 2016).

The response of international and national aid agencies was immediate and there was huge influx of aid interventions in the form of short-term relief efforts and long-term rehabilitation interventions after the war (Shah and Shahbaz, 2015). The Government of KP carried out a disaster needs assessment in the conflict/disaster affected areas through the Provincial Disaster Management Authority (PDMA) and the Provincial Reconstruction, Rehabilitation and Settlement Authority (PaRRSA), in collaboration with the World Bank and the Asian Development Bank. A large number of bilateral, multilateral and humanitarian agencies provided assistance to relief and rehabilitation efforts.[8] Most of these agencies implemented their interventions through NGOs and government departments such as PaRRSA and PDMA (for details see Shah and Shahbaz, 2015; Shahbaz et al., 2012)

Cash and food/non-food items were distributed during the relief operation, while the focus of long-term rehabilitation efforts was on the reconstruction of public infrastructure, and the distribution of farming tools, seeds/fertilisers and livestock/poultry, along with capacity-building training (ibid). Though there were many challenges and shortcomings in relief and rehabilitation efforts, life gradually began to return to normalcy. Markets have recovered (Suleri et al., 2016), institutions (in particular, local governments) have started to function (Shahbaz et al, forthcoming) and people have gradually re-started their livelihood activities.

In this context, this section looks at the data we have on measures of local safety and security, to see how these larger contextual changes have affected life at the local level. We look firstly at people's actual experiences of conflict and shocks, and secondly at people's more subjective perceptions of safety in their local area.

[8] Some of the notable organizations were, UNICEF, UNHCR, WFP, Save the Children, the Norwegian Agency for Development Cooperation (Norad), the Australian Agency for International Development (AusAID), USAID, the UK Department for International Development (DFID), CARE International, the Canadian International Development Agency (CIDA), Swiss Agency for Development and Cooperation (SDC), Qatar Charity, CARE International, Plan Pakistan, WHO, Oxfam, Mercy Corps and Islamic Relief.

4.1 Conflict

The respondents were asked whether there had been any fighting between law enforcement agencies (army/police) and Taliban militants in the area in the last three years (Table 5). Significant differences are evident between the two waves; in Wave 1 almost every one reported fighting in the area (the Pakistani army waged a full-scale war against the Taliban during 2009, which was followed by sporadic fighting). However, after 2012, there were very few incidents involving fighting and the army controlled most of the area.

Table 5: Experience of conflict in the past three years

Has there been fighting in this area in the last 3 years?	Wave 1		Wave 2	
	Freq	%	Freq	%
No	16	0.8	1985	95.9
Yes	2098	99.2	84	4.1
Total	2114	100	2103	100

Note: The difference in the reporting of fighting between waves is statistically significant at 1%.

A comparison between the two districts is given in Table 6 below, which indicates that almost all of the households in both districts reported conflict in Wave 1, but in Wave 2 the number of respondents who reported fighting in Swat was almost negligible (1.2%); the number in Lower Dir was slightly higher (8.8%).

Table 6: Experience of conflict in the past three years (comparison between districts)

District	Wave 1		Wave 2		Size of change
	Freq	%	Freq	%	
Lower Dir	834	98.8	70	8.80	-90.0
Swat	1264	99.5	15	1.20	-98.3

4.2 Shocks

Table 7 (below) presents the shocks experienced by households (during the last 3 years). Notably, there is a significant increase in households in Wave 2 who experienced a sudden health problem or accident, or long-term health problem. One of the possible reasons for this was the outbreak of dengue fever in KP, and in Swat and Lower Dir in particular, during 2013 and 2014 (Khan and Khan, 2015).

Table 7: Households who experienced different types of shocks (during the past three years)

Shock	District	Wave 1		Wave 2		Size of change
		Freq	%	Freq	%	
Sudden health problem or accident	Lower Dir	150	17.8	463	56.2	38.4
	Swat	151	11.9	381	30.0	18.1
Long term health problem	Lower Dir	142	16.8	364	44.2	27.4
	Swat	175	13.8	356	28.0	14.2
Inflation and price hikes	Lower Dir	718	85.1	286	34.7	-50.4
	Swat	616	48.5	47	3.7	-44.8
Loss of work of a household member	Lower Dir	7	0.8	28	3.4	2.6
	Swat	76	6.0	25	2.0	-4.0
Loss of land/ assets	Lower Dir	23	2.7	22	2.7	0.0
	Swat	142	11.2	12	0.9	-10.3
Failure or loss of family business	Lower Dir	15	1.8	52	6.3	4.5
	Swat	50	3.9	28	2.2	-1.7
Low market prices for livestock/ crops	Lower Dir	2	0.2	12	1.5	1.3
	Swat	39	3.1	23	1.8	-1.3
Poor market access	Lower Dir	1	0.1	6	0.8	0.7
	Swat	75	5.9	11	0.8	-5.1
Loss of crop(s) / livestock	Lower Dir	309	36.6	227	27.6	-9.0
	Swat	392	30.9	90	7.1	-23.8
Loss of Housing	Lower Dir	118	14.0	33	4.0	-10.0
	Swat	510	40.2	35	2.8	-37.4
Soil problem/ losing fertility	Lower Dir	275	32.6	29	3.5	-29.1
	Swat	40	3.1	8	0.6	-2.5
Other (specify)	Lower Dir	6	0.7	2	0.3	-0.4
	Swat	48	3.8	7	0.6	-3.2

It is evident that price hikes and inflation decreased considerably in Wave 2, mostly likely as a result of the drop in the price of petrol during 2014 and 2015. There is also a significant reduction in the number of respondents who reported poor market access (in Swat). This finding complements a qualitative study conducted by Suleri et al. (2016) of post-conflict changes in fruit and vegetable markets in Swat: "…the recovery has been fairly rapid, with farmers able to re-establish production and traders, commission agents and transporters able to re-establish marketing networks. The role of external assistance (aid agencies or government) seems to have been helpful, in the sense that livelihood interventions in the form of the provision of seeds, fertilisers and trainings have brought direct and indirect impacts." (ibid: 25)

There has also been a considerable reduction in the number of households reporting a loss of crops and livestock between Wave 1 and Wave 2. Likewise, fewer households reported a loss of land in Wave 2. These results indicate an overall reduction in agriculture related shocks. During 2009 and 2010, the majority of respondents had to leave their villages and were internally displaced due to fierce fighting between the army and the Taliban. Their houses were destroyed and they had to abandon their standing crops and sell livestock at nominal prices (Shahbaz et al., 2012). For this reason, more than one third of respondents in Wave 1 reported agriculture and housing related shocks; this figure reduced significantly in Wave 2, following the end of the conflict.

Relatively fewer households in Wave 2 reported soil problems/loss of soil fertility. Post-conflict interventions by international donor agencies in Swat and Lower Dir involved the distribution of farming inputs (fertilisers and seeds) and the provision farm-related training (Shah and Shahbaz, 2015), and such interventions have helped in the recovery of farming enterprises (Suleri et al. 2016).

Table 8 shows significant reductions in the average number of shocks observed by sampled households between both waves. The floods of 2010, fighting between the Taliban and the army and the

consequent loss of housing, crops and livestock are some of the factors contributing to the shocks reported in Wave 1. While some of these shocks are environmental and the risk remains the same over time (e.g. flooding, drought), those which are man-made (e.g. economic shocks) have declined over time as the region has stabilised.

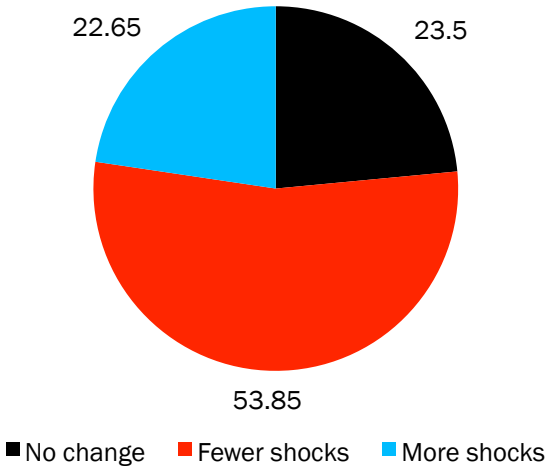
Table 8: Change in number of shocks

Survey wave	Average number of shocks
Wave 1	2.05
Wave 2	1.36

Note: The difference in number of shocks over time is statistically significant.

Changes in the number of shocks were different across households: some households experienced fewer shocks in Wave 2, some households experienced more, while for others there was no change. The detail is given in Figure 1 below.

Figure 1: Change in the number of shocks between each wave



4.3 Crime levels

Crimes levels have also changed in the post-conflict context. Table 9 below presents the data on households that experienced crime in Wave 1 and Wave 2.

Table 9: Frequency and percentage of households that experienced crime

Any crimes experienced	Wave 1		Wave 2	
	Freq	%	Freq	%
No	1733	82	1959	93
Yes	381	18	147	7
Total	2114	100	2106	100

A large proportion of respondents (93% in Wave 2 and 82% in Wave 1) reported that they did not experience any crime. Moreover, the number of households that experienced crime decreased from 18% to 7%, indicating a reduction in crime levels in our study areas.

Households that experienced crime were asked to indicate the nature of the crime; the data are presented in Table 10 (below). We can clearly see the changes in the experience of different types of crime.

Table 10: Changes in types of crime in each wave

Experience of crimes by wave	Wave 1		Wave 2	
Crime	Freq	%	Freq	%
Theft	198	9.4	65	3.1
Verbal threats	179	8.5	42	2.0
House breaking (burglary)	97	4.6	7	0.3
Torture	21	1.0	8	0.4
Cattle rustling	18	0.9	12	0.6
Murder	14	0.7	2	0.1
Robbery	8	0.4	3	0.1
Abduction	6	0.3	1	0.0
Child abuse	2	0.1	0	0.0
Land grabbing / dispossession	2	0.1	38	1.8
Physical attack/ assault	2	0.1	4	0.2
Revenge killing	0	0.0	2	0.1
Sexual assault	1	0.0	4	0.2

Note: The difference between waves is statistically significant for theft, verbal threats, burglary, torture, murder and land grabbing/ dispossession.

There was a significant reduction in theft – a relatively small proportion of households (3.1%) experienced theft in Wave 2 compared to Wave 1 (9.4%). Similarly, the percentage of sampled households who experienced verbal threats decreased from 8.5% to 2%. There was also a substantial reduction in the percentage of households who reported burglary (down from 4.6% in Wave 1 to 0.3% in Wave 2). However, there was a considerable increase in land grabbing.

Table 11: Percentage of respondents reporting any crime, by UC

UC (District)	Crime rate		
	Wave 1	Wave 2	Difference
Bar Abakhel (Swat)	36.6	2.8	-33.8
Charbagh (Swat)	26.3	3.0	-23.3
Baidara (Swat)	21.5	8.0	-13.5
Haya Serai (Lower Dir)	3.6	9.2	5.6
Lal Qila (Lower Dir)	2.1	10.9	8.8

Note: The crime rate is calculated as the number of crimes reported by respondents in our sample, out of every 100 households

Table 11 presents the percentage of households reporting crimes in different UCs. It shows that UCs in Swat had a considerably higher crime rate in Wave 1 but that the number of reported crimes decreased substantially in Wave 2, while the crime rate in UCs in Lower Dir increased.

Table 12: Change in crime rate, by district[9]

District	Crime rate	
	Wave 1	Wave 2
Lower Dir	2.8	10.1
Swat	28.1	4.7

At the district level, the crime rate in Wave 1 was substantially higher in Swat than in Lower Dir, but in Wave 2 the crime rate in Lower Dir increased, surpassing the crime rate in Swat. The high crime rate in Swat district in Wave 1 might be explained by incidents of looting and theft during the war between the army and the Taliban and then the floods in 2010. Following the end of the war the army set up

[9] The crime rate is the number of crimes reported for every 100 households. This does *not* mean that in wave 1 approximately three out of 100 households experienced crime in Lower Dir because the crimes could all have been reported by one household.

checkpoints along most of the roads, which could account for the reduction in reported crime. Most of the crimes in Swat related to verbal threats and theft (Table 13 below), and might be as a result of the transition between war and peace. The crime rate differs for each wave and between districts. Severe crimes such as revenge killing, sexual assault and robbery were less common than petty crimes. The detail of each crime is given in the table below.

Table 13: Types of crime experienced by sample households (by district and panel wave)

Reporting of crime	Lower Dir		Swat	
Crime	**Wave 1 %**	**Wave 2 %**	**Wave 1 %**	**Wave 2 %**
Theft	1.3	3.4	14.7	2.9
Verbal threats	0.9	3.8	13.5	0.8
Cattle rustling	0.5	0.8	1.1	0.4
Murder	0.2	0.3	0.9	0.0
Torture	0.2	1.0	1.5	0.0
Burglary	0.1	0.7	7.6	0.1
Abduction	0.1	0.0	0.4	0.1
Child abuse	0.1	0.0	0.1	0.0
Land grabbing / dispossession	0.1	3.3	0.1	0.8
Sexual assault	0.0	0.3	0.1	0.1
Physical attack/ assault	0.0	0.5	0.2	0.0
Torture	0.2	1.0	1.5	0.0

Generally, low levels of crime were reported in both waves. Only 1.3% of households in Lower Dir reported thefts in Wave 1, increasing slightly to 2.1% in Wave 2. In Swat, a large percentage of households reported thefts (14.7%) in Wave 1 but this decreased dramatically (to 2.9%) in Wave 2. The incidence of verbal threats reported in Lower Dir increased from 0.9% to 3.8%; however, the reverse trend was observed in Swat, where there was a decrease from 13.5% to 0.8%.

4.4 Perceptions of safety

Respondents were also asked how safe they felt in their village or neighbourhood. Table 14 shows a significant reduction in perceptions of safety, accounted for, primarily, by a movement from the 'very safe' category to 'quite safe'. This is an interesting result which at first might appear counter-intuitive. One of the reasons might be that in 2012 the war had just finished and there was a strong army presence and security check points throughout the region. Residents therefore felt safer in their village.[10] However, in 2015, most of the check points were removed (except on the major roads) and the army returned to the cantonment; thus, people perceived themselves to be less safe. Table 14 also shows that 8.3% of respondents felt rather unsafe in Wave 2 as compared to 1.3% in Wave 1. After the military operation, the police gradually took control of law and order. Our results therefore imply that people have comparatively more trust in the army than in the police.

Table 14: Perceptions of safety within the village (by wave)

	Wave 1		Wave 2	
How safe do you feel in your neighbourhood?	**Freq**	**%**	**Freq**	**%**
Very safe	1794	84.9	1143	54.3
Quite safe	283	13.4	776	36.9
Rather unsafe	28	1.3	174	8.3
Not at all safe	9	0.4	10	0.5
Total	2114	100	2104	100

Note: The difference in safety by panel wave is statistically significant at 1%.

[10] http://blogs.tribune.com.pk/story/17653/horrors-of-2007-in-swat-we-need-the-army/

District-level data on village safety, shown in Table 15 below, show significantly more 'negative switchers' in Lower Dir than in Swat, which means that more respondents felt that they or their household members did not feel safe while moving within the village.

Table 15: Change in perceptions of safety in the village (by district)

		District	
	All (%)	Lower Dir (%)	Swat (%)
No change	51.9	46.9	53.8
More safe	9.1	10.7	8.1
Less safe	39.8	**42.4**	**38.2**
Total	100	100	100

Note: The difference between districts is statistically significant at 5%.

The data on 'feeling safe while moving to other places (outside the village)', shown in Table 16, reveals a significant reduction in households who perceive this to be 'very safe' (from 71.6% in Wave 1 to 35.9% in Wave 2).

Table 16: Perceptions of safety outside the village (by wave)

	Wave 1		Wave 2	
How safe do you feel moving to other places?	**Freq**	**%**	**Freq**	**%**
Very safe	1495	71.6	747	35.9
Quite safe	230	11	1070	51.5
Quite dangerous	226	10.8	241	11.6
Not safe	137	6.6	22	1.1
Total	2088	100	2079	100

Note: The difference between waves is statistically significant at 1%.

The data on changes in perception of safety outside the village (Table 17) indicate that the largest share (47.2%) feel less safe in Wave 2, while there is no change in perception for 31.7% of households and 21.1% of households feel safer outside the village. The reason might be that the army had a strong presence during Wave 1 in most of the areas and after 2012 it started to either reduce the number of check points[11] or hand over to local police.[12] Though there were no major outbreaks of fighting reported after 2012, Taliban militants killed a number of influential people including members of peace committees.[13,14] Such incidents are likely to have contributed towards the change in perception from 'very safe' to 'less safe' by most of the respondents (see also Rehman, 2014).

Again, there were more switchers to 'less safe' in Lower Dir (Table 17). More than 62% of respondents in Lower Dir perceived it to be less safe outside the village in Wave 2. Similarly, 31.2% of respondents in Swat perceived it to be safer outside the village (as compared to only 6.3% in Lower Dir) between Wave 1 and Wave 2. This might be because of government peace-building efforts in Swat and the considerable role of the army.[15]

Table 17: Change in the perception of safety outside the village (by district)

[11] Change of guard: Security forces hand over 30 check posts to police. THE Express Tribune; December 20, 2014. http://tribune.com.pk/story/158036/improved-security-situation-in-swat-army-begins-reducing-checkposts/

[12] http://tribune.com.pk/story/809427/change-of-guard-security-forces-hand-over-30-check-posts-to-police/

[13] "In the last three years, a number of members of Village Defence Committees (VDCs) or peace committees — which are being organised at village-level in entire districts with the army's support — have been targeted by unknown militants." http://www.dawn.com/news/1133198

[14] Peace committee member gunned down in Swat; The Express Tribune October 2, 2015. http://tribune.com.pk/story/965898/peace-committee-member-gunned-down-in-swat-3/

[15] Dawn News (2015). Terrorists thrown out of Swat for good: army chief. Dawn Sep. 8, 2015. http://www.dawn.com/news/1205554

		District	
	All (%)	Lower Dir (%)	Swat (%)
No change	31.7	31.2	32.0
More safe	21.1	6.3	31.2
Less safe	47.2	62.5	36.9
Total	100	100	100

Note: The difference between waves is statistically significant at 1%.

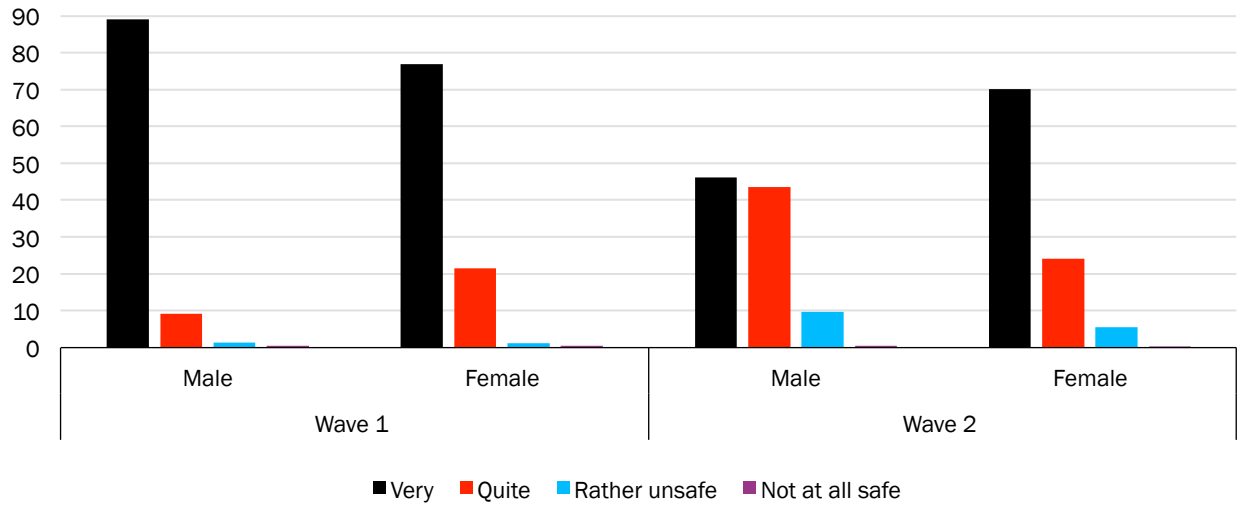
The geographical element may be important here. Clearly there is a difference in perceptions of safety between Swat and Lower Dir. This might be due to the permanent deployment of the army in Swat. Although many checkpoints have been handed over to local police, the army has built a cantonment and intends to stay.[16] Data from selected UCs (Table 18) also indicate that more households in Lower Dir perceive themselves as less safe (in Wave 2) compared to sampled households in Swat.

Table 18: Change in perceptions of safety outside the village (%), by UC

UC (District)	No change	More safe	Less safe	Total
Haya Serai (L. Dir)	30.7	9.3	60.0	100
Lal Qila (L. Dir)	31.7	3.4	64.9	100
Charbagh (Swat)	30.5	41.2	28.4	100
Baidara (Swat)	29.4	36.3	34.3	100
Bar Abakhel (Swat)	35.9	16.5	47.5	100
Total	31.7	21.1	47.2	100

There is also a difference in the perceptions of male and female respondents. Figure 2 and Figure 3 show gender disaggregated[17] data on perceptions of safety within and outside villages. It is interesting to note that significantly more female respondents in Wave 2 feel 'very safe' moving within their village. This is rather an odd finding, but in rural areas of KP, extended family members live in the same village and most of the residents in the villages are related to each other. This might be one of the reasons why female respondents feel safer while moving within the village.

Figure 2: How safe do you feel in neighbourhood/village? (male/female perceptions)

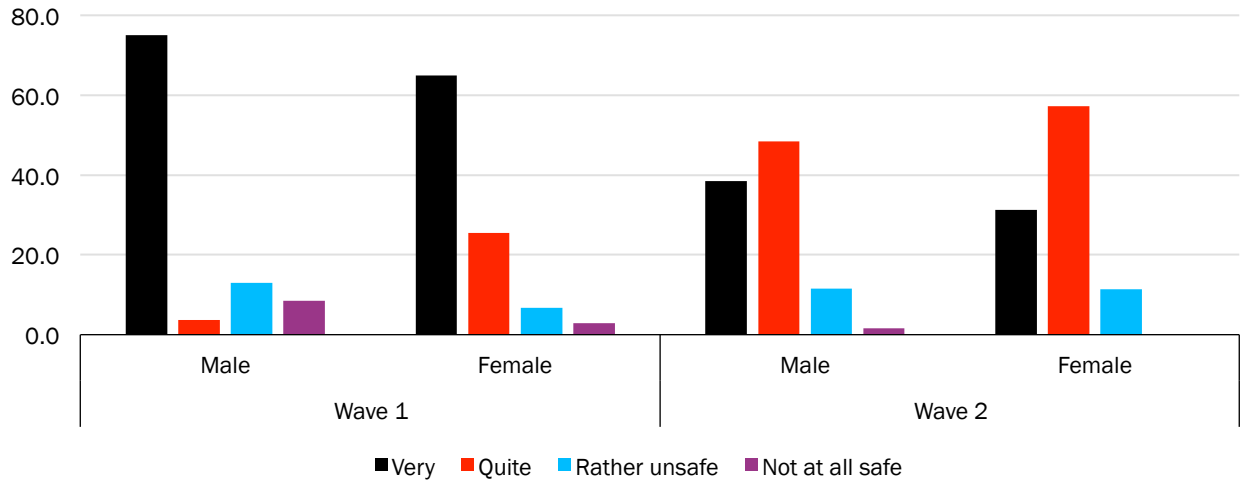


[16] http://www.dawn.com/news/1205832

[17] 34% of the respondents were female in both waves

The results for ‘feeling safe while moving outside of village’ (Figure 3) again show significant differences in the perceptions of male and female respondents. In this case, female respondents were less likely than men to feel ‘very’ safe outside the village and their perceptions also became more negative over time.

Figure 3: Perceptions of safety outside the village, by sex of respondent.



5 Changing livelihoods and wellbeing

This section presents the main findings for changes (between the two waves of data collection, 2012 and 2015) in the status of livelihoods and wellbeing for our sampled households. As discussed in section 2.3, we used different indicators to understand these changes: the Morris Score Index (MSI) for household wealth and the Coping Strategies Index (CS) and Food Consumption Score (FCS) for food insecurity, as well as information on livelihood activities, the role of migration and access to credit.

5.1 Livelihood activities

We define livelihood activities as the activities/strategies adopted by household members that contribute towards family income (cash and/or subsistence). Figure 4 shows that income from 'overseas labour' was the main source of household income for 26% and 22% of sampled households in Wave 1 and Wave 2, respectively. This change may be due to an increase in income opportunities in Wave 2 with the restoration of peace (see also Suleri et al., 2016). 'Farming on own land/livestock'[18] was the main income source for 14.4% of the sampled households in Wave 1, but only 10% of households in Wave 2. However, more households receive their main income from their 'own business' in Wave 2 (13%) than in Wave 1 (10%). Similarly, non-agricultural casual labour was the main income source for 13% of the households in Wave 1, but dropped to 9% in Wave 2. On the other hand, the number of households whose main income was from agricultural labour[19] increased slightly from 8% to 10%. About 8% of the sampled households in Wave 1 had no single main income source (i.e. they had more than one source of equal importance) but in Wave 2 this increased to 13%.

[18] 'Farming on own land' indicates that the landowner is cultivating the land himself.

[19] 'Agricultural labour' refers to people engaged as labourers on farms owned by someone else (landowner).

Figure 4: Main livelihood activities (in terms of contribution to income) in each wave

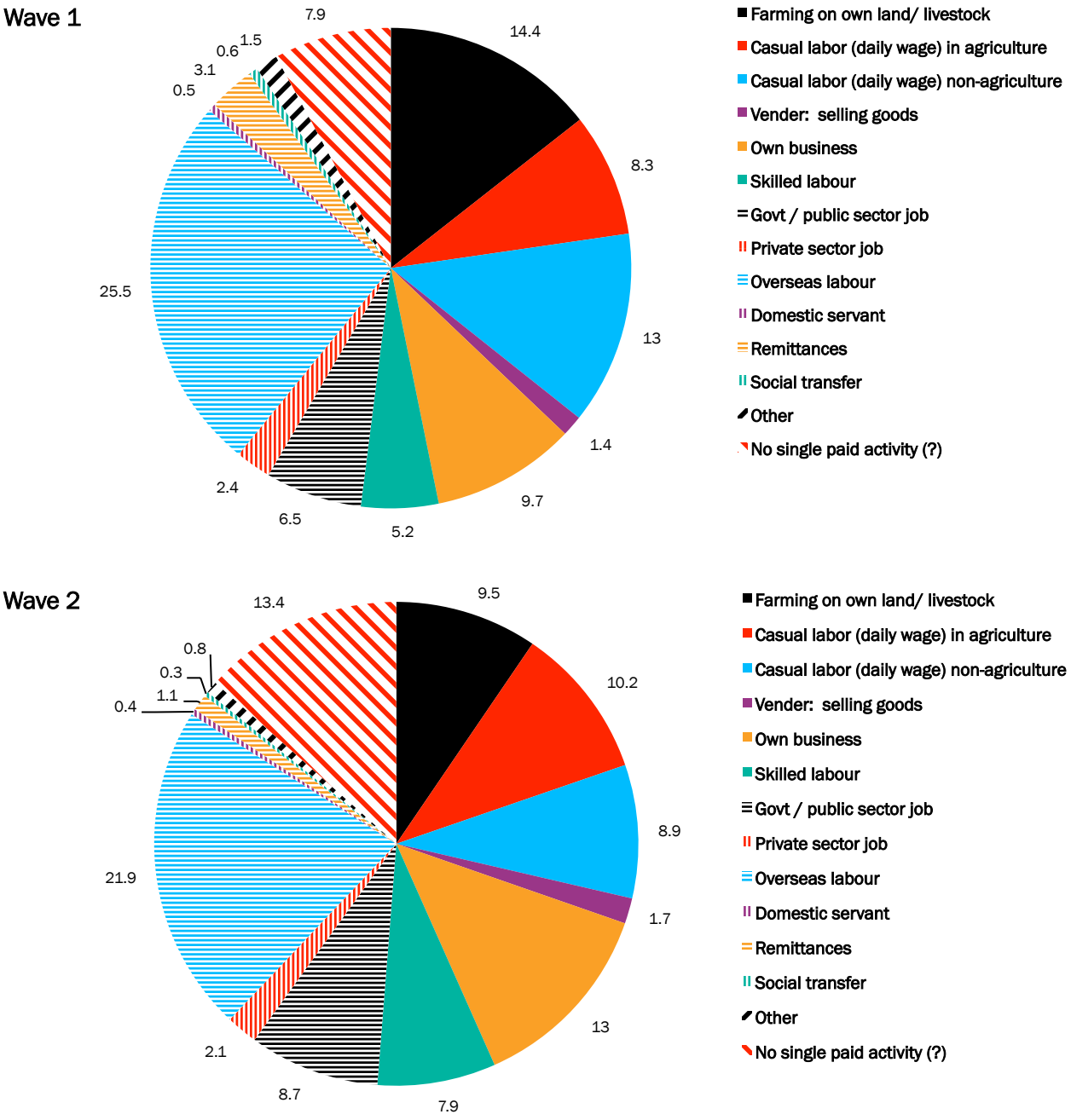


Table 19 shows the percentage of households that received 'any' income from different sources (as opposed to the 'main' source of income in Figure 4). If we compare Table 19 and Figure 4, it is interesting to note that comparatively fewer households reported 'farming on own land' and 'overseas labour' as their main livelihood activity. We can also see that the percentage of households engaged in farming their own land decreased from 47.2% to 45.8%, while the proportion of households earning income from agriculture based causal labour increased from 14.7% to 23.6%. Non-farm based labour decreased from 23.3% to 15%. The share of households receiving income from overseas labour went up slightly. The table also indicates that comparatively more households were earning income form skilled labour and government jobs, and there was an overall increase in non-farm based livelihoods in Wave 2.

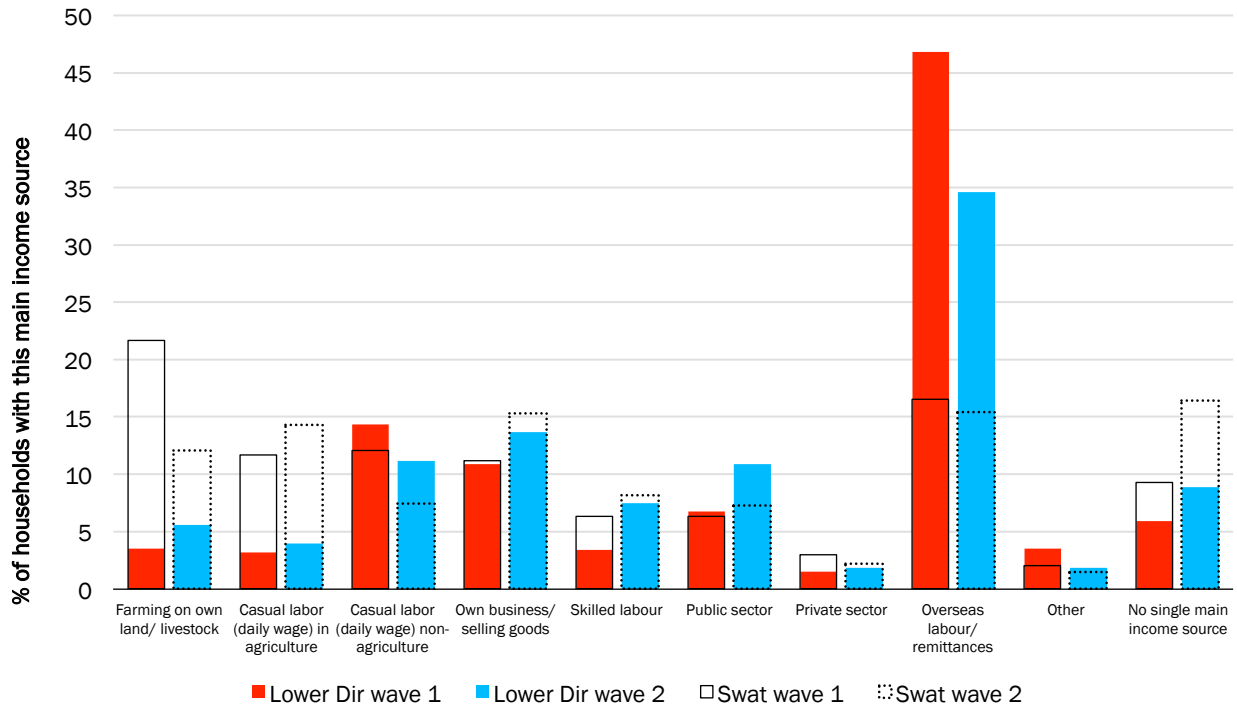
Table 19: Share of households receiving income from different sources

Household received any income from this source	Wave 1	Wave 1 %	Wave 2	Wave 2 %
Farming on own land / livestock	997	47.2	967	45.8
Casual labour (daily wage) in agriculture / farming / fruits picking & packing/forestry	311	14.7	500	23.6
Casual labour (daily wage) non-agriculture including construction, transport	492	23.3	318	15.1
Vender: selling goods	47	2.2	88	4.2
Own business / transport /shop/food outlet	394	18.6	484	22.9
Skilled labour	205	9.7	309	14.6
Government / public sector job	235	11.1	341	16.1
Private sector job (non-agriculture)	127	6.0	103	4.9
Overseas labour	690	32.6	708	33.5
Domestic servant (work in somebody else's house as paid servant, in cash or kind)	21	1.0	23	1.1
Remittances	116	5.5	94	4.4
Social protection transfer	433	20.5	116	5.5

Note: The difference between waves is statistically significant at 1% for all income sources.

A comparison of the sampled households in both districts (Swat and Lower Dir), shown in Figure 5, reveals that significantly more sampled households were dependent on overseas labour (foreign remittances) as the largest income source in Lower Dir (39% in Wave 1 and 32.5% in Wave 2) than in Swat (16% and 15%, respectively). Dependence on farming as the main source of income was comparatively high in Swat but reduced substantially in Wave 2. Similarly, dependence on casual labour (agriculture) in Swat is higher than in Lower Dir; it remained almost the same in both waves for Lower Dir but increased slightly in Swat. This reflects the greater opportunity for commercial agricultural activities in Swat than in Lower Dir. However, the percentage of sample households depending on non-agricultural causal labour decreased in both Lower Dir (from 14.3% to 11.2%) and Swat (from 12% to 7.5%). The trend indicates a decreasing reliance on non-farm based labour (similar to Figure 4). Dependence on 'own business' increased in both districts.

Figure 5: District-level livelihood activities (main source of household income)



Remittances from migration continued to be the main source of household income in both waves – more than one third of the sampled households received remittances (Table 20), though there was a slight reduction from 36% in Wave 1 to 35% in Wave 2.

Remittances have traditionally been a major contributor to the Khyber Pakhtunkhwa (KP) economy and more than a quarter (26%) of total Pakistani overseas migrants are from KP (Amjad and Arif, 2014). The main destinations for the majority of overseas migrants from KP are the Gulf States and the Middle East, where they work mainly in unskilled labour.[20] A report by the International Growth Centre and Planning and Development Department of KP revealed that Swat and Lower Dir districts have some of the country's highest levels of emigration – Lower Dir has the highest share of emigrants (as a proportion of the district population) and Swat is ranked the third highest (Government of KP, 2015).

Table 20: Households that received remittances in last 3 years

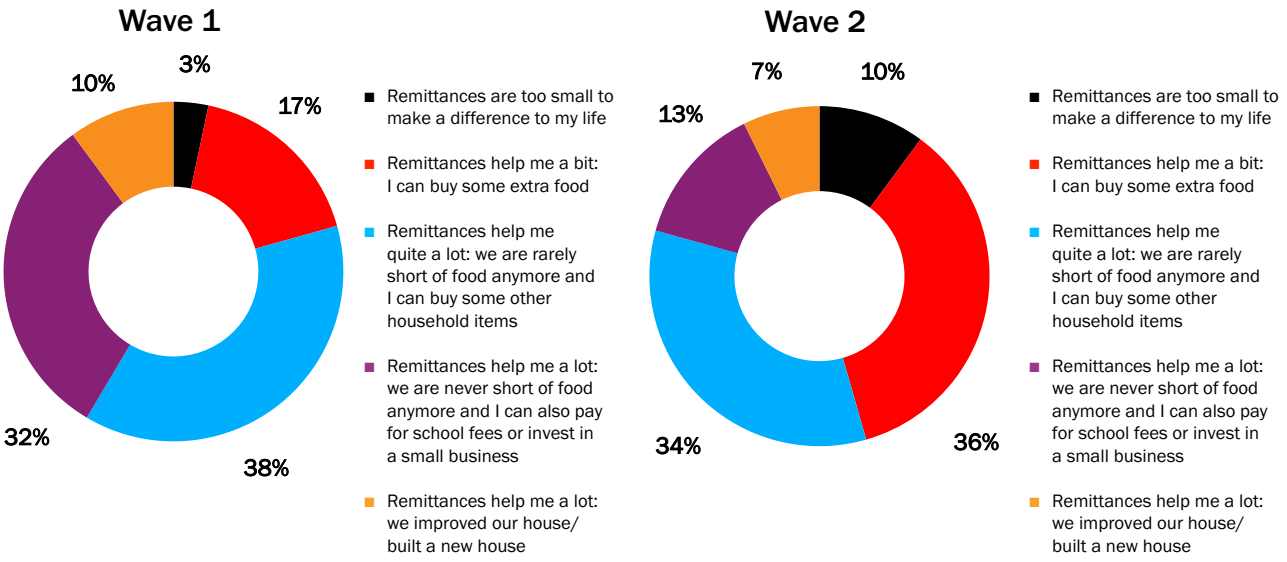
	Wave 1		Wave 2	
	Freq	%	Freq	%
No	1131	64.0	1379	65.4
Yes	635	36.0	728	34.6
Total	1766	100	2107	100

There is a growing recognition of the role of remittances in sustaining livelihoods in conflict and disaster affected areas. Amjad and Arif (2014) in their review paper, argued that foreign remittances have played a crucial role in helping households to cope in conflict situations by ensuring a regular supply of income and then in rebuilding assets destroyed during the war. Likewise, the Government of KP (2015) also recognises the importance of remittances in conflict-affected areas in ensuring food and income security for recipient households, and for rebuilding houses that were destroyed the war. Awan et al. (2013) evaluated the use of remittances by households in Peshawar district in KP through a survey of 400 households with an overseas worker. Their results show that migrant households are most likely to use remittances on food, followed by health, education and transport. They also studied the impact of remittances on different indicators of wellbeing such as productive investments, income, education of children, improvement in housing, sanitation and child nutrition. They found positive impacts on the wellbeing of recipient households in their sample.

To understand the changing role of remittances in our study area, recipient households were asked to describe how helpful remittances were for different aspects of household wellbeing. Figure 6 shows a reduction in the 'helpfulness' of remittances as far as livelihoods and wellbeing are concerned.

[20] http://khyberpakhtunkhwa.gov.pk/khyberpk/admin421/upload/downloads/Reclaming%20Prosperity%20in%20KP-EGS.pdf

Figure 6: Changes in the usefulness of remittances for household wellbeing



In Wave 1, 32% of remittance recipients reported that '*remittances helped me quite a lot in terms of food, school fees and small business*' but this decreased substantially to 13% in Wave 2. Simultaneously, the percentage of households reporting that '*remittances are too small to make a difference*' rose from 3% to 10%. These results clearly indicate a reduction in the helpfulness of remittances between Wave 1 and Wave 2.

It seems likely that during the early phase of post-conflict rehabilitation remittances contributed substantially to ensuring food security and paying household, education and health related expenses. However, as the situation began to normalise, we can clearly see the decreasing role of remittances, possibly as a result of increases in other sources of income. Our results are in line with those of Gioli et al. (2013), who conducted a qualitative and quantitative study of households with migrant members in conflict-affected areas of Dir and Swat in October 2012. They found that remittances played a key role in ensuring the survival of affected households during the conflict and that more than 70% of households (from a sample of 600) reported having avoided starvation due to remittances. In other words, remittances acted as safety net while almost all routine economic activity ceased during war between the Taliban and the Pakistani army. Evidence from other conflict-affected regions of Pakistan also shows that remittances foster post-conflict recovery and rehabilitation efforts (ibid.)

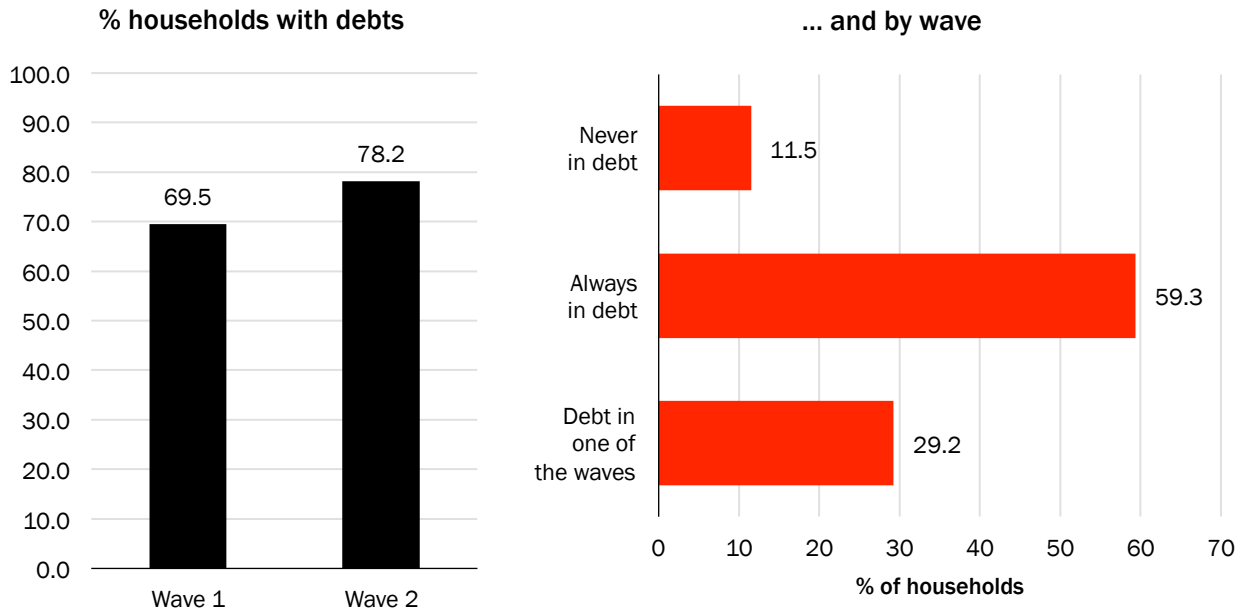
5.2 Access to credit

There is evidence to suggest that micro-credit loans play a crucial role in post-conflict recovery. For instance, Marino (2005)[21] reviewed the literature and synthesised lessons from nine conflict-affected countries in Asia and the Pacific, with an emphasis on microfinance experiments. His paper reveals that microfinance contributes substantially to conflict resolution, for example, by empowering members to establish their own (microfinance) organisation. It also brings people together, focusing on cooperation rather than differences. Informal credit (from relatives, friends, shopkeepers, etc.) is particularly important in Pakistan's rural livelihood system (Irfan et al., 1999; Wahid and Rehman, 2014). Our survey revealed that the proportion of households that owe money increased from 70% in Wave 1 to 78% in Wave 2 (Figure 7). It shows that the overwhelming majority of respondents' households have

[21] http://www.gdrc.org/icm/country/fdc-afgan.pdf

taken a loan at some point (mostly in the form of a cash loan or household items bought from shopkeepers on credit). Figure 7 also indicates that the majority of households were continuously in debt (in both waves of the survey).

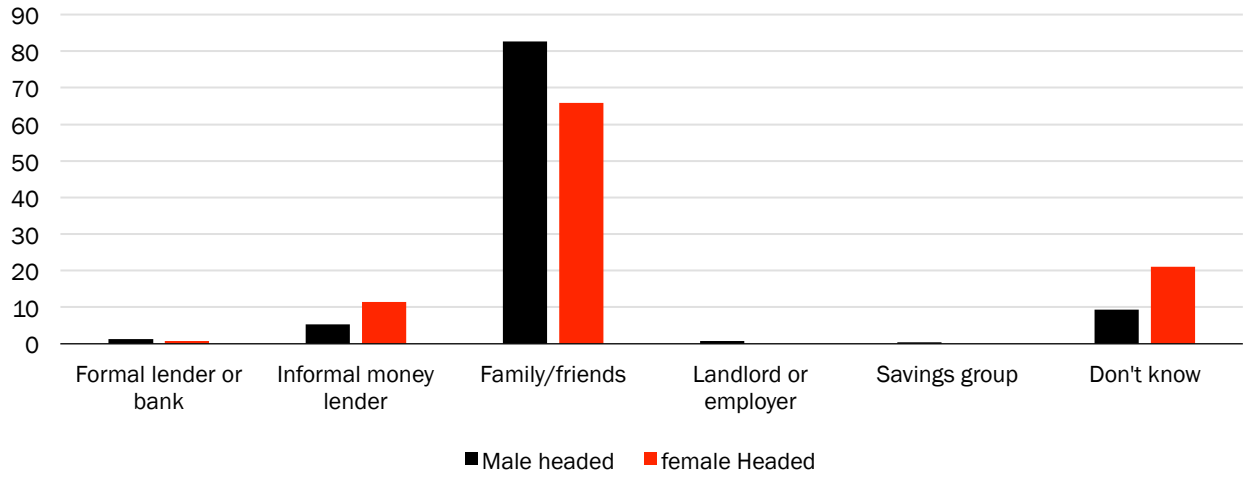
Figure 7: Changes in the percentage of households with debts



Our data show that the majority of indebted households have taken loans from family/friends (77% in Wave 1 and 75% in Wave 2) and informal lenders (23% in Wave 1 and 27% in Wave 2); the percentage of households who took loans from formal sources of credit was negligible.

The respondents were asked if they would be able to borrow money if they suddenly needed to pay PKR 10,000 for health treatment. Gender disaggregated data (from female and male headed households[22]) on access to emergency credit is presented in Figure 8, below.

Figure 8: Source of loans for emergency health related needs, by sex of household head



[22] 6% of the total households in wave 2 were headed by women

The results show significant differences in the response of male and female headed households. Comparatively more respondents from female headed households (11.5%) would get a loan from informal money lenders. Worryingly, 21% of female headed households did not know where to get a loan in case of a medical emergency.

We also analysed the changes in male and female responses[23] across the two waves. Table 21 shows that family/friends were the main source of loans; however, the share of female respondents giving this response is lower than for males and declined over time. When the war between the militants and the army started in Swat, most of the residents were internally displaced and the majority of them stayed with relatives in safer areas (Khan, 2009).[24] Hospitality towards relatives and friends is deeply rooted in Pashtun culture[25] and there is strong pride in helping friends in need (Shams-ur-Rehman, 2015). However, it is interesting to note that in Wave 2 significantly fewer respondents reported that they would borrow money from their friends/family in case of emergency. Perhaps immediately after the conflict (Wave 1) the expectations on family/friends were higher. It is also interesting to note that a significant percentage of female respondents were not sure where they would borrow money from. This might be due to male dominance in household decision-making in Pakistan and among Pashtun families in particular (Alam, 2012)

Table 21: Sources of loans in case of medical treatment, by sex of respondents

	Wave 1		Wave 2	
If you suddenly needed to pay Rs. 10,000/for a health treatment, would you be able to borrow this money from anyone?	**Male**	**Female**	**Male**	**Female**
Formal lender or bank	0.4	1.4	1.1	1.7
Informal money lender	0.7	4.1	3.4	9.7
Family/friends	93.7	91.1	88.2	69.5
Landlord or employer	1.5	1.3	0.9	0.6
Savings group	0.0	0.1	0.6	0.0
Don't know/ No	3.8	1.9	5.8	18.5
Total	100	100	100	100

Note: The difference between male and female respondents' answers is statistically significant at 1% in both waves.

5.3 Food insecurity/Coping Strategy Index

The CSI gives an indirect estimate of food insecurity by estimating the severity of different coping strategies employed by a household when they don't have enough food.

The data on CSI in Table 22 indicate an overall increase in food insecurity in Wave 2 with mean values of 4.4 (as compared to 2.5 in Wave 1). A UC-level comparison indicates that food insecurity increased in all UCs; however, the increase was most pronounced in Lower Dir. There is little increase in CSI in the UCs in Swat, except in Bar Abakhel, where it increased considerably from 2.3 to 4.3. The results for Wave 2 seem to be in line with previous reports on food security (Suleri and Haq, 2009) which describe Swat as a less food insecure district than Lower Dir (which is classified as extremely food insecure). This might be explained by the larger supply of aid (in the form of food and cash) to Swat, compared to Lower Dir, after the conflict (see Shah and Shahbaz, 2015).

[23] 34% of the respondents were female in both waves

[24] Khan (2009). IDPs prefer to stay with relatives. Dawn, May 30 2009. http://www.dawn.com/news/467927/idps-prefer-to-stay-with-relatives

[25] The largest ethnic group in KP

Table 22: CSI (measuring food insecurity), by wave and UC[26]

Districts	Union Councils	Mean wave 1	Mean wave 2
Lower Dir	Haya Serai	1.9	4.3
	Lal Qila	1.2	5.5
	Mean	1.55	4.9
Swat	Charbagh	3.8	3.9
	Baidara	3.3	3.9
	Bar Abakhel	2.3	4.3
	Mean	3.13	4.03
	Overall mean	2.5	4.37

We also calculated the comparative status of food insecurity in both waves. The results for switchers and stayers in Wave 2 indicate that the CSI of 44% of sampled households deteriorated, that there was no change for 35%, and only 21% of households improved. District-level data shown in Table 23 shows that food insecurity got worse for about 49% and 42% of sampled households in Lower Dir and Swat, respectively. These results clearly indicate food insecurity has increased for most households within the three-year period (2012 to 2015).

Table 23: Changes in CSI between waves, by UC.

Districts	Union Councils	No change	Lower	Higher
Lower Dir	Haya Serai	40.0	14.3	45.6
	Lal Qila	42.2	6.8	51
Swat	Charbagh	30.3	30.0	39.6
	Baidara	29.1	31.8	39.0
	Bar Abakhel	31.5	22.4	46.1
	Total	34.6	21.1	44.3

5.3.1 Regression analysis

Changes in the level of food insecurity of sampled households between waves due to household variables determined by the CSI, were estimated through an econometric analysis, using a Fixed Effect Regression model (see Table 2, in Annex). The following inferences are drawn from the regression.

Households which did not owe money during the first round of surveys in 2012 but owed money during the second survey in 2015 have comparatively higher CSI scores (i.e. higher food insecurity). As discussed earlier, loans are either in the form of cash or in the form of household items. Wahid and Rehman (2014) analysed the share of informal loans in total borrowing by collecting data from 200 households from Peshawar in KP, and observed that 83% used informal lenders and only 17% used formal lenders.

The data on access to credit (Figure 7) indicate a considerable increase in the percentage of households who borrowed money (70% in Wave 1 and 78% in Wave 2). Nevertheless, we cannot determine from the regression whether food insecurity compels households to borrow money or being in debt leads to food insecurity. WFP (2010) reported that most of the conflict-affected households in KP were compelled to borrow money to manage food and cash shortages. The main reason for borrowing money was a shortage of food (ibid). Though an updated version of the food security status for KP is not available, WFP (2015) conducted an Integrated Food Security Phase Classification, which indicates that Swat and Lower Dir districts are moderately food secure and that their status is likely to improve. Nevertheless, food shortages may not be the only reason for borrowing money. There may be a number of other reasons such as health care, sending family members to other cities or abroad, or to meet educational expenses. More recently, Bhatti (2015) in his doctoral dissertation conducted a study

[26] A higher CSI value indicates higher food insecurity and lower values indicate improved food security

in post-conflict Swat using 275 randomly sampled households from conflict-affected regions in the district. His study revealed that among the sampled households about 75% took on loans in the post-conflict year, mostly from relatives and friends. The majority (53%) took on loans to meet household expenditures (ibid).

Table 24 (below) confirms that the majority of households borrowed money to meet immediate needs (mainly food and clothing), followed by health (to buy medicine, treatment, etc); fewer households borrowed money for productive uses (setting up a business, buying fertiliser, facilitating migration). There was a considerable increase in the proportion of households borrowing money to meet health-related expenses.

Table 24: Reasons for borrowing money

Household borrowed money for	Wave 1		Wave 2	
	Freq	%	Freq	%
Productive use	269	18.3	255	15.5
Immediate basic needs (food, cloth)	801	54.6	851	51.5
Health	264	18	548	33.2
Education	38	2.6	91	5.5
Construction	155	10.6	0	0

There seems to be negative relationship between perceptions of safety within neighbourhoods and outside the village, and CSI scores. The regressions used the percentage of respondents in each UC who reported that it was 'safe' or 'very safe' to go outside their village as a variable to capture this relationship[27]. The result implies that when safety levels (meaning the percentage reporting it to be safe) in UC increase by 10%, CSI scores are expected to drop by -0.57 points. Similarly, when safety levels at the UC level decrease by 10%, there is expected to be a 0.63 point increase in CSI scores. A decrease in CSI means that they become more food secure. The perception of safety within neighbourhoods is also negatively correlated but is statistically non-significant. Though there is evidence available on the linkage between conflict and food insecurity (for example Messer and Cohen, 2006; Rice, 2007), limited studies are found on the circular link. Hendrix and Brinkman (2013) in his review paper, tried to establish a circular link between food insecurity and conflict. He argued that food insecurity can be a source of grievance and may consequently lead to conflict; and that conflict is a significant source of food insecurity, as it disrupts production and distribution networks – in fact, the strategic withholding of food is often a tool used in counter insurgency. He concludes that there is an important role for the donor community to play in enhancing peacebuilding and the resolution of prolonged crises. A recent FAO report (2016) acknowledged that while violent conflict has substantial and unambiguous adverse effects on food security, little is known about how, and to what extent, better food security could avert conflict, and build and sustain peace.

That said, data on perceptions of safety (Table 14 and Table 16 in Section 4) indicate that more sampled households considered themselves less safe (within and outside villages) in Wave 2 than in Wave 1. See section 4.4 (Perceptions of safety) for a more in depth discussion of the relationship between safety and conflict.

Our results also show that changes in livelihood assistance is significantly ($p<0.05$) related to CSI scores. A negative coefficient sign indicates that those households which did not receive livelihood assistance in 2012 but received livelihood assistance afterwards (between 2012 and 2015) were less food insecure (they had a lower CSI score).[28] It may also indicate that food secure households received livelihood assistance in Wave 2 or the other way round i.e. those who received livelihood assistance

[27] Sensitivity analysis found that the significance level of this coefficient is sensitive to model specification.

[28] Sensitivity analysis found that the significance level of this coefficient is sensitive to model specification.

tend to be food secure. In our study areas, livelihood assistance was in the form of seeds, fertilisers and farming implements and appears to have had a positive impact on household food security. An SLRC paper on the revival of food and vegetable markets in post-conflict Swat argued that livelihood assistance from donor agencies has had a positive impact on the livelihood strategies of farmers (Suleri et al., 2016).

Many of the explanatory variables have a statistically non-significant relationship with the CSI which indicates that, within our sample, the CSI is not dependent on most of the household variables. These include changes in household size and dependency ratio, the gender of the household head, and changes in livelihood activities.

Average education levels within the household seem to have a significant effect on household food security (CSI).[29] The Random Effects model indicates that the higher the average educational level of the household, the higher the household CSI score (i.e. improved food security). However primary or madrassa education does not have a significant impact on CSI, relative to 'no education', the base category. This suggests that there is no benefit in terms of improved food security to having more household members educated to a primary level or in madrassa. The benefits become apparent when the majority of adult household members have a secondary education or above. Education is probably linked to wealth and access to patronage networks. However, the causal relationship could also go the other way – in other words, improved food security in the past means fewer children had to drop out of school early, leading to more highly educated adults.

5.4 Food consumption

Food consumption, a measure of dietary quality and diversity, is an important indicator of food security. Our survey asked the respondents about different types of food consumed by their families during the past 30 days, to construct a Food Consumption Score (FCS). Table 25 indicates that more than half of households (52% of the total sample) switched to better food consumption patterns (a higher FCS). However, 41% of households have also switched to a lower level of food consumption and only 7% of households have not changed their food consumption pattern between the two waves of surveys.

An analysis of 'switchers and stayers' indicates that FCS decreased for more food insecure households and increased for the most food secure households.

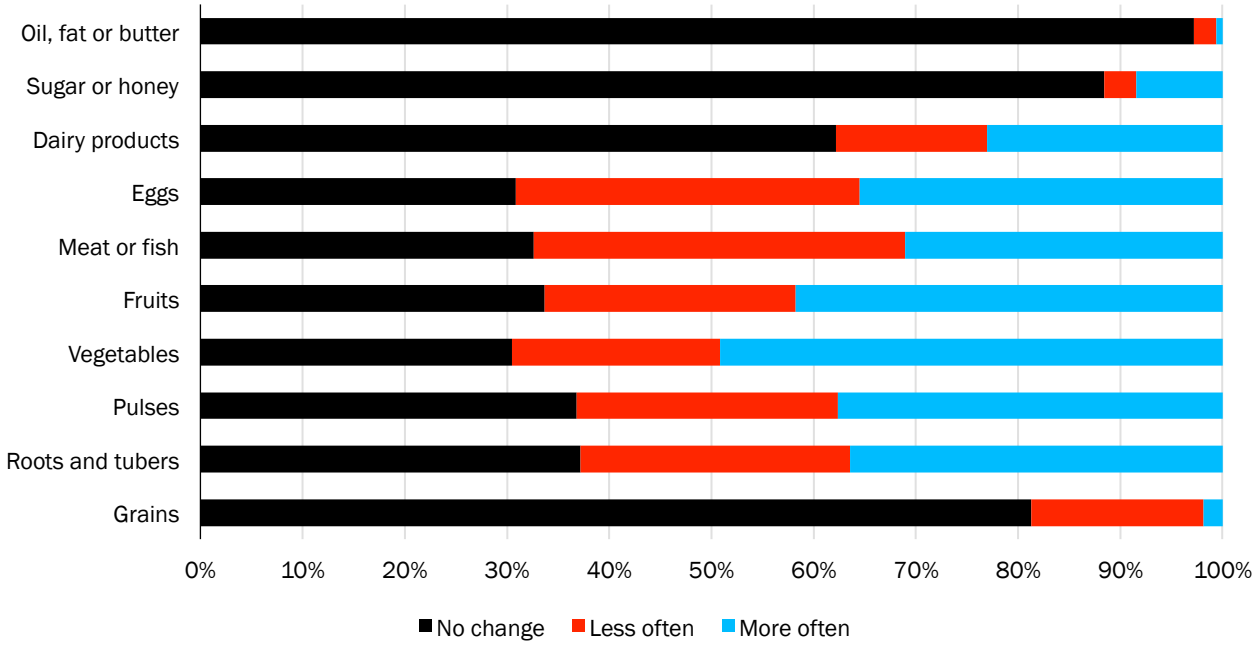
Table 25: Change in Food Consumption Score (FCS) over time

	Frequency	Percent
No change	115	7
Got lower	728	41
Got higher	913	52
Total	1756	100

The results for changes in consumption of individual food groups are given in the following graph (Figure 9).

[29] Sensitivity analysis found that the significance level of these coefficients are sensitive to model specification.

Figure 9: Changes in consumption of specific foods between waves



Changes in food consumption patterns reveal that while consumption of grains, sugar, oil and dairy product remained roughly the same, there was a marked increase in the consumption of vegetables, fruit, pulses and root/tubers. Increases in the consumption of vegetables and fruit might be due to the revival of local markets after the conflict (see also Suleri et al., 2016).

5.4.1 Regression Analysis

The Fixed Effects regression (Table 3 in Annex) examines the relationship between changes in FCS and different household variables. It shows that households which did not owe money in Wave 1 but owed money in Wave 2 tend to have a lower FCS and that they rely on less diverse foods (most probably cheaper ones).[30] The households that started to receive income from selling goods in Wave 2 tend to have a better FCS. Similarly, crime rate at the UC level is significantly but negatively associated with FCS –in other words, households in UCs where the crime rate rose between Waves 1 and 2 tend to have a lower FCS. It may be argued that a higher crime rate might lead to a restricted economy and, consequently, households consume a less diverse range of foods. A stable environment, on the other hand, is conducive to economic activity. As our paper on markets (Suleri et al., 2016) indicates, there was a considerable boom in economic activities after the restoration of peace following army operations in Swat.

Another interesting result is for 'Received livelihood assistance in past three years', which is significantly associated with FCS. It implies that the households which did not receive livelihood assistance in Wave 1, but received livelihood assistance in Wave 2, tend to have a comparatively higher FCS. Livelihood assistance was in the form of seeds, tools and other agricultural inputs. As a result of this assistance households were likely to have higher levels of agricultural productivity and eat more diverse food. However, it could also be argued that better-off households might have received livelihood assistance in Wave 2.

Access to the health centre is also significantly associated with FCS and indicates that the households which increased their journey time to the health centre consume more diverse food in Wave 2.

[30] The sensitivity analysis found that the significance level of the coefficients for owing money, selling goods, livelihood assistance, access to the health centre and gender of household head are sensitive to model specification.

The Random Effects model indicates the significant effect of household average education levels on dietary diversity. Higher average household levels of education have a highly significant positive impact on FCS, compared to those where most household members have no education. Interestingly, when the majority of adult household members were madrassa-educated, FCS is lower than among households whose members are mostly uneducated. It is important to note that primary education appears to have no effect on FCS and that it is not until most members are secondary-educated that there is any difference.

The sampled households in Swat district consume significantly less diverse food than those in Lower Dir.

5.5 Morris Score Index

The Morris Score Index (MSI) is used as a proxy for household assets (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 particular asset. What this essentially means is that households are considered better off when they own assets not owned by most households in the sample.

Table 26: Change in Morris Score Index (MSI) over time, by district

Morris Score Index by District			
Morris Score Index	**Mean wave 1**	**Mean wave 2**	**Percentage point difference**
Lower Dir	28.6	47.2	18.6
Swat	37.5	36.5	-1.0

The data on MSI (Table 26) show that the average Morris Score Index for Swat was higher (37.5) than for Lower Dir (28.6) in Wave 1, but in Wave 2 the opposite was true. This is interesting because Lower Dir households generally became more food insecure than households in Swat. The MSI in Lower Dir increased by 18.6 points but remained roughly the same (decreased by just 1 point) in Swat. About 71% of the sampled households increased their assets; 28.6% of households in Lower Dir and 55% in Swat decreased their assets (Table 27). One of the possible reasons for a higher MSI in Lower Dir is that more households depend on overseas labour as the main source of household income. During the rehabilitation phase (after the conflict during Wave 1) these households used remittances to buy food and pay other household expenditures (see Figure 6) but after the end of the conflict these households used remittances to purchase assets. Gioli et al. (2013) conducted research to study the impact of remittances in the conflict-affected regions in KP and found that money sent back by overseas migrants was key in coping with the aftermath of conflict. Remittances were essential for the survival of households during the war, as well as the recovery of household assets afterwards.

Table 27: Change in MSI between waves, by district

Morris Score Index	**No change**	**Got worse**	**Got better**
Lower Dir	0.1	28.6	21.2
Swat	0	55.1	44.9
Total	0.1	44.6	55.3

The data on the possession of different types of assets reveals that there was an increase in the ownership of washing machines, furniture and refrigerators/freezers (Table 4 in Annex). There was an 18% increase in the possession of furniture and a 9% increase in motorcycle ownership recorded in Wave 2. However, there was a 6% decrease in the ownership of farming tools.

5.5.1 Regression Analysis

The regression (Table 5 in Annex) examines the relationship between the MSI and household variables. Households which did not own cultivable land in Wave 1 but now own land, are likely to have more assets (and higher MSI scores). Our calculations also found that if a household went from no cultivable land in Wave 1 to possessing land in Wave 2 it would be expected to increase its assets by 28.4%. Another significant result is for 'receive livelihood assistance' – in other words, households that did not receive livelihood assistance (seeds and fertilisers) in Wave 1 but received assistance in Wave 2, increased their assets by around 22%.[31]

Generating income from different sources (cultivating own land, causal labour, small businesses, skilled labour, etc.) did not seem to have a significant impact on MSI. Surprisingly, overseas migration did not have any impact on MSI; a non-significant change in MSI is recorded for households who did not have any migrant family members in Wave 1 but had at least one in Wave 2.

The Random Effects model indicates a significant impact for education on MSI. Primary education has no bearing on MSI, which indicates that those households with members who are only primary-educated tend to have fewer assets, relative to those with 'no education'. On the other hand, the households with secondary-educated members are likely to have more assets. A similar trend is observed for higher/vocational education. Our calculations also reveal that those households with mostly secondary-educated members have a 12% higher asset score than those with mostly non-educated members; and the asset scores for higher/tertiary-educated households are 34% higher. The overall trend indicates the positive impact of education on assets.

5.6 Summing up

Overseas migration continued to be the main livelihood activity (income source) in both waves – more than one-third of the sampled households received remittances. However, there was a considerable reduction in the percentage of households whose largest source of income was overseas labour. The share of income from farming has decreased but the share of income from casual labour in agriculture/farming, fruit picking and packing, etc. increased. This demonstrates the revival in agricultural markets (mainly fruit and vegetable markets) after the conflict. The role of remittances in household wellbeing has also changed. Remittances were particularly important during Wave 1 for ensuring food security. Evidence shows that during the conflict, recipient households used remittances mainly for food, but that during the post-conflict phase they also used remittances for other purposes such as re-establishing their businesses or reconstructing houses (Gioli et al., 2013).

There is significant reduction in the households which depend on social transfers. Nevertheless, taking on loans remained an important strategy for most households in both waves and, in fact, significantly more households were in debt in Wave 2.

The CSI scores indicate a substantial increase in food insecurity in Wave 2, most noticeably in Lower Dir. Food security deteriorated for a large share of households (44%). Linking food security with debt, our results indicate that the sampled households which do not owe money during the first round of surveys in 2012 (Wave 1) but owe money during the second survey in 2015 (Wave 2) are likely to have a higher CSI (in other words, higher food insecurity), compared to households which were not in any debt. Safety is significantly associated with food insecurity and households who felt safe outside of their villages tended to be more food secure in Wave 2. Livelihood assistance also had a positive impact on food security. Likewise, education is significantly associated with household food security – the higher the average education level of household members, the better off the household tends to be in terms food security.

[31] The significance level of livelihood assistance, owning land, and having primary education were sensitive to model specification.

The food consumption data indicate that while more than half of households in our sample switched to a more diverse diet, 41% of households switched to a lower level of food diversity. The consumption of vegetables has increased significantly. FCS decreased for more food insecure households and increased for the most food secure households. Being in debt implies that households rely on less diverse food. Higher crime rates are also associated with a lower FCS. Livelihood assistance seems to have had a positive impact on food consumption and households whose debt situation changed from "not being in debt" to "in debt", tended to eat less diverse food. Better education is also likely to lead towards a higher FCS.

The results for the MSI indicate a substantial increase in household assets in Lower Dir district. The households which did not own cultivable land in Wave 1 but now own land, are likely to have more assets. The households with secondary-educated members are also likely to have more assets than those with no education or only a primary education.

Receipt of livelihood assistance (seed, tools, inputs) is significantly associated with food insecurity and those households which did not receive livelihood assistance in 2012 but received it between 2012 and 2015, are likely to be less food insecure (a lower CSI).

6 Changing access to and satisfaction with services

Health, education, drinking water, social protection and livelihood assistance are the five basic services that have been included in our analysis. The data on changes in levels of satisfaction and the problems experienced with these services are discussed in this section.

The war between the army and the Taliban severely damaged education and health infrastructure. After the end of the war, the international donor community and the state carried out intensive rebuilding efforts (Shahbaz et al., 2012). Rehabilitation started immediately after the conflict with support from bilateral/multilateral organisations and state institutions. The Pakistani army remained one of the major institutions for security and development in the region (Tanoli, 2013).[32] The Khyber Pakhtunkhwa Reconstruction Programme (KPRP) was established in 2010 with USAID funding; the Provincial Reconstruction, Rehabilitation and Settlement Authority (PaRRSA) and the Government of Khyber Pakhtunkhwa (GOKP) were the implementing partners. The main emphasis was on the reconstruction of damaged schools and health facilities (Husain et al., 2014). Similarly, the German aid agency, BMZ,[33] supported the refurbishment of the water supply system and irrigation channels, and contributed to the reconstruction of damaged houses. UNDP initiated a mega project in 2011 to improve water supply and road construction, also through PaRRSA (UNDP, 2016). Likewise, the Asian Development Bank (ADB), EU, DFID and other international agencies supported interventions to rebuild basic infrastructure in the conflict-affected areas. Following the huge influx of aid, we are interested in examining how access to and satisfaction with services have changed over time – from the rehabilitation phase in 2012 to stabilisation in 2015. Access to and experience of basic services, including health, education, water, social protection and livelihoods assistance are all analysed in this section. During the first round of the survey, in 2012, we asked respondents about the status of a range of basic services and their access to and satisfaction with these services. We again asked these questions in the second round in 2015, to identify any changes.

Travel time (in minutes) to the nearest health centre, to primary schools (for both girls and boys) and to sources of drinking water were used as indicators for access to services. For access to social protection and livelihoods assistance, we used households with members in receipt of these benefits (or who had received them at least once) as an indicator. Satisfaction with services was measured by asking respondents to rank their overall level of satisfaction with a service (based on the most recent visit) using a five-point scale (very satisfied to very dissatisfied). For social protection and livelihood assistance, we asked our respondents about the reliability of particular services in terms of timeliness and perceived impact (positive or negative).

6.1 Health

Health is an important contributing factor to human capital. Better health improves the efficiency and productivity of the labour force and indirectly contributes to economic growth and improvements to human welfare. Conversely, poor health reduces the ability to work and undermines human capital, and can even lead to poverty. The health status of a region may be evaluated in terms of either input indicators such as doctors, institutions and health services or output indicators such as infant mortality, maternal mortality and life expectancy (Government of KP, 2014).

[32] http://www.criterion-quarterly.com/malakand-division-conflict-floods-and-response/ (accessed August 2016)

[33] https://www.giz.de/en/worldwide/17998.html (Accessed August 2016)

It is often argued that equitable and effective health services may be a key contributor to state legitimacy (Haar and Rubenstein, 2012). Nevertheless, the role of service delivery in conflict-affected situations has not been thoroughly analysed and little empirical evidence is available on the impact of service delivery on state legitimacy (Wild et al., 2013). More recently, Godamunne (2015) conducted a qualitative study in conflict-affected areas in Sri Lanka and argued that, 'state officials play an important role in building state–society relations. In this sense, it is not so much what the state delivers but how it delivers programmes and services that is important when using the concept of performance legitimacy as an indicator of state legitimacy' (Godamunne, 2015: 28). In KP, health indicators are poor compared to national statistics, and in conflict-affected areas are below the provincial average (PCNA, 2010).

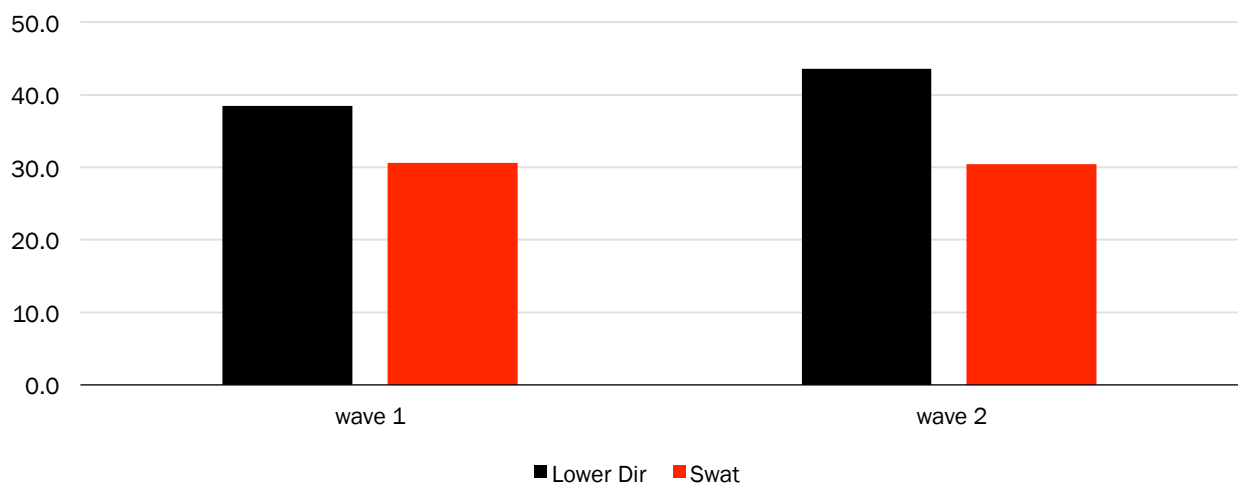
In this panel survey we focus on input indicators. We look specifically at respondents' experiences of health-related services and any changes between the two waves of survey.

6.1.1 Access to health service (travel time)

Our panel data indicate that the average travel time to the nearest health centre/clinic used by the sampled households in Wave 1 was 33.7 minutes, increasing to 35.6 minute in Wave 2. Journey times differ between districts (Figure 10). The data show that, on average, travel times to health centres in Lower Dir were longer than in Swat. On average, journeys in Lower Dir took 38.5 minutes in Wave 1 and 43.6 minutes in Wave 2, but in Swat took almost the same time – 30.6 minutes in Wave 1 and 30.4 minutes in Wave 2. At the UC-level (Table 18 in Annex), we find that sampled households in Haya Sarai (Lower Dir) had to travel 10 more minutes in Wave 2; similarly, travel times for households in Char Bagh (Swat) increased by 6.7 additional minutes between waves. Journeys in Baidara (Swat) were shortened by 6.2 minutes but remained almost the same in Lal Qila and Bar Abakhel. Overall, travel times for sampled households in UCs in Lower Dir increased considerably.

Increases in travel time to health centres, particularly in Lower Dir, may be due to a number of different reasons: for example, households may have switched to a better health centre which is a little further away or perhaps the nearest health facility is no longer operating. However, our data show that only 88 respondents (5%) said they had switched health centre between waves. Some might have switched and not remembered or reported it, but even so, this number seems fairly low and would probably not be enough to account for changes in travel times across the whole sample. According to Government of KP statistics, Lower Dir had three hospitals in 2011 and only two in 2015, compared to Swat which had 8 in 2011 and 10 in 2015 (Government of KP, 2014). These statistics also reveal that the population per hospital bed in Swat was 2451 and in Lower Dir was 3320, while the average for KP was 1581 (ibid).

Figure 10: Length of journey (in minutes) to health centre



This change in access to health centres was not the same for all households. Journey times for some households increased, while for others they went down. For some households there was no change. We can see this in detail in Table 28 (below) which shows that, for 46% and 44% of respondents in Lower Dir and Swat respectively, journey times became longer. Journey times to the nearest health centre for 37.5% (Lower Dir) and 38.1% (Swat) of households were reduced and 16.6% of respondents in Lower Dir and 18% in Swat reported no change between Wave 1 and Wave 2.

Table 28: Change in the length of journey to the health centre between waves, by district

Length of journey to health centre (%)	No change	Shorter	Longer	Total
Lower Dir	16.6	37.5	46.0	100
Swat	18.0	38.1	43.9	100
Total	17.4	37.9	44.7	100

Despite these changes, Table 29 (below) shows that the majority of respondents (95%) used the same health centre in both waves. Changes in travel times might therefore be due to changes in transport or the condition of the road. The 5% of respondents who switched to a different health care centre were asked to identify why and the majority (87%) of them cited better facilities in the new centre. Only 8% of these respondents reported that they switched because the new health centre is nearer to their residence. A small proportion (4%) of households said that they switched because the previous one no longer existed. Only 1% cited cheaper costs as a reason for switching (Table 19 in Annex).

Table 29: Change of health centre

Same health centre as 3 years ago (unweighted)	Freq	%
No	88	5
Yes	1672	95
Total	1760	100

We asked respondents when anyone in their household had last used a health centre – the results are provided in Table 30 (below). The majority of households (57% in Wave 1 and 52% in Wave 2) had used health centre services in the last 7 days; and 36%, in wave 1, and 39%, in wave 2, had used it longer ago than one week but in the last 30 days.

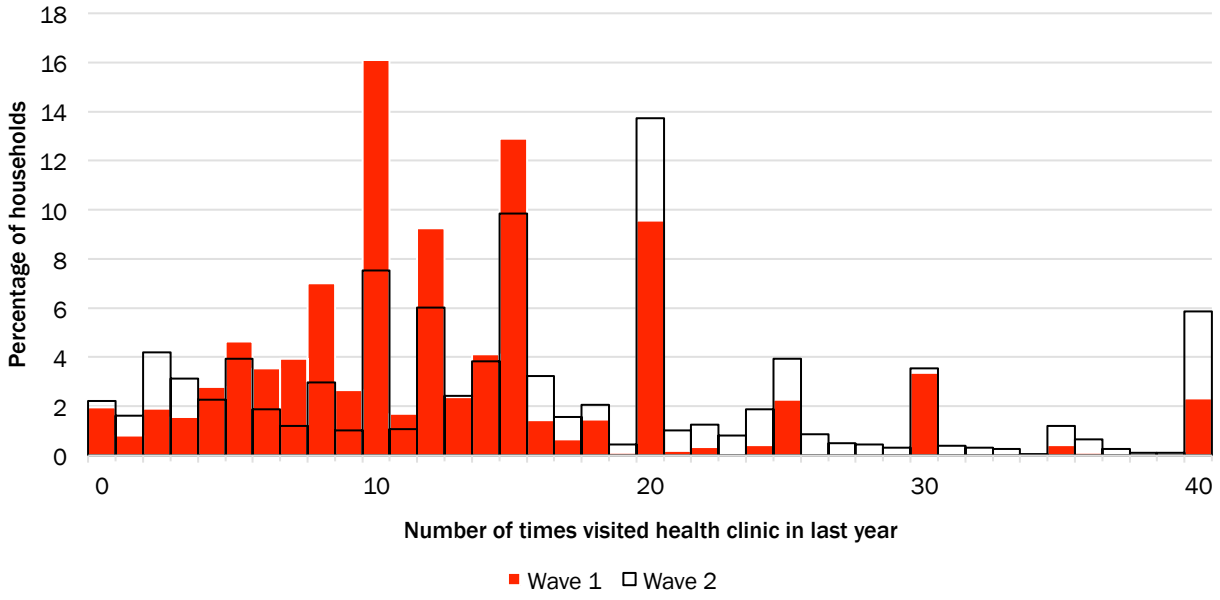
Table 30: When did anyone in household use the health centre?

	Wave 1		Wave 2		
Frequency of use of health centre	Freq	%	Freq	%	Difference
In the last 7 days	1201	56.9	1096	52.0	-4.9
In the last 30 days	756	35.8	818	38.8	3.0
In the last 6 months	133	6.3	155	7.4	1.1
In the last year	13	0.6	24	1.1	0.5
Over a year ago/ Never	8	0.4	15	0.7	0.3
Total	2111	100	2107	100	0.0

Note: the categories are not cumulative, so 'In the last 30 days' means between 8 to 30 days ago. The difference in frequency of use is statistically significant at 1% between waves.

The number of visits to health centre by each household also differs between the two waves (Figure 11). There were on average 13 visits to a health centre per household in Wave 1; this increased to 16 in Wave 2. The increase may be due to the outbreak of dengue fever in Swat during 2013 and 2014. Khan and Khan (2015) reported that the incidence of dengue was highest during August and September, 2015.

Figure 11: Number of times visited health centre in last year



6.1.2 Regression: access to health

A Fixed Effect regression model is applied to examine the relationship between changes in access to health (travel time) and different explanatory variables. The regression (Table 6 in Annex) indicates that the migration of a household member outside the country is significantly associated with travel time to the health centre.[34] It indicates that households with no overseas migrants in Wave 1 but with at least one in Wave 2 tended to travel for longer for medical facilities. However, the remittance variable is non-significant which implies that receiving remittances does not mean that household journey times would increase.

Perceptions of safety are significantly associated with access to health services, with a large coefficient. Neighbourhood safety (within the village) is negatively associated with travel times to the nearest health centre/clinic. When there is a 10% rise in respondents reporting feeling safer in their neighbourhood and outside their village, journey times to health centres tend to decrease by 2.7 and 1.1 minutes respectively. Thus, it can be deduced that by increasing neighbourhood safety, the households in our study area are more likely to visit a closer health centre, or the households in our sample might still use the same clinic, but use a different form of transport or use a more direct route.

Payment of informal fees is also significantly related to access to health clinics: households who reported that they did not pay informal fees in the Wave 1 but paid informal fees in Wave 2 tend to have longer journey times to health clinics. They might have switched to a better health facility or they might use the money they would have used on transport to pay the informal fees, thereby increasing journey times. Similarly, those respondents who reported they were not aware of meetings related to health services in Wave 1 but were aware of these in Wave 2 tend to take longer to reach the health centre they use.

The Fixed Effect model indicates that the sampled households in Swat tend to have shorter journey times than those in Lower Dir.

[34] The significance level of migrant household members, safety levels outside the village, informal fees for the health centre and gender of the household head were sensitive to model specification.

6.1.3 Changes in levels of satisfaction with health centre

The results for levels of satisfaction with health services (Table 31 below) indicate that the majority of respondents (57% in Wave 1 and 59.7% in Wave 2) are satisfied with the quality of health services; the remaining respondents showed varying degrees of satisfaction or dissatisfaction.

Table 31: Satisfaction with health centre in each wave

Satisfaction with hospital	Wave 1 (weighted)	%	Wave 2 (weighted)	%	Change
Very satisfied	272	12.9	240	11.4	-1.5
Satisfied	1203	57	1256	59.7	2.7
Quite satisfied	145	6.9	181	8.6	1.7
Dissatisfied	399	18.9	319	15.2	-3.7
Very dissatisfied	92	4.4	108	5.1	0.8
Total	2111	100	2104	100	

Note: The difference in satisfaction level by wave was statistically significant at 1%.

The results for 'switchers and stayers' show changes in levels of satisfaction (Table 32). The proportion of households varied considerably between categories. More than half of the respondents (51.2%) were 'always satisfied' (in other words, satisfied in both waves) with health services while 10.4% of respondents were 'always dissatisfied'. However, 18.1% of the respondents switched from satisfied to dissatisfied and 20.3% switched from dissatisfied to satisfied.

Table 32: Changes in levels of satisfaction with the health centre

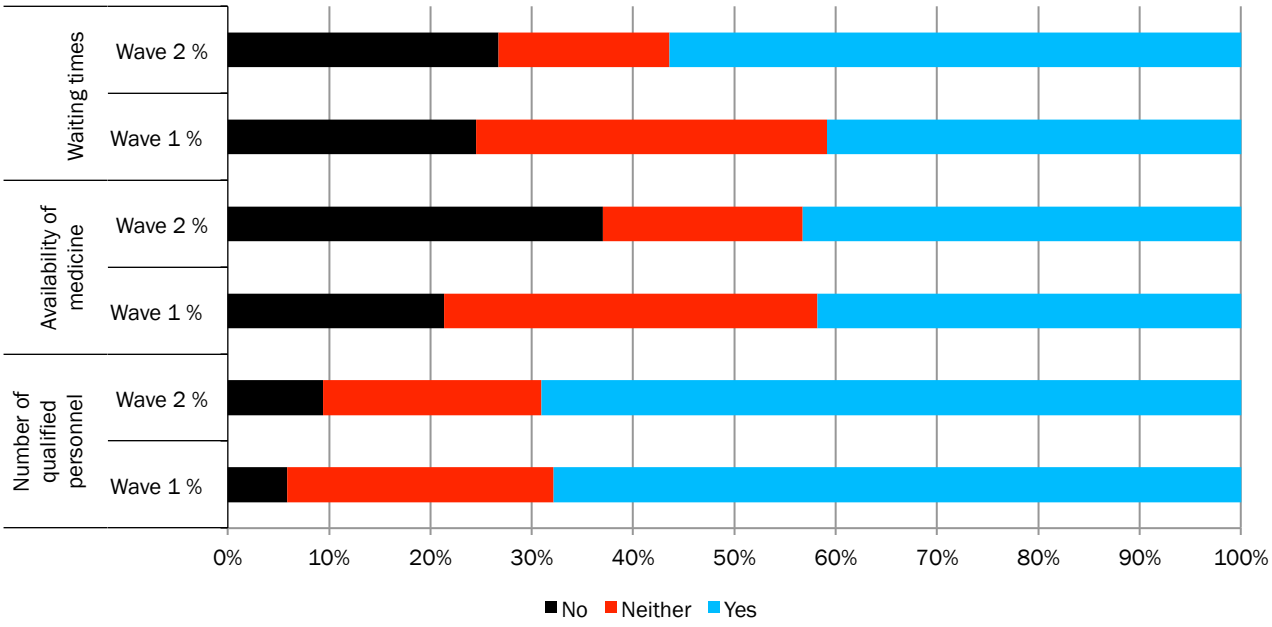
Level of satisfaction	No.	%
Always satisfied	898	51.2
Satisfied to dissatisfied	317	18.1
Dissatisfied to satisfied	357	20.3
Always dissatisfied	183	10.4
Total	1755	100

We also asked respondents about their levels of satisfaction with different aspects of the health centre they use. The graph (Figure 12) shows changes in levels of satisfaction with respect to the number of qualified personnel in health centres for Wave 1 and Wave 2. The majority of respondents (68%) in Wave 1 and 69% in Wave 2 were satisfied with the number of qualified personnel in health centre.

The levels of satisfaction with the availability of medicines also changed. As shown in Figure 12, about 42% of respondents in Wave 1 and 43% in Wave 2 were satisfied with the availability of medicine at their health centre, while 22% of respondents in Wave 1 and 37% in Wave 2 said that they were not satisfied.

The data for waiting times show that about 41% or respondents in Wave 1 and 56% in Wave 2 were satisfied. To sum up, some aspects of health service delivery appear to have improved, according to reported satisfaction levels (waiting times), while others have fared less well (availability of medicine). For the number of qualified personnel, there has been relatively little change.

Figure 12: Satisfaction with different aspects of the health centre



The data also reveal that, in both waves, the majority of health centres are reported to be run by government (78% across both waves), however we see an increase over time in perceived private running of health centres. Looking at the two waves separately, and at the UC level, in Wave 1 there was a big difference with 25% being private in Swat compared to 14% in Lower Dir. By Wave 2 this figure was almost 23% in both districts. This indicates an increase in the use of private clinics by the sampled households in Lower Dir.

The results for the payment of fees show that fewer households (69%) reported paying official fees for health services in Wave 2 than in Wave 1 (83%). In addition, 2% of respondents in Wave 1 and 16% in Wave 2 reported paying informal fees. Thus, while the share of people paying formal fees has fallen, the opposite is true for informal fees.

There was a substantial increase in the percentage of respondents who experienced problems with health services, as shown in Table 33 and Table 34 (below).

Table 33: Relationship between problems experienced and levels of satisfaction (availability of medicine)

	Problem with health service	
Availability of medicine: satisfaction	**Never a problem**	**From no problem to a problem**
Always satisfied	47.1	26.3
Always dissatisfied	7.8	15.3
Satisfied to dissatisfied	34.3	44.7
Dissatisfied to satisfied	10.8	13.7
Total	100	100

Note: The difference between waves is statistically significant at 1%.

According to the Table 33 above, among those respondents who never experienced a problem with health centres, the largest share (47.1%) were 'always satisfied' (i.e. in both waves) with the availability of medicine. Of the respondents who did not experience a problem in Wave 1 but did in Wave 2, 44.7% changed from satisfied to dissatisfied. Interestingly, a relatively large proportion of respondents (34.3%)

who never had a problem were found to have become less satisfied between waves. A similar relationship is recorded in levels of satisfaction with waiting times (Table 34).

Table 34: Relationship between problems experienced and levels of satisfaction (waiting times)

	Problem with health service	
Waiting times: satisfaction	**Never a problem**	**From no problem to a problem**
Always satisfied	56.1	29.7
Always dissatisfied	5.9	10.8
Dissatisfied to satisfied	22.7	17.9
Satisfied to dissatisfied	15.2	41.5
Total	100	100

Overall, it can be inferred that most respondents who experienced no problems are found to be satisfied, unlike respondents who experienced problems in Wave 2. We also tested whether satisfaction with the number of personnel was affected by problems experienced with health services and found that respondents were consistently highly satisfied in this regard.

Table 35 (below) shows the proportion of respondents who reported being consulted on health services. The vast majority (97.5% in Wave 1 and 93.9% in Wave 2) reported that they (or any of their household members) had not been consulted.

Table 35: Consultations on the health service

	Wave 1		Wave 2	
	Freq	**%**	**Freq**	**%**
No	574	97.5	1979	93.9
Yes	15	2.5	128	6.1
Total	589	100.0	2107	100.0

6.1.4 Regression: Satisfaction with health services

The regression analysis for levels of satisfaction with health services (Table 11 in Annex) shows mixed results. Households with more diverse sources of income tend to be positively correlated with satisfaction with health services. For instance, households which started to receive income from farming between waves are more likely to be satisfied with health centres.

Changes in livelihood and well-being indicators were also linked to changes in satisfaction. Households which became more food insecure (in Wave 2) are likely to be less satisfied with health services, compared to those who did not. Households that experienced an increase in their MSI (a measure of asset wealth) in Wave 2 are likely to be more satisfied with the overall quality of health centres, compared to households whose Morris Index decreased. Therefore, respondents from wealthier households (those households whose assets increased in Wave 2) are more likely to be satisfied with the health centre they use.

Perceptions of neighbourhood safety and safety outside the village are inversely associated with satisfaction with health services, and the association is highly significant. In other words, if an area is judged by most respondents to be safer, respondents there are likely to be less satisfied with the quality of health services. This finding could be associated with higher expectations on government services in a post-conflict context. Following peace-building and rehabilitation efforts, affected populations often expect a rapid improvement in services. Some authors have elaborated on this mismatch between expectations and recovery (Call and Cousens, 2008). Shah and Shahbaz (2015) argued that local communities often had ‘unrealistic expectations’ of aid agencies (including government agencies) and when their expectations were not fulfilled, they began to feel that they were not being given enough attention. SDPI conducted a perception survey on reconciliation in six districts in Malakand (including Swat and Lower Dir)

in collaboration with UNDP in 2012. It found that the respondents had a lot of expectations in terms of government compensation for conflict-related losses (UNDP, 2012). Post-conflict rehabilitation efforts may also explain these findings: before 2012, rehabilitation efforts by aid agencies were in full swing (Shahbaz et al. 2012; Shah and Shahbaz, 2015) but in 2015 (when safety had improved) most of the aid agencies had left and the health centres were being managed by local administrators.

Changes in the levels of satisfaction with the number of qualified health personnel, the availability of medicines and waiting times are significantly associated with satisfaction with the overall quality of health centres. Households which were not satisfied with the above-mentioned variables in Wave 1 but were satisfied in Wave 2 are more likely to be satisfied with the overall quality of health centres.

Households who reported longer journey times to the health centre in Wave 2 are less likely to be satisfied with the health centre. Similarly, households who visited health centres more frequently in Wave 2 are likely to be less satisfied with the overall quality of health centres in Wave 2. A range of aid agencies were providing health-related assistance in the early post-conflict phase, so the locals might have had easy access to qualified medical staff. In the later stages, aid organisations pulled out and the locals reverted to government (public) clinics and hospitals. Many switched to private hospitals as they were not satisfied with the government facilities.

Similarly, the payment of official, as well as informal fees, has a negative association with the perception of the overall quality of health centres. Thus, respondents who reported not paying fees in Wave 1 but paying them in Wave 2 are likely to be less satisfied with the overall performance of health centres.

Respondents who had used the health centre less recently in Wave 2 than they had in Wave 1 were less likely to be satisfied with its overall quality. Similarly, respondents who had household members with health-related problems in Wave 2 (but did not report this in Wave 1) are more likely to be dissatisfied with the overall quality of health services. Thus, it can be inferred that more frequent use of health clinics may lead to greater levels of dissatisfaction. This might be because of an increase in expectations once a household visits a health centre more frequently, or it may be because of more serious diseases, for example the outbreak of dengue fever.

Similarly, respondents who were not aware of any health service-related meetings in the past 12 months in Wave 1 but were more aware in Wave 2 are less likely to be satisfied with health centres.

The results also indicate that people in Swat are more likely to be satisfied with health centres than those in Lower Dir. Similarly, female respondents are more positive than male respondents.[35]

6.2 Education

The data on access to schools indicate a slight overall increase in travel time between the two waves. Average travel time to the nearest girls' and boys' schools in Wave 1 was 17.3 and 17.8 minutes respectively, increasing to 18.6 minutes and 19.6 minutes in Wave 2. Of those who experienced a change, 47% and 41% of households had shorter journey times (almost 13 minutes shorter, on average) for boys' and girls' school respectively, while 31% and 36% had longer journey times (by an average of 14.5 minutes).

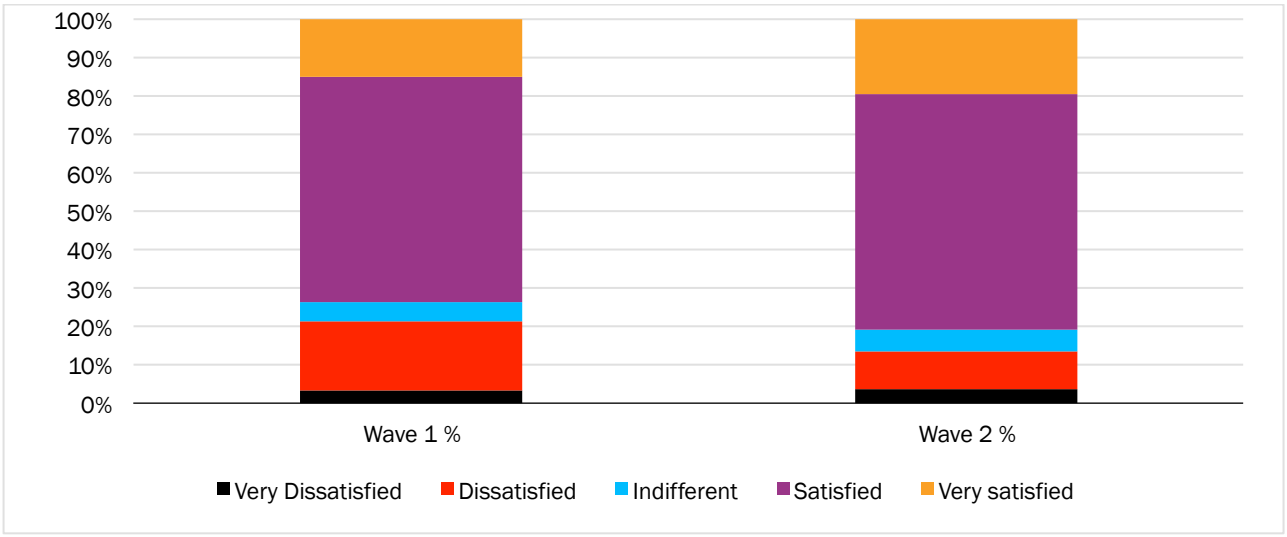
We asked respondents about their reasons for switching schools and 34.8% (girls' schools) and 31.2% (boys' schools) cited proximity of the new school to their residence. In addition, 34.8% and 42.5% switched (girls' and boy's schools respectively) because of better quality services. Only 6.3% and 5.7% switched because the previous school no longer exists.

[35] The significance levels of most of the coefficients in the fixed effects model were sensitive to model specification. The specific variables were: CSI, agricultural shocks, neighbourhood safety level, crime rate, access to the health centres, frequency of health centre use, payment of informal fees for the health centre, satisfaction with the number of qualified personnel, most recent use of the health centre and knowledge of health-related meeting. In the RE model, gender of the respondent was also sensitive to model specification.

The results for primary school attendance show that the overwhelming majority of respondents (95.7% in Wave 1 and 96.7% in Wave 2) reported that girls attend school every day – indicating a slight overall increase in attendance. The figures are similar for boys' schools: 96.9% in Wave 1 and 96.5% in Wave 2. Primary school attendance is high because, in most cases, primary schools are located within the village or in the neighbouring village.

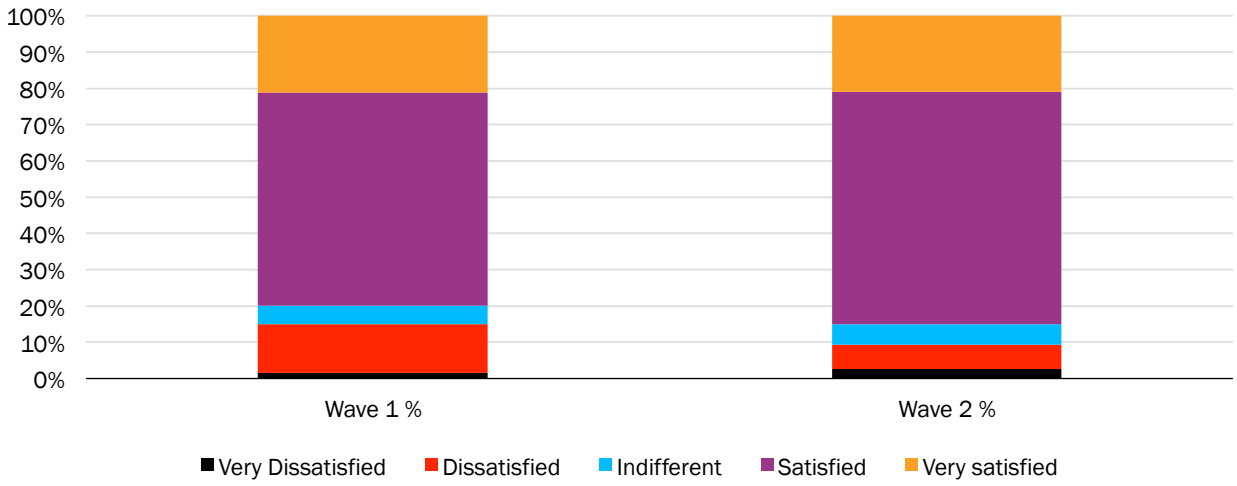
Levels of satisfaction with girls' schools in Wave 1 and Wave 2 are shown in Figure 13 (below). The majority (58.9%) of respondents in Wave 1 and in Wave 2 (61.5%) reported that they were 'satisfied' with girls' schooling. In addition, 14.9% of respondents in Wave 1 and 19.4% in Wave 2 said that they were 'very satisfied'. The proportion of respondents who were 'dissatisfied' also decreased from 18% in Wave 1 to 10% in Wave 2. These improvements in levels of satisfaction are probably due to the reconstruction of schools in the post-conflict phase.

Figure 13: Satisfaction with girls' school



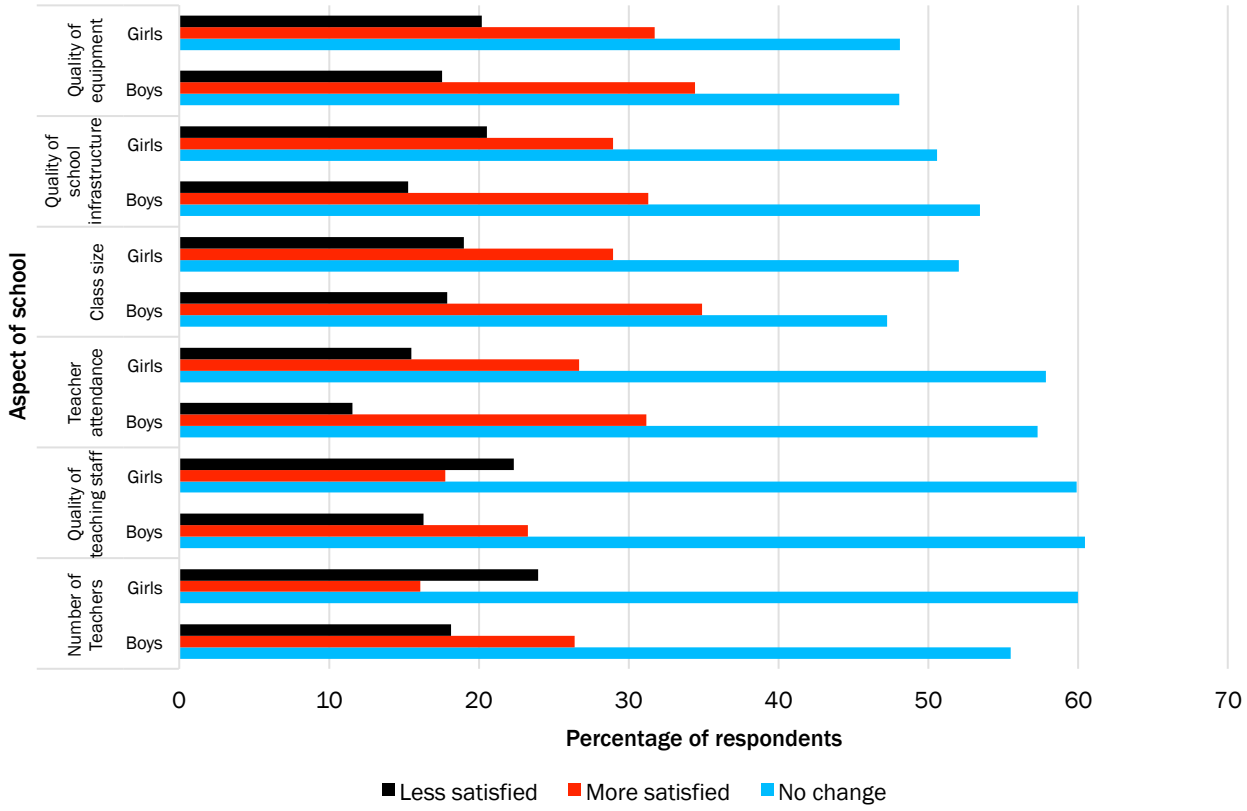
The results for levels of satisfaction with boys' schools show that 21% of respondents in Wave 1 and a similar percentage (20.9%) in Wave 2 were 'very satisfied' (Figure 14); and that the majority (58.9% in Wave 1 and 64.2% in Wave 2) were satisfied. In addition, substantially fewer households were 'dissatisfied' in Wave 2. Once again, these results indicate improved perceptions of primary schools.

Figure 14: Satisfaction with boys' schools



We can also look at how reported levels of satisfaction with specific indicators of school quality has changed over time (Figure 15). For the boys' schools, the biggest perceived improvements were in class size, while for girls' schools it was in the quality of equipment.

Figure 15: Change in satisfaction with different aspects of schools over time, by school type



In our configuration, 'more satisfied' includes movement from 'not satisfied' to 'neutral' and less satisfied includes movement from 'satisfied' to 'neutral'. So strictly speaking, movement from one category to another does not always reflect a positive or negative change in the perception of the respondent.

The respondents were asked 'who runs the girls' school?'. The results show that the majority of respondents in Wave 1 reported sending their girls to a government-run school. This figure decreased in Wave 2, along with an increase in the use of private schools (from 17.2% to 20.7%). The differences are significant between waves. The results for boys' schools also indicate a slight decline in the use of government-run schools and an increase in private and community schools.

Our results show that the majority of respondents did not have to pay formal fees in either wave (Table 20 in Annex). There was an increase in the proportion of respondents paying formal fees for private schools (from 19.1% to 24.8%); probably a reflection of the increase in the use of these schools. Overall, the proportion of respondents who paid school fees for boys was higher than for girls.

The data show a considerable increase in households who paid informal fees for both boys' and girls' schools (from less than 1% in Wave 1 to about 18.5% in Wave 2). Those who did not experience any problems in either wave are most likely to be 'always satisfied'; and those who experienced problems in Wave 2 (but no problems in Wave 1) tended to change their perception from 'satisfied to dissatisfied' (Table 21 in Annex).

6.2.1 Regression: access to education

The associations between access to girls' school (distance in minutes) and possible explanatory variables are given in the regression (Table 7 in Annex). Most of the household variables are not significantly associated with access to school (travel time). However, those households who took on loans in Wave 2 (but were not in debt in Wave 1) were more likely to experience longer journey times.

The regression for access to boys' primary schools shows that the length of journey to school increased for households which started to receive income from cultivating their own land. Similarly, households that started to receive income from selling goods in Wave 2 also saw an increase in journey times to boys' schools. The association is highly significant in both cases. However, households who had more diverse sources of income in Wave 2 tended to see a reduction in their children's journey to school. The same is true for households that owned agricultural land in Wave 2 (but not in Wave 1).

Experience of health-related shocks is significantly associated with access to primary school, which implies that households which did not experience health-related shocks in Wave 1 but did in Wave 2 saw a reduction in journey times.

Those households who reported that they started paying fees between Wave 1 and Wave 2 experienced (on average) an increase in journey times.

6.2.2 Regression: satisfaction with school

The regression for 'satisfaction with boys' school' (Table 8 in annexure) shows that most of the independent variables have a non-significant association with this outcome. However, there are some interesting results. For instance, crime rates at the UC-level are significantly linked with perceptions of the overall quality of boys' schools. Respondents in UCs where the crime rate was higher in Wave 2 are more likely to be satisfied with the overall quality of boys' schools.[36] This is rather an odd result. The combination of higher crime rates (particularly in Lower Dir) and the increase in private school enrolment might provide an explanation.

Changes in levels of satisfaction with the number of teachers, quality of teaching staff, teacher attendance, class size and quality of school equipment are positively associated with overall satisfaction with boys' schools. The number of teachers and class size, in particular, have a significant effect on perceptions of boys' schools.

Neighbourhood safety is negatively correlated with satisfaction with schools. Thus, there is likelihood that respondents in neighbourhoods that are perceived to be safer in Wave 2 are less satisfied with the performance of schools.

The results for satisfaction with girls' schools show a slightly different picture: firstly, female respondents and respondents with a high school or tertiary education are less likely to be satisfied with the overall quality of girls' schooling. This is not the case for boys' school. As in the regression for boys' schooling, satisfaction with specific aspects of the school is positively correlated with an increase in overall satisfaction. However, the significant results for girls' schooling are 'number of teachers', 'teacher attendance' and 'quality of infrastructure'. If the respondents were aware of education-related meeting in Wave 2 but not in Wave 1, their level of satisfaction with girls' schools declined, which was not the case for boys' schooling.

6.3 Water

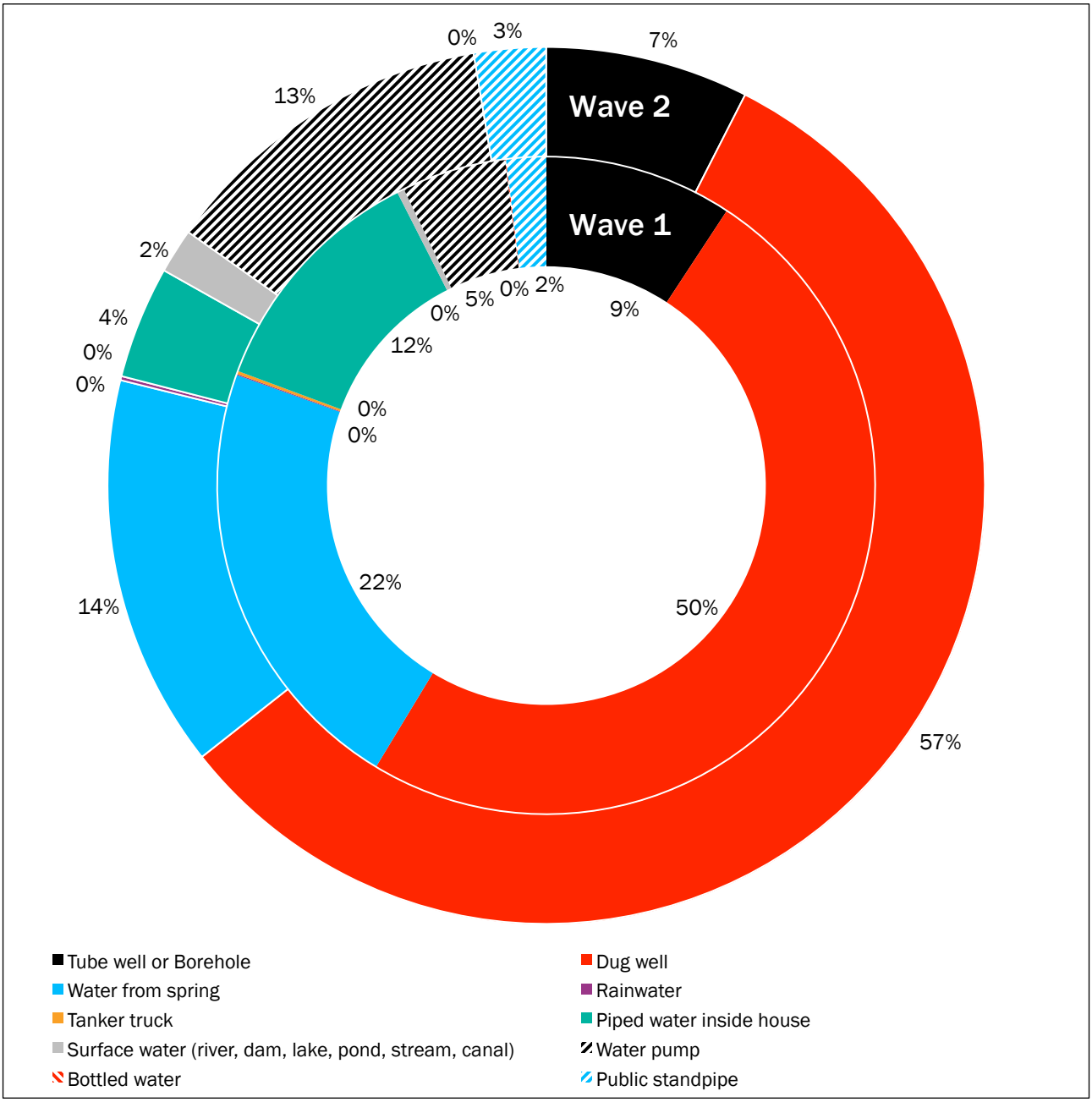
Travel times (in minutes) to the nearest source of drinking water is used as an indicator for access to water. In Wave 1, the average travel time to the nearest water source was 13.6 minutes, which

[36] The statistical significance of this result was sensitive to model specification.

increased to 15.9 minutes in Wave 2. Our results show that 94% of respondents were using the same source of water as they used 3 years previously. Of those who switched (5% of the sample) 38.5% did so because the new source was closer, 22.2% switched to a newly built source and 19.3% said the previous one no longer existed. It can be inferred that those who switched source are much more likely to have a reduced journey time, compared to those who stayed with the same source.

The main source of drinking water in both waves is dug wells – 50% households were using water from dug wells in Wave 1 and 57% in Wave 2. A considerable number of households were using water from springs; although this decreased from 22% to 14%. It is important to note that in Wave 1, 12% of households had access to piped water but in Wave 2 a negligible share (4%) had access to piped water inside their house. On the other hand, access to water pumps increased from 5% to 13%. This indicates an increase in the installation of water pumps (mainly through community initiatives) and a decrease in access to piped drinking water, which is the responsibility of the state.

Figure 16: Sources of drinking water in each wave



The quality of drinking water in both waves was similar: 93% in Wave 1 said that drinking water was safe and 92.5% in Wave 2.

About 85% of the households in Wave 1 and 93.5% in Wave 2 did not have to pay for drinking water; the remaining households paid for water either on a weekly or monthly basis. Thus, we can see an improvement in Wave 2 in access to free drinking water.

In terms of responsibility for maintaining sources of drinking water, the majority of respondents (67% in Wave 1 and 52% in Wave 2) said that they maintained their own supply. There was a significant increase in households whose source of drinking water was maintained by the community (from 13.77% to 20.69%). The role of NGOs and the government also increased in Wave 2. A marked increase in community-based water supplies is observed in Lower Dir, where 35% of households report using water sources maintained by the community (compared to 11% in Swat); on the other hand, government-maintained water supplies increased in Swat.

Table 36: Problems experienced with water services

	Wave 1		Wave 2	
Problem with water service	**Freq**	**%**	**Freq**	**%**
No	1256	59.4	1212	57.5
Yes	858	40.6	895	42.5
Total	2114	100.00	2107	100.00

Note: The difference between waves is statistically significant at 1%.

Table 36 (above) shows the number and share of houses who experienced problems with water services: there was a slight increase from 40.6% to 42.5%. The data on switchers and stayers show that there was quite a bit of switching between waves (Table 37).

Table 37: Problems with water services in each wave - switchers and stayers

Problem with the water source	**Freq**	**%**
Always no	695	39.5
Always yes	396	22.5
From no to yes	354	20.1
From yes to no	315	17.9
Total	1760	100.0

6.3.1 Regression: Access to water

The regression for access to water (determined by travel time) indicates that most of the explanatory variables are not significantly associated with the outcome variable (Table 8 in Annex). Crime rates at the UC level are an exception, and are significantly ($p<0.05$) but negatively associated with travel times. It implies that respondents from areas with a higher crime rate in Wave 2 (based on crimes reported in our sample) tend to cover less distance to their source of drinking water[37] – perhaps higher levels of crime restrict movement and households have to rely on the nearest water source, which may provide lower quality water.

To some extent Table 38 supports this theory: households in the UCs which saw an increase in crimes also had comparatively more respondents who shortened their journey time (although, this only applies in Lal Qila) and, crucially, they saw a negative change in people reporting clean and safe water.

[37] This result is, however, sensitive to model specification.

Table 38: Change in crime rate vis-à-vis access to and satisfaction with water

UC	Change in crime rate (crimes per 100 households)	% with a shorter journey time to water source in wave 2	% with a shorter journey time to water source in wave 2	Change in % reporting water as clean and safe
Haya Serai	**5.6**	**37.3**	**45.1**	**-8.1**
Lal Qila	**8.8**	**54.1**	**29.6**	**-8.7**
Charbagh	-23.3	35.6	48.5	8.5
Baidara	-13.5	39	44.9	2.2
Bar Abakhel	-33.8	12.7	62	0.7

Having to queue for water is significantly associated with access to water. A change from not having to queue to having to queue increases the travel time to water sources.

6.3.2 Regression: satisfaction with water quality/cleanliness

The response to the question "Is your drinking water safe and clean?" was used as an outcome variable and its association was determined with a number of household variables by using a Fixed Effect model. The results reveal that households which started to receive income from selling goods in Wave 2 are more likely to be satisfied with the quality of water.

Respondents in areas where the overall perception of safety (outside the village) improved in Wave 2 were more likely to report a clean and safe water supply. One possible explanation is that improved safety in moving outside of the village encouraged households to travel longer to procure clean water.

Results for 'affected by drought in the last three years' and 'have to queue for water' are interesting as these variables are significantly but negatively correlated with perceptions of water quality. It implies that the households which were not affected by drought in Wave 1 but were in Wave 2 are likely to have a more negative perception of water quality. The same is true for those who did not need to queue for water in Wave 1 but had to queue in Wave 2.

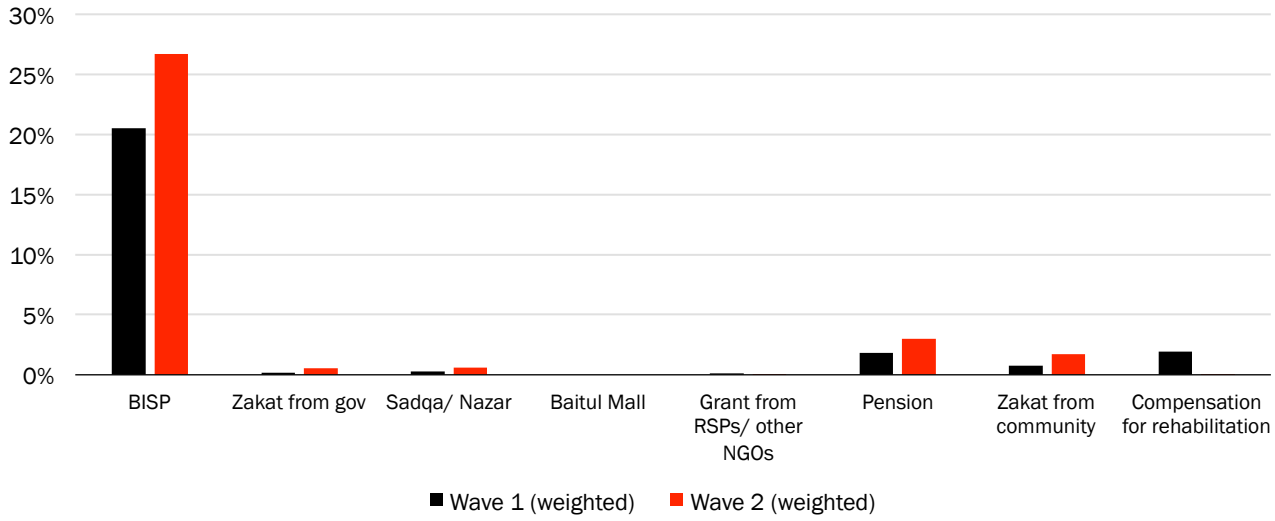
The respondents who were aware of meetings related to water services (in the last 12 months) in Wave 2 but were not aware in Wave 1, are likely to be dissatisfied with water quality.[38]

6.4 Social protection

Households in the study areas received different types of social protection, including the Benazir Income Support Programme (BISP) transfer, *Zakat* (a religious tax paid by wealthy people to support the poor), *sadqa/nazar* (charity from wealthy individuals), assistance from government-funded rural support programmes, pensions, community *zakat* and compensation for rehabilitation (housing) (Figure 17). Overall, 25% of households received a social protection transfer in Wave 1 and the figure significantly increased to 34% in Wave 2. The majority of households with at least one member in receipt of a social protection transfer reported support from BISP (21% in Wave 1 and 27% in Wave 2); 12% started to receive BISP support in Wave 2, while only 5.5% of households stopped receiving BISP in Wave 2. A district-level comparison indicates that more households in Swat (26% in Wave 1 and 31% in Wave 2) received BISP transfers than in Lower Dir (11% in Wave 1 and 19% in Wave 2).

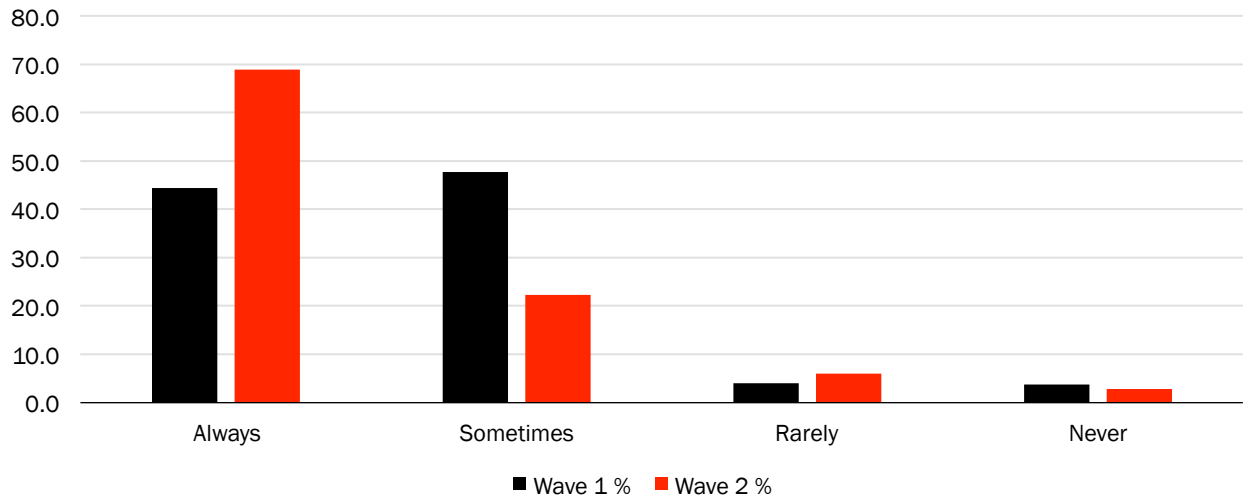
[38] This model was highly sensitive to specification adjustments and in the sensitivity check in which clustered standard errors were introduced, all of these results became non-significant. In another sensitivity check using an alternative model, the number of income sources, experiences of drought and the water provider became non-significant.

Figure 17: Access to Social Safety Nets (SSN)



BISP is the government's flagship social protection programme, launched as a response to high food prices. Reliability, in terms of the timely transfer of BISP, increased significantly – 44.4% of respondents in Wave 1 and 69% in Wave 2 said that the cash always arrived on time. Similarly, 47.7% of the respondents in Wave 1 and 22.3% in Wave 2 reported that BISP transfer 'sometimes' arrived on time (Figure 18).

Figure 18: Timely transfer of BSIP



The perceived impact is also high: in both waves almost 66% of households who receive BISP reported a positive impact.

6.4.1 Regression: receipt of social protection

The regression for social protection transfers (Table 11 in annexure) indicates that a number of the independent variables have a significant effect on access to these benefits. Households which did not receive income from farming (own cultivation) in Wave 1 but earned money from this source in Wave 2 were less likely to receive a social protection transfer. Similarly, income from selling goods, causal labour and skilled labour has a negative association with access to social protection. It implies that households that earned money from any of these sources in Wave 2 were unlikely to receive social protection. The number of income sources, on the other hand, has a positive association with receipt of

social protection – in other words, if a household adds an additional income source between waves then they are more likely to receive social protection in Wave 2.

Overseas migration and remittances have a significant negative association with social protection transfers. Households without a migrant family member in Wave 1 but with at least on in Wave 2 are less likely to receive any type of social protection. The same applies for household remittances.

Experience of economic shocks during the last three years is highly significantly related to access to social protection transfers.[39] A negative sign for the coefficient indicates that households which did not report experience of economic shocks during Wave 1 but reported them during Wave 2 are less likely to receive social transfers. BISP conducted a Nationwide Poverty Scorecard Survey[40] in 2010-11 to identify eligible households and then distributed the cash among the poorest. The households in our sample may have suffered an economic shock after the survey and therefore may not have been eligible for a BISP transfer, or there may have been problems with targeting (see also Shah and Shahbaz, 2015).

The CSI is also highly significantly associated with access to social protection. Households whose CSI has increased (are more food insecure) in Wave 2 are more likely to receive social protection transfers. Conversely, moving from food insecurity to food security implies that households are less likely to receive SSN. However, there is insignificant association between MSI and access to social protection. The SLRC paper on targeting, access and relevance of post-conflict livelihood interventions (Suleri et al., 2016) reveals that local people feel that BISP is influenced by political pressures, and it was alleged that support was often distributed based on political affiliation.

Perceptions of safety outside the village is significantly correlated with access to social protection. A positive association implies that households who perceive an improvement in safety between waves are more likely to receive social transfers.

The Random Effects regression model for average levels of household education indicates that secondary-educated (or higher-educated) households are less likely to receive social protection. It also indicates that sampled households in Swat district have more access to social protection than those in Lower Dir district.

6.5 Livelihood assistance (seeds and tools)

There is significant reduction in the percentage of households who received livelihood assistance in the form of seeds, tools and agricultural inputs. In Wave 1, 22.5% of households received livelihoods assistance but in Wave 2 this dropped to 4.7%. Moreover, 11% of households who received livelihood assistance in Wave 1 stopped receiving assistance in Wave 2 and only 1.5% of households who did not receive livelihood assistance in Wave 1 received assistance in Wave 2.

Significant differences in access to livelihood services in Wave 1 and Wave 2 might be due to the fact that more local and international NGOs provided livelihood assistance after the conflict in Wave 1 (see for example Shahbaz et. al., 2012). However, with the improvements in security and stability, the extent of the social sector reduced significantly.

Those households who received seeds and tools were asked whether they received them on time: 94% in Wave 1 and 78% in Wave 2 responded positively. The majority of households (86% in Wave 1 and 84% in Wave 2) who received livelihood assistance reported that the assistance had a positive impact on their well-being.

---

[39] This result is sensitive to model specification, as are the results for safety level outside the village and the CSI.

[40] http://www.bisp.gov.pk/

6.5.1 Regression: receipt of livelihood assistance

The regression for access to livelihood assistance (seeds, fertilisers and farming tools) given in Table 10, in Annex, shows mixed results. The change in the average age of a household is significantly associated with livelihood assistance – a negative sign indicates that households whose average age increased in Wave 2 are less likely to be the recipients of livelihood assistance.[41] A higher average age means more productive (earning) household members who may not require assistance.

'Income from different sources' is negatively associated with access to livelihood assistance. Households that did not earn any income from either farming, selling goods, causal or skilled labour in Wave 1 but earned income from any of these sources in Wave 2, are less likely to receive livelihood assistance. However, the relationship is rather weak (non-significant), except for 'selling goods'.

Remittances are negatively associated with access to livelihood assistance. Households from our sample who reported that they did not receive remittances during the past 3 years in Wave 1 but received remittances in Wave 2, are less likely to receive livelihood assistance. Thus, it could be argued that migration offsets the need for social transfers. Remittances play an important role in the livelihoods of rural people in KP and are the most important income source for households in conflict-affected areas (Mallett et al., 2015). Previous research also highlights the growing importance of migration as a livelihood strategy in KP (Steimann, 2005).

MSI, an indicator of household wealth, is highly significantly related to access to livelihood assistance. The relationship could go both ways – in other words, households whose wealth increased in Wave 2 are more likely to receive livelihood assistance or livelihood assistance is likely to result in an increase in assets (farming tools, for example).

CSI is significantly associated with access to livelihood assistance. A negative coefficient sign indicates that household whose CSI increased (i.e. food insecurity increased) are less likely to receive livelihood assistance.

'Experienced health shock in past three years' is significantly but negatively associated with access to livelihood assistance. Households which did not experience health-related shocks in Wave 1 but did in Wave 2 are less likely to receive livelihood assistance. However, the number of shocks during past 3 years is significantly associated with access to livelihood assistance – in other words, households who experienced more shocks in Wave 2 (compared to Wave 1) are more likely to receive livelihood assistance.

Households who live in areas where the overall perceptions of safety improved between waves are more likely to be the recipients of livelihood assistance.

6.5.2 Regression: impact of livelihood assistance

The respondents were asked about the contribution of livelihood assistance (whether it improved their agricultural productivity) and the regression is given in Table 22, in the Annex.

Migration by any household member (in the past 3 years) is significantly but negatively correlated with satisfaction with livelihood assistance. Thus, respondents in sampled households which did not have a migrant family member in Wave 1 but had one in Wave 2 are less likely to report a positive impact from livelihood assistance. This could be because of the effect of remittances – in other words, when remittances start coming in, they may diminish the relative contribution of other (smaller) forms of assistance.

[41] Sensitivity analysis found that the significance levels of the coefficients for average age, remittances, health shocks, CSI, MSI and perceptions of safety outside the village are sensitive to model specification.

Neighbourhood safety is negatively associated with perceptions of livelihood assistance. Respondents in areas where the overall perception of safety improved between waves are less likely to report a positive impact from livelihood assistance.

The timely arrival of livelihood assistance has a significant positive impact on perceptions of livelihood assistance. The positive sign for the coefficient indicates that households which reported that livelihood assistance did not arrive in time in Wave 1 but did in Wave 2 are more likely to be positive about the impact of livelihood assistance on agricultural productivity. This is logical because the timely delivery of seeds and fertilisers is crucial for agricultural operations and consequent productivity, and the results of the regression indicate that this is the strongest variable (significant at 1%).

Experiencing an agricultural shock in the past three years is significantly associated with perceiving an impact from livelihood assistance. It implies that households which experienced agricultural shocks in Wave 2 tend to have a positive response to the statement 'livelihood assistance improved agricultural productivity and other economic activities'. Experiencing problems with services in the previous year is also positively associated with the outcome variable. Thus, it can be inferred that respondents who had a problem with services in Wave 1 but did not in Wave 2 are more likely to have a positive opinion of the effectiveness of livelihood assistance. Similarly, 'livelihood assistance arrived on time' is significantly associated with the outcome variable. A positive change in the timeliness of livelihood assistance is likely to lead towards a positive perception of the impact of livelihood assistance.

The Random Effects model indicates that the sampled households in Swat district have a more positive perception of livelihood assistance than those in Lower Dir. Similarly, female respondents are more likely to have a positive opinion.

6.6 Summing up

There is a cluster of key household variables that are significantly related to satisfaction with health services. For instance, household income from different sources tends to be positively correlated with satisfaction with health services. In other words, households which become more food insecure (in Wave 2) are likely to be less satisfied with health services as compared to those who are not. Similarly, respondents from households whose assets have increased in Wave 2 are more likely to be satisfied with the health centre they use.

Safety is emerging as an important variable here. Neighbourhood safety is negatively correlated with satisfaction with schools and health services. Thus, respondents in neighbourhoods that are perceived to be safer in Wave 2 are less satisfied with the performance of schools and health services. Perceptions of safety outside the village are inversely associated with satisfaction with health services and water provision. Perceptions of safety are also significantly associated with access to health services. By increasing neighbourhood safety, households in our study area are more likely to visit health centres that are nearer.

The results also indicate that, although there have been improvements in overall levels of satisfaction with health care centres, satisfaction with specific aspects of health facilities varies. For instance, significantly more respondents in Wave 2 were not satisfied with the availability of medicine in health centres. On the other hand, satisfaction with waiting times increased. There was a substantial increase in the number of respondents who experienced problems with health services. Respondents who did not experience any problems (in either wave) are more likely to be satisfied with the availability of medicine than respondents who experienced problems in Wave 2.

Overall, for education services, there was a slight increase in the percentage of respondents who are either satisfied or very satisfied, but a substantial decrease in households who were dissatisfied in

Wave 2. There was, however, an increase in the percentage of respondents who were not satisfied with the number of teachers and the quality of teaching staff.

The migration of a household member outside the country is significantly associated with access to health centres. Remittances tend to have a positive impact as far as access to social assistance is concerned. Households without a migrant family member in Wave 1 but with at least one in Wave 2 tend not to be recipients of any type of social protection. Likewise, those households which did not receive remittances during Wave 1 of our survey but received them during Wave 2, are less likely to receive social protection transfers and livelihood assistance.

Payment of informal fees is also significantly related to access to health clinics –in other words, households that started paying informal fees between waves tend to have longer journey times to the health clinic (although, this might be to a better health facility). Similarly, those respondents who reported that they were not aware of meetings related to health services in Wave 1 but were aware of them in Wave 2 tend to have worse access to the health centre they use.

The results for schools indicate an increase in travel times between the two waves. We also see an increasing number of households sending their children to private schools and a decline in the use of government schools. Most of the households who switched to a new school (in Wave 2) cited a better quality of services and a (shorter) journey time as the main reason.

There was a considerable increase in the number of households who received a social transfer. For instance, 25% of households received a social protection transfer in Wave 1, significantly increasing to 34% in Wave 2. Furthermore, 12% more households received BISP transfers in Wave 2. Conversely, there was significant reduction in the percentage of households who received livelihood assistance in the form of seeds, tools and agricultural inputs.

Farming (cultivating own land), income from selling goods, causal labour and skilled labour have negative associations with access to social protection. It implies that households which earned money from any of these sources in Wave 2 are less likely to receive social protection.

7 Changing perceptions of governance

This section examines how perceptions of governance (local and central) have changed from Wave 1 to Wave 2. Respondents were asked **1) whether they feel that local and central governments care about their opinion**, and **2) to what extent government decisions reflect the priorities of respondents**. This gives us an idea of the sense of participation and ownership in the governance process. However, it is important to note here that in both waves the political and institutional set-ups were different. In Wave 1, elected local governments were largely defunct and the gap was filled by non-elected local administrators and civil servants; however, in Wave 2 (recently elected) local governments were in power in the study area. Local elections were held in 2015 and in Swat the Pakistan Tekrik-e-Insaf (PTI) won the largest number of seats (24), followed by the Pakistan Muslim League (PML-N) with 21 seats and the Awami National Party (ANP) with 8 seats; Jamaat-e-Islami (JI) only secured 1 seat. In Lower Dir, JI won the largest number of seats (23), followed by the ANP with 5 seats and PTI with 4 seats. Different political parties were in power at the provincial and federal level in both waves. In Wave 1, the Pakistan People's Party (PPP) was the ruling party at the central (federal) level, and the ANP at the provincial level. However, three political parties emerged as the main parties in the 2013 general election – namely, the PML- N, the PTI and the PPP. The PML-N won the most seats in the national assembly and thus formed the government at the national (federal) level, and Nawaz Sharif became the Prime Minister of Pakistan. In KP, the PTI formed the government in coalition with the JI.

In this section, we first elaborate on the conceptual framing of legitimacy, then trace the changes in perceptions of government over time, before drawing on regression analyses to identify what factors, if any, are associated with these changes.

7.1 Connecting our indicators to legitimacy

The importance of legitimacy to both the creation and preservation of order has long been recognised by political scientists. It has been described as 'the core of political organization' (Alagappa, 1995: 3), the 'central issue in social and political theory' (Beetham, 1991: 41) and 'central to virtually all of political science' (Gilley, 2006: 499). The state-building policy agenda, with its original interest in insitutions and capacity, has taken rather longer to open up to this 'slippery' concept (Teskey et al., 2012). But circumstances today are quite different from those of, say, ten years ago: legitimacy, as well as capacity, has become a fundamental aspect of donor and aid agency agendas, in their attempts to help build more peaceful, responsive and embedded states. Investing in better service delivery is one of the main ways they seek to enhance legitimacy. Therefore, one of the objectives of this panel survey is to examine whether (and under what conditions) this is a credible strategy.

Although there are differences in approaches, it is generally agreed that, in its broadest sense, legitimacy refers to the 'social rightfulness' of a given actor – in this case, the state. 'Social rightfulness' is a way of framing the extent to which a particular group of people in a particular territory i) *believes* the state has the right to rule, and ii) *acts* accordingly, through different modes of behavioural compliance. These are what Levi et al. (2009) refer to as the 'value-based' and 'behavioural components' of legitimacy (Figure 19: Pathways to legitimacy). In their model, these are not just dimensions of legitimacy – although it might, nonetheless, be useful to think of them as constituting the first 'sub-layer' of legitimacy – but parts of a causal chain. In their view, it is the 'sense of obligation or willingness to obey authorities [...] that then *translates* into actual compliance' (ibid: 354, emphasis added). In other words, before someone starts willingly paying taxes or deferring to a police order, they must first, as a necessary condition, believe in the rightfulness of the enforcing / regulatory institution. It is this logic that supports the idea that legitimacy makes it cheaper and easier for states to govern, reducing

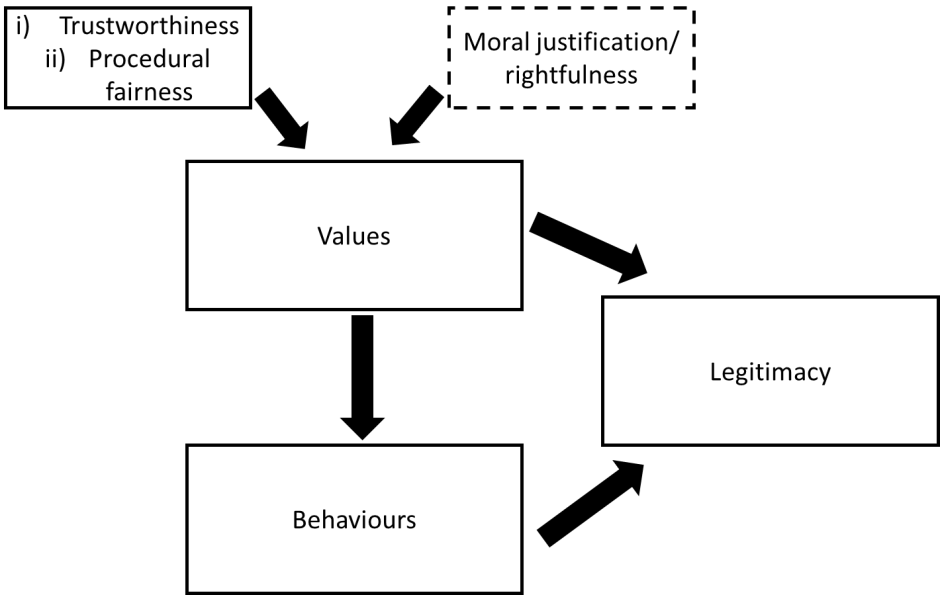
as it does the need to secure compliance through the resource-intensive application of force (ibid: 355). It also relates to the idea that legitimacy creates 'a kind of elasticity in state–society relations' (Mcloughlin, 2015: 2), whereby beliefs in the rightfulness of the state help maintain social compliance even when things go bad (e.g. in times of financial crisis).

Given the comparative advantage of surveys in generating perception data, the SLRC survey focuses on the value-based component of legitimacy rather than the behavioural component.[42] This too can be collapsed further. In their model, Levi et al. (2009) argue that value-based legitimacy has two 'antecedent conditions'. On the one hand, there is **trustworthiness**, which reflects the judgement that 'authorities are motivated to deliver on their promises and do what is right for the people they serve, seeking policies that truly benefit their societies' (ibid: 356). The authors suggest that trustworthiness is in turn comprised of three more specific elements, against each of which personal judgements or assessments can be made. These include:

- *leadership motivations*, which are tied to the nature of commitments made by leaders as well as their individual charisma (to an extent this means a 'thin' form of legitimacy might be generated by the ability of a President, for example, to convince the public of their vision);
- *performance*, which refers to the capacity of the state to produce core functions (this is how service delivery tends to get framed as a mechanism of trust-building, and therefore legitimation); and
- *administrative competence*, which is about both the honesty of state agents (e.g. perceptions of corruption) and the state's capacity to enforce the kinds of policies / regulations it has committed to (e.g. *de jure* law).

On the other hand, there is **procedural justice**, which emerges when 'governments exercise their authority through procedures that people perceive as fair' (ibid: 359). Evidence that beliefs in procedural justice contain a *legitimating quality* has been found in multiple settings (Tyler, 2006), most recently (and of particular relevance to us) in post-conflict Nepal (Fisk and Cherney, 2016).

Figure 19: Pathways to legitimacy



Adapted from Levi et al. (2009).

[42] Although the survey generates information on certain measures that could be taken as indicators of behavioural legitimacy, such as civic participation, these are never included in the regression models as dependent variables.

At this deconstructed level, it then becomes possible to formulate questions that can be inserted into a survey instrument, the responses to which plausibly tell us something about state legitimacy. The SLRC survey uses two questions in particular to capture aspects of value-based legitimacy:

- To what extent do you feel the decisions of those in power in (local and central) government reflect your priorities?
- Do you agree that the (local and central) government cares about your opinion?

Of course, these questions cannot be taken as direct indicators of state legitimacy, underpinned as they are by a series of assumptions. To start with, the government is taken as the primary political unit, although it has long been acknowledged that the state is about more than just formal government. This is particularly the case in conflict-affected contexts, where government tends to be contested, hybrid, layered and networked (Boege et al., 2008; Leonard, 2013). We recognise this as a limitation, but at the same time point out that governments are rarely an irrelevance; while they may not be the only form of authority, they remain one of the most important. Indeed, scholars continue to argue that the best hopes of improved security and development, hinge on the construction of capable states (Pritchett et al. 2012). As such, one assumption underpinning our model is that beliefs about the government translate into beliefs about the state in a broader sense.

It is also apparent from the nature of the questions asked that we are exploring a particular line of legitimation. That is, we are looking at value-based legitimacy (a precondition of behavioural legitimacy). And again, within that are focusing on certain strands. While the interpretation of our survey questions is open to debate, we see them as constituting indicators of trustworthiness: that is, the belief that the government's actions are serving individual interests. This potentially captures two aspects of Levi et al.'s (2009) three indicators of trustworthiness – leadership motivation and performance– which might make it difficult to disentangle the specific mechanisms at play. Our approach stops short of assessing the underlying rightfulness of government actions, which Mcloughlin (2015) sees as the most direct way of examining legitimacy. For example, just because an individual feels the government's decisions reflect their own priorities, it does not automatically follow that the same individual believes its actions are morally justifiable in a wider sense (partly for the simple reason that not everyone can be characterised as a self-interested rational actor). To investigate those issues would be to carry out a more detailed inquiry of the norms and expectations held by an individual, and the extent to which government action squares (or not) with these.

Thus, as with all studies of this 'slippery' concept, we are making a number of assumptions in our choice of approach. We are not claiming that the responses to our questions (and the perceptions that they reveal) are perfect measures of state legitimacy but rather that they may capture steps in a longer pathway to legitimacy, according to established theories.

7.2 Perceptions of local and central governments

To assess the respondents' perceptions of formal state governance, we asked them: 'To what extent do you feel the decisions of those in power in (local and central) government reflect your priorities?' [43]

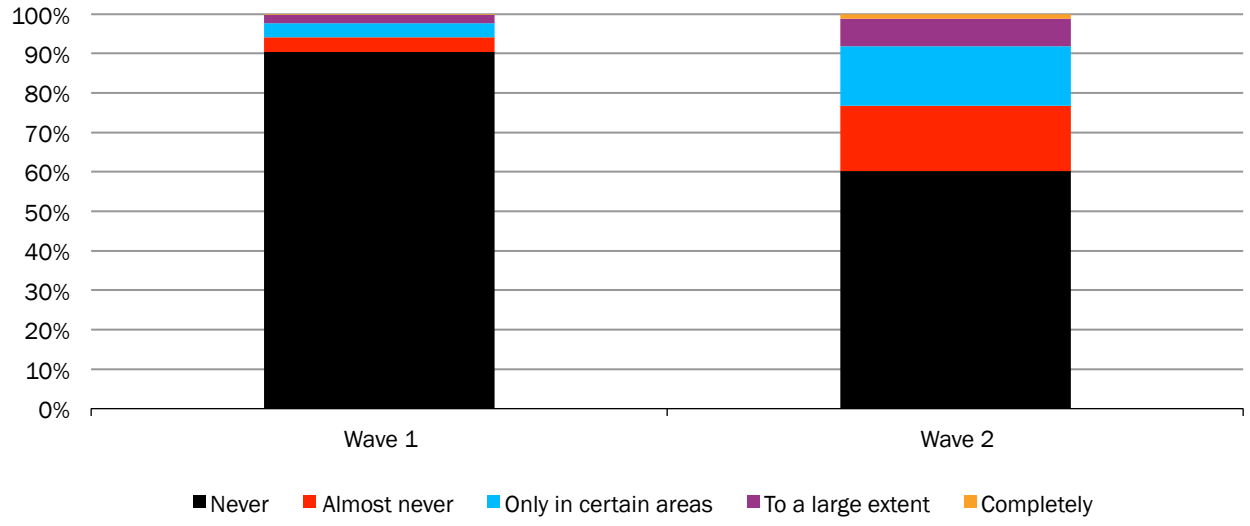
There is substantial change in the respondents' perceptions of local and central governments, as shown in Figure 19 and Figure 20. In Wave 1, the overwhelming majority of respondents (90% for local government and 94% for central government) said that the decisions of those in power 'never' reflected their priorities. But in Wave 2, these figures decreased to about 60% and 62%. The remaining respondents have a fairly positive opinion of local and central governments.

[43] They were asked to select one of the following five options in response to the above questions: Never = 1; Almost never = 2; Only in some areas = 3; To a large extent = 4; Completely = 5.

There are a number of possible explanations for this change in opinion. Local government institutions in Pakistan are commonly called 'local bodies' or 'local governments', and a 'new' system of local governance was introduced in 2001 by General Musharraf, the then military president of Pakistan (Saleem and Ahmad, 2012). Local government elections were held in 2001 on a non-party basis and local governments were empowered to administer water, education, health and sanitation as well as other basic services at the local level.[44] The system of local governments remained fully functional till 2008, but after the general election the powers of locally-elected leaders were gradually shifted to the bureaucracy; new elections were not held until 2015. At the national level, the Pakistan People's Party was in power in 2012 but in 2015 the Pakistan Muslim League (N) was the ruling party. When the first round of surveys was conducted in 2012, there were no functioning local governments and the district and sub-district level bureaucracy filled the gap. The local civil administration (and to some extent the army) was responsible for local level issues like water and sanitation, education and health. Respondents' perceptions may therefore relate more to the performance of the local administration rather than the defunct local government. But in 2015, newly elected local governments came to power and the perceptions of governance in the second wave probably relate more to their performance. Fair et. al. (2015) argued that the perceptions of disaster-affected populations in Pakistan were influenced by the effectiveness of government performance; however, in our case the political parties in power during the first round of surveys did not win the election in 2013.

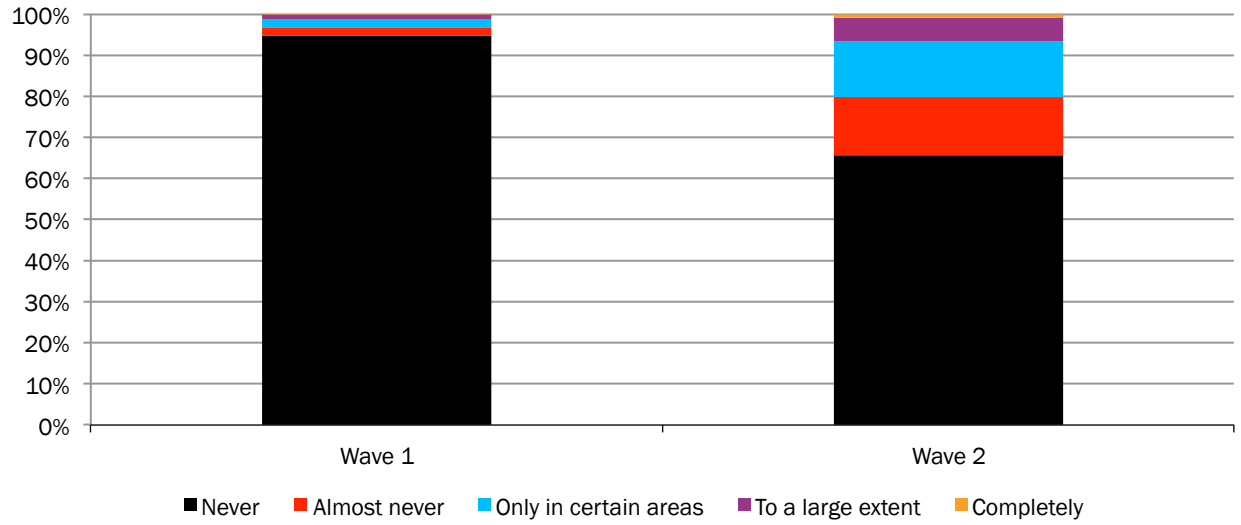
It is interesting to note that the majority of respondents were not happy with local and central governments; they felt that they did not care about their opinion. This is despite the fact that the vast majority of them were satisfied with the provision of basic services (particularly health and education). Even when levels of satisfaction with services increased in Wave 2, the perception of local and central governments remained poor.

Figure 19: To what extent do the decisions of local government reflect respondents' priorities?



[44] http://spearheadresearch.org/index.php/researchopinions/pakistan-with-and-without-local-government

Figure 20: To what extent do the decisions of central government reflect respondent's priorities?



Gender disaggregated data, given in Table 39(below), shows significant difference in the perception of male and female respondents. The data indicates that female respondents are less positive than male respondents. Although positive perceptions of local and central government have increased, significantly more female respondents consider that local and central governments do not reflect their priorities.

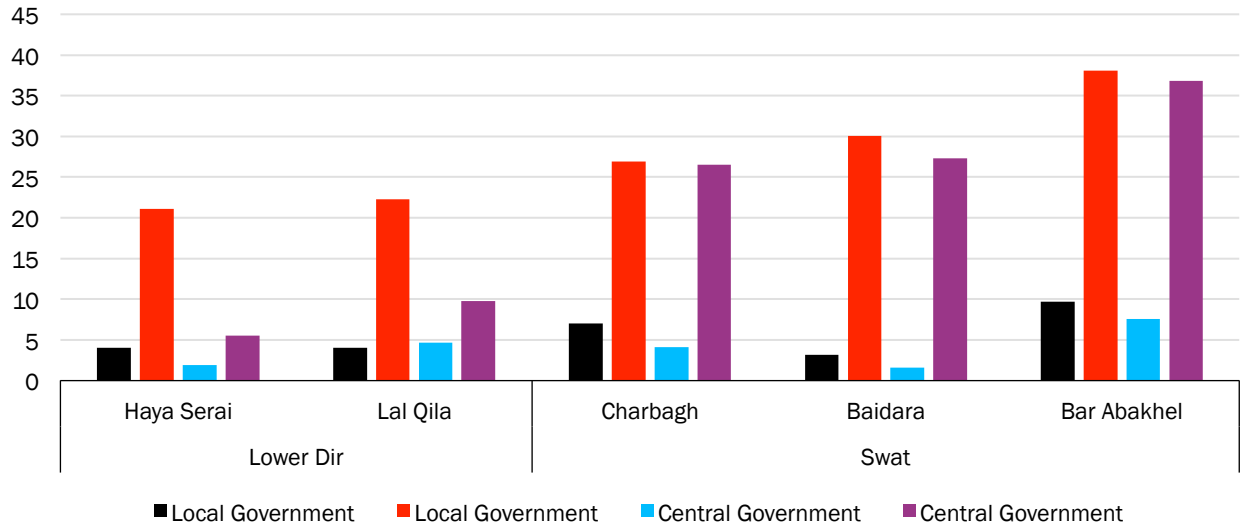
Table 39: To what extent do the decisions of local/central governments reflect respondent's priorities? (gender disaggregated)

	Local government				Central government			
	Wave 1		Wave 2		Wave 1		Wave 2	
To what extent do the decisions of local government reflect the respondent's priorities?	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Never	86.0	98.8	51.6	78.5	92.6	99.2	65.0	67.4
Almost never	5.7	0.0	21.4	6.1	2.8	0.0	14.4	13.0
Only in some areas	5.0	0.8	16.6	11.8	2.8	0.4	12.2	16.7
To a large extent	3.0	0.3	8.7	3.6	1.7	0.3	7.1	2.8
Completely	0.4	0.1	1.7	0.0	0.1	0.1	1.2	0.2
Total	100	100	100	100	100.0	100.0	100.0	100.0

Note: The difference in perceptions between men and women is statistically significant at 1% for both waves and levels of government.

Union Council-level comparisons of perceptions of whether 'local and central governments care about my opinion' are shown in Figure 21. This shows that a substantially higher percentage of respondents have a more positive opinion of local government in all UCs in Wave 2 – although this change of opinion is more noticeable in the UCs in Swat. The data for perceptions of central government shows a similar pattern, but a more significant improvement in public opinion in Swat. In Lower Dir, the Islamic party (JI) is the dominant party in local government and in Swat, PTI is the ruling party. PTI is also the ruling party at the provincial level. The general perception is that governance is more effective if the same party is in power at the provincial and local level. The army presence in Swat is another important factor; it is seen as a representative of central government and responsible for much of the development in Swat.

Figure 21: Perceptions of whether local and central government care about respondents' opinion



Disaggregation by gender, shown in Table 40, shows significant differences. In Wave 1, only 8% of males and 1% of female respondents thought that local governments cared about their opinion; this figure increased to 34% and 16% respectively. A similar increase was reported for central government. This clearly indicate that, though positive perceptions increased in Wave 2, female respondents were still less positive than male respondents.

Table 40: Local and central government care my opinion

	Local government				Central government			
	Wave 1		Wave 2		Wave 1		Wave 2	
Whether local government cares about respondents' opinion	Male	Female	Male	Female	Male	Female	Male	Female
No	91.9	99.2	66.3	84.2	94.5	99.0	74.1	88.7
Yes	8.1	0.8	33.7	15.9	5.5	1.0	25.9	11.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: The difference in perceptions between men and women is statistically significant at 1% for both waves and levels of government.

7.3 Regression results for local government

Looking at sample averages and 'switches' in perceptions of government, we can see a great deal of change over the three-year period, particularly with regard to local government. However, there were noticeable differences in patterns of change, indicating that different circumstances may have given rise to changes of opinion. To get a better understanding of the changes in circumstances, we ran regression analyses on the outcome variables 'the local government cares about my opinions' and 'the local government reflects my priorities' (the results of which are presented in Tables 14 and 15 in Annex).

The first regression indicates that the experience of shocks is linked to worse perceptions of government. More specifically, respondents who experienced agricultural shocks or economic shocks in Wave 2 (but did not experience them in Wave 1) are less likely to believe that the local government cares about their opinion. Local governments are responsible for providing basic needs such as water, sanitation and education (Saleem and Ahmad, 2012) and, because they are elected, the public believe that they have a duty to respond to shocks which affect their constituents. Jackson and Scot (2007) highlight the importance of local government institutions in post-conflict environments and argue that

donor agencies should recognize the importance of local governments in their rehabilitation efforts because local institutions are better positioned to negotiate with local communities.

In the second regression on the outcome variable 'local government reflects my priorities', shocks are non-significant, but an increase in wealth (measured by the Morris Score Index) is linked to a more positive perception of local government.[45] So too is receiving social protection, to the extent that respondents whose household members received social protection transfer in Wave 2 (but not in Wave 1) have a more positive opinion about the local government's commitment to their priorities.

The other significant explanatory factors in the regressions are largely related to service delivery. Time taken to collect drinking water is positively associated with the perception that local government cares about the respondents' opinions. More specifically, those who increased their journey time to their water source were more likely to believe that the government cares about them. Changes in sources of drinking water (detailed in Section 6.3), indicates that more households have access to a dug-well in Wave 2, which might have been installed by the local government (however we do not have any evidence to confirm this). From this, we can infer that, where the government improves water facilities, citizens have a more positive perception.

The payment of official fees for health centres is negatively linked to perceptions about local government, in both the regression on whether the government cares and whether its decisions reflect the respondent's priorities. Respondents who started having to pay official fees for health centres between waves, have worse perceptions of the government's responsiveness to their needs. In most of the villages, the local health centre (known as the Basic Health Unit) is managed by the local government and any negative associations with the centres tend to generate negative perceptions about local governments.

The number of problems experienced with services in the past year is inversely and significantly related to the perception of local government, again, in regressions for both outcome variables for local government. This means that respondents who experienced more problems with basic services in Wave 2 (than in Wave 1) have more negative perceptions of local government.

The Random Effects model indicates that female respondents are less likely to believe that the government cares about their opinion. Those in Lower Dir also have a more negative perception, relative to those in Swat. However, these indicators were both non-significant in the other local government regression.

7.4 Regression results for central government

Similar regressions were run to test for explanatory factors for changes in perception of central government. As before, the outcome variables were 'the central government cares about my opinions and 'the central government reflect my priorities' (and the results are found in Table s 16 and 17, in Annex). On the whole, the results were very similar to those for local government, suggesting that, broadly speaking, both tiers of government are judged according to the same criteria.

Again, the experience of economic shocks (in the past three years) has a significant but negative association with *both* outcome variables.[46] From this, we can infer that experience of shocks by households may lead to a negative perception of central government, perhaps due to expectations on the government to compensate for losses. One way in which the government could compensate for

[45] Sensitivity analysis found that the significance levels of the coefficients for MSI, receiving social protection and paying official fees for health service are sensitive to model specification.

[46] All of the significant results in the Fixed Effects regression on 'central government cares about my opinion' were sensitive to model specification. For the FE regression on 'central government reflects my priorities', the results for economic shocks and paying official fees for health service were sensitive to model specification.

economic shocks is through the provision of social safety nets. The major social protection programme (BISP) is managed by the federal government, which acts as social safety net for the poorest households. It does not appear, however, that the receipt of social protection is linked to an improvement in the perception of central government (the evidence suggests that most recipients attribute the effectiveness of social protection to local government). Another reason why social protection provision may not be significant here is that eligibility for BISP is based on a poverty survey conducted back in 2010.[47] Thus, households which, due to economic shock, fell below the poverty line after 2010 might not have been compensated.

One difference with the local government regressions, was that respondents in areas where the crime rate went up between waves had a more negative perception of whether central government cares about their opinion. We also see from the Random Effects regression for this outcome that respondents in Lower Dir, which saw a spike in certain crimes between waves, had more negative perceptions. We conclude that security provision, not only against the outbreak of violence but also for tackling petty crime, is important for how the government is judged. In Swat, the army was seen as the main institution responsible for maintaining law and order and in Lower Dir it was the police, both of which are managed at the federal level.

Several factors relating to service delivery were, again, significant. Those who started to pay official fees for the health service were more likely to have a worse perception of central government for *both* outcome variables. Similarly, respondents who identified the government as the provider of their water source (but had identified someone else in Wave 1) were less likely to believe that the government cared about their opinion. This is the opposite to what we found for local government and could reflect negative perceptions of the central government's management of donor-provided water schemes – compared to locally-managed ones which were introduced after 2015 (Shahbaz et al. 2012).

Participation and accountability are, again, seen to matter. Respondents who experienced more problems in Wave 2 are less likely to believe that the central government cares. On the other hand, those who were aware of meetings in the second survey had a more positive perception of central government. As in the case of local government, female respondents are less likely to agree that the central government cares about their opinion and this may also be connected to a lack of opportunities for women to represent themselves in the public sphere.

7.5 Summing up

There was a substantial change in respondents' perceptions of local and central governments; most notably a considerable reduction in the share of respondents who reported that governments 'never' reflect their priorities, from 90% in Wave 1 to 60% in Wave 2.

Despite this positive trend, it is important to note that the majority of respondents were still not happy with either local or central governments, particularly when it comes to listening to their opinion. Experiencing problems with basic services is consistently linked to worse perceptions of government, while awareness of meetings improves perceptions, suggesting that accountability and participation are highly valued. Likewise, female respondents consistently have more a negative opinion of local and central governments, which we link to their comparative exclusion from decision-making processes.

A UC-level comparison indicated that more respondents in Swat improved their opinion of government than those in Lower Dir. This might be due to the fact that the same political party is now in power at the local and provincial level in Swat, but in Lower Dir different political parties govern the different levels. The presence of the army in Swat is another factor that might have influenced perceptions

[47] http://www.bisp.gov.pk/

because it is seen as a representative of central government and is highly regarded because of its considerable development work in Swat.

There is also a suggestion that perceptions of local and central government are swayed by economic fluctuations at the local and household level. Experiencing economic and agricultural shocks is linked to more negative perceptions of government, while a rise in household wealth is linked to more positive ones (although in the latter case we only see the local government being judged more positively). The crime rate at the UC level also has a negative association with the perception of central government but it is non-significant in the case of local government. This could be because of the rise in crime rate in Lower Dir, and the fact that the police, who are responsible for tackling crime, are associated with the federal (national) rather than local government.

Under some circumstances, changes in service delivery seem to a have significant effect on perceptions of governance. The introduction of official fees for health, for example, is linked to more negative perceptions of both levels of government. The provider of drinking water also seems to matter and there is a suggestion from the regressions that the central government is judged for the performance of donor-provided water, while the local government is not held accountable for this.

8 Conclusion

8.1 Context

The study was conducted in areas affected by conflict, which subsequently had some form of assistance for rehabilitation/recovery. Two rounds of our survey were conducted during 2012 and 2015 in selected Union Councils (UC) in Swat and Lower Dir districts in Khyber Pakhtunkhwa (KP) Province. The surveys are representative at the UC level, and of the 2,114 respondents surveyed in Wave 1, 1,762 were tracked and questioned again in Wave 2; 34 % of the respondents were female. The surveys were designed to generate information about changes over time in people's livelihoods, their access to basic services (education, health, and water), social protection and livelihoods assistance, and the relationship of these outcomes with governance processes and practices.

A comparison of the data shows considerable changes between the two waves (2012 to 2015). In Wave 1 almost every respondent reported fighting in their area. At the time (2009-2010) there was a full-scale war between the Pakistani army and the Taliban, followed by sporadic fighting in some areas (ADB and World Bank 2009 and 2010; Shahbaz et al., 2012). However, after 2012, when the army had taken control of most of the region, there were fewer reported incidences of fighting (Bhatti 2015). In Wave 2 a negligible percentage 4.1%) of respondents reported fighting in the study area. In this context, we see a restoration of market activities, with a **significant reduction in respondents who reported poor market access as one of the barriers to livelihoods**. The production and marketing of fruit and vegetables is one of the main entrepreneurial activities in Swat, but market infrastructure was severely destroyed and activities came to a virtual standstill during the conflict (Nyborg et al. 2012). Following the restoration of peace, markets quickly recovered (Ali 2015; Suleri et. al. 2016). Similarly, there was a significant **reduction in crop and livestock-related shocks and loss of soil fertility**. This is partly attributable to the success of post-conflict livelihood interventions (the distribution of seeds and fertilisers) in improving soil fertility (Shahbaz et al. 2012, Suleri et al. 2016). Another important development was the reduction in **inflation and price hikes,** indicating improved economic stability.

Despite these developments, it was surprising to note that **perceptions of safety worsened**. More specifically, there was a significant reduction in households who feel 'very safe' while moving within their village or moving to other places (outside their village). While this does not mean that people began to feel 'unsafe' on a large scale (in fact these figures are rather small in both waves) we, nonetheless, see a *reduction* in people's confidence in the safety of their area. The presence of the army in towns and along roads during Wave 1 might be one of the reasons. After 2012, the situation began to normalise and the army began reducing the number of check points[48] – most of the check posts on smaller roads were either removed or handed over to local police. Though there were no longer any reports of large-scale fighting, there were numerous cases of influential people[49,50] killed by the Taliban (Rehman 2014). This continuing climate of violence, coupled with the withdrawal of the army, is likely to be one of the reasons that concerns about safety grew during this period. Interestingly, female respondents' perceptions of safety within their village is more positive than males, but worse for 'moving outside the village'.

---

[48] http://tribune.com.pk/story/158036/improved-security-situation-in-swat-army-begins-reducing-checkposts/

[49] 'In the last three years, a number of members of Village Defence Committees (VDCs) or peace committees — which are being organised at village-level in entire districts with the army's support — have been targeted by unknown militants.' http://www.dawn.com/news/1133198

[50] Peace committee member gunned down in Swat; The Express Tribune October 2, 2015. http://tribune.com.pk/story/965898/peace-committee-member-gunned-down-in-swat-3/

8.2 Livelihoods and wellbeing

Changes in livelihood activities, income sources, assets, food security and food diversity, and access to credit are some of the key variables selected to understand the changes in livelihood and wellbeing of sampled households.

Remittances from migrant family members was the main income source in Wave 1, and this continued in Wave 2. This is not an unusual finding because migration is one of the most prevalent livelihood strategies in rural areas of KP, particularly in Swat and Lower Dir (Amjad and Arif 2014; Government of KP 2015). Nevertheless, there was a slight decrease in households who reported overseas remittances as the major contributor to household income. We also see a decrease in the perceived impact of remittances, in terms of how much households depend on them. Thus, we infer that, immediately after the conflict, remittances were an invaluable contribution to food and other immediate household expenditures. This is supported by the findings of Gioli et al. (2013) who found that the majority of households they surveyed reported having avoided starvation due to remittances, since most of their livelihood activities had ceased as a result of violent conflicts between the Taliban and the army, and prolonged curfews.

Like remittances, small loans also continued to be an important strategy for households for meeting their immediate needs, and **the percentage of households in debt substantially increased in Wave 2**. The majority of these household borrowed from their family/friends or from informal money lenders; only a small number of respondents took out a loan from a formal money lender. Most of the households borrowed money to meet their immediate needs (food, clothing and health) and the majority stated that they would be able to borrow money from their family/friends in case of sudden health-related problems. However, significantly fewer female respondents in Wave 2 believed that they could borrow money from family/friends in case of an emergency.

Food insecurity was assessed using the Coping Strategies Index (CSI) and our results reveal a **significant increase in food insecurity (higher CSIs) in Wave 2** across the sample as a whole. However, it should be noted that food insecurity was very low to begin with: 67% of the sample had a score of zero or 'no food insecurity' in Wave 1. The increase in food insecurity was more prominent in UCs in Lower Dir than those in Swat. This finding is in line with the report by Suleri and Haq (2009) which indicates more food insecurity in Lower Dir district.

Food diversity, measured using the Food Consumption Score (FCS), has improved slightly – while more than half (52%) of the total sample switched to better food consumption patterns (a higher FCS), 41% of households had a lower FCS. A marked increase in the consumption of vegetables, fruit, pulses and root/tubers was recorded.

Ownership of household assets determined by **the Morris Score Index (MSI) indicates an overall increase in household wealth**. However, beneath the overall improvement, we see that while MSI improved on the whole in Lower Dir, it actually decreased on average in Swat. A possible explanation is that more households in Lower Dir depend on remittances (overseas labour) as their main source of household income and that these were more commonly used in the purchase of assets in Wave 2, while in Wave 1 they would have mainly been used for subsistence. This complements a previous study in which Gioli et al. (2013) found that remittances to these conflict-affected areas were commonly used in coping with the aftermath of conflict.

Using regression models we tested for other changes in circumstances between waves that help to explain these outcomes. The regressions indicated that **taking a loan/ credit is linked to worsening food insecurity and food diversity but was not associated with changes in household wealth**. In other words, taking a loan is one of many coping strategies that households employ in this context, without perhaps offering the level of input that would be needed for households to invest substantially in their

livelihoods. This finding follows on from research by WFP (2010) which indicated that most of the conflict-affected households of KP had to borrow money to manage food and cash shortages.

On the other hand, **households which started receiving livelihood assistance between the waves tend to be less food insecure, with better food diversity (FCS) and increased assets**. While we cannot tell necessarily whether these are causal relationships, it is important to acknowledge the impact of seeds, fertilisers and farming tools distributed by donor agencies during the relief and rehabilitation phase.

Interestingly, **overseas migration and remittances were not linked to any changes in food security, food diversity or household assets**. However, given the fact that the importance of remittances for subsistence has diminished as these districts have undergone post-conflict rehabilitation, it is not that surprising that we do not see a significant relationship here anymore.

Perceptions of safety emerged as an important explanatory variable for food insecurity and there is a negative relationship between perceptions of safety (within the neighbourhood and outside the village) and CSI. In other words, **perceiving the local area to be less safe is associated with worsening food insecurity.** While we cannot make a causal interpretation here, we can link this to other research, which suggests that being in a (perceived) safer location goes hand-in-hand with better access to income generation activities. Some previous researchers have established links between food insecurity and conflict (see for example Messer and Cohen, 2006; Rice, 2007). In terms of a direction of causality, more recently FAO (2016) established that, while violent conflict has adverse effects on food security, the effect of food security on conflict is not fully understood.

We also identified variables in our Random Effects regression analysis which shows the effect of household characteristics that change much more slowly over time. Education emerged as an important explanatory variable for food security, food consumption and household assets. **The better the average education of the household, the better off they tend to be in terms of food security (CSI), food diversity (FCS) and asset ownership (MSI)**. However, primary or madrassa education does not have a significant impact on these variables; thus, the improvement is likely to come when the average education is secondary or higher.

8.3 Services, livelihood assistance and social protection

Changes in respondents' access to and experience of basic services (health, education and water), livelihood assistance and social protection were recorded. The following main findings emerge:

The majority of the sampled households are using the same health centre, school and source of drinking water in both waves. However average travel time to the health clinic, school and source of drinking water have increased slightly and we saw a huge amount of change in journey times in general. Access to services has also changed in other ways – for example, the number of visits to the health centre has increased slightly from 13 to 15 visits per household. There is also decrease in the number of households which are using piped water (maintained by the government) and a significant increase in households whose source of drinking water is maintained by the community, particularly in Lower Dir.

There is an increasing trend for sending children to private schools and we also see high levels of reported school attendance in both waves, including for girls. Levels of satisfaction with the girls' school also increased, although satisfaction with the boys' school remained higher across both waves.

Recipients of social protection have increased significantly (from 25% to 34% of the sample between waves) but **recipients of livelihood assistance have substantially decreased** (from 22.5% to 4.7%). This is an important finding which reveals the extent of the withdrawal of donor-supported livelihood projects now that the recovery and rehabilitation phase in KP is coming to an end. Most of the post-conflict livelihood interventions involved the distribution of seeds, fertilisers and nurseries, and the provision of trainings, which had a positive impact on the revival of agricultural activities (Suleri et. al., 2016). Nonetheless, we

do see that livelihood assistance has a positive relationship with food security (see previous section of the conclusion) so the scaling down of such programmes is worrying in a context in which food insecurity also appears to have risen overall. It is worth mentioning, however, that the government-supported cash transfer, the Benazir Income Support Programme (BISP), remained the most important SSN and most of those households who received cash from BISP reported a positive impact.

The results for satisfaction with health, education (boys and girls school) and water services indicate that the majority of respondents are satisfied with the quality of service for health facilities and **satisfaction from basic services (health, education, water) has increased in Wave 2.** Satisfaction with different aspects of services (for example, the number and quality of teachers, class size, school infrastructure/equipment, availability of medicines, waiting time in health centres, qualified personnel, etc.) has improved quite uniformly across waves. This improvement might be attributed to post-conflict rehabilitation efforts by the aid agencies. During the initial phase of post-conflict interventions, the emphasis was on recovering subsistence mechanisms through improving the food supply and delivering livelihood assistance (seeds, fertilisers). The restoration of infrastructure was a long-term strategy whose benefits were realised in Wave 2 (see Shah and Shahbaz, 2015, for details).

Using regression models to test for explanatory factors, we find that perception of safety has emerged as an important parameter. The results, however, are extremely inconsistent in terms of direction. **We find that when the level of perceived safety in a neighbourhood increases, households have better access to the health centre**, in the sense that the journey takes less time. On the other hand, **if an area is judged by most respondents to be safer, respondents there are likely to be less satisfied with the quality of health and educational services**. Thus, our hypothesis for a positive association between safety and satisfaction with services (health and education) is not accepted. However, **respondents in areas where the overall perception of safety (while moving outside village) improved in Wave 2, are more likely to report that their water is safe and clean.**

There are some other counter-intuitive relationships – for example, households who perceive that moving outside the village became less safe between waves are more likely to receive social protection. Neighbourhood safety is also negatively associated with perceptions of livelihood assistance, meaning that respondents in areas where the overall perception of safety improved between waves are less likely to report a positive impact from livelihood assistance. We also find that respondents from areas with a higher crime rate in Wave 2 (based on crimes reported in our sample) have better access to their water source, in terms of journey time. It is clear that perceptions of safety, and rates of petty crime, differ by location and are partly influenced by the presence of different security providers, notably the police or the Pakistan army. It is not clear, however, that there is any consistent link between security and service delivery and more needs to be done to understand how the providers of services (donors or government) fit into this picture.

We do find that households who had a migrant leave the household between waves or started to receive remittances, are less likely to be the recipient of any type of social protection or livelihood assistance. We infer that migration/remittances might have offset the need for social protection and livelihood assistance. Similarly, respondents in sampled households which had a migrant in Wave 2 (but not in Wave 1) were less likely to report a positive impact from livelihood assistance, implying that it became of less importance to their overall household income.

Somewhat surprisingly, we **did not find any association between knowledge about a community meeting and satisfaction with health and educational services, livelihood assistance or social protection. However, awareness of meetings about water is linked to greater dissatisfaction with water quality**.

Payment of fees is also linked with access to and satisfaction with services. For instance, payment of informal fees is associated with worse access to the health clinic and the boys' school, meaning longer journey times. The payment of formal or informal fees is also significantly associated with lower satisfaction with the health centre. We cannot be sure whether this is related to households becoming more stretched for cash as a result of newly-imposed fees, since our measure of wealth (MSI) is not an explanatory factor of any changes in access to basic services.

Food security is also an important explanatory variable for some outcome variables. The households which become more food insecure are likely to be less satisfied with health services than those which did not. Households whose food insecurity increased are also more likely to be the recipients of social protection but less likely to receive livelihood assistance.

8.4 Changes in the perception of governance

The respondents' perceptions of local and central governments have also changed between waves. Our primary indicators of perception were the questions: 'To what extent do the decisions of government reflect your priorities?' and 'Do you agree with the statement that the government cares about your opinion?'. These were asked for local and central government. It is worth noting that local government underwent a significant change between waves, in the sense that it was non-functioning in Wave 1 and run by unelected administrators, while in Wave 2 elections had been held so local governments had become more formally accountable.

Though the majority of respondents are still not positive about either local or central governments, there was a significant change (improvement) between the two waves. In Wave 1 more than 90% of the respondents felt that local and central governments 'never' or 'almost never' reflected their priorities but in Wave 2 this percentage dropped to around 75 %. Likewise, there was a similar response to the question of whether 'local and central governments care about my opinion', where a considerable percentage of respondents changed their opinion in a more positive direction – though, again, the majority perceive that the local and central governments never care about their opinions.

This change might be due to the different political set-up in the two waves. In Wave 1 there were no elected local governments in the study area and the local bureaucracy filled the gap, but during the second round of surveys elected local governments were functioning. Similarly, different political parties were in central government. This change between waves might have altered respondents' perceptions. Fair et. al. (2015) have argued that the effective government response after the conflict and floods led to a change in attitude towards government in conflict-affected regions of KP – although, the political parties in power during the conflict and subsequent rehabilitation phase ended up losing power in the elections of 2013.

Regression analysis allowed us to look into the circumstances associated with negative and positive change. On the whole, there were few statistically significant explanatory factors. **Change in household assets, food insecurity and perception of safety did not have a significant relationship with change in the perception of governance**, with one exception: households whose assets have increased are more likely to say 'yes' to the statement, 'decisions taken by local government reflect my priorities'.

Experiencing more shocks was strongly linked to worsening perceptions of government. For instance, respondents who have experienced economic and/or agricultural shocks in Wave 2, are more likely to say 'no' to the statement that local and/or central government cares about their opinions.

One of our core research questions is whether a link can be established between service delivery and state legitimacy, and here we test one aspect of legitimacy: people's perceptions of the government's responsiveness and reflectiveness. During this period, satisfaction with all basic services in our study improved. We do not, however, find a direct link between improvements in services and perceptions of

government, even taking into account all the other factors that might have swayed perceptions. We do, however, find that **respondents who experienced more problems with basic services in Wave 2 (than in Wave 1) have more negative perceptions of local and central government**, and that these results are stronger for local government.

Some other aspects of service delivery also have isolated links with government perceptions. Starting to pay official fees for the health service is significantly associated with the negative perceptions of local as well as central governments**. Respondents in households which started receiving social protection transfers in Wave 2 also tended to have a more positive opinion about the statement that the decisions of local governments reflect their priorities.** However, receipt of a social transfer did not have any significant impact on changes in perception of central government. Respondents who reported that the government was responsible for the source of their drinking water in Wave 2 (though they reported sources other than the government in Wave 1) also tend to have more negative opinions about central government.

References

Amjad, R. and Arif G. M. (2014). 'Analysing the impact of overseas migration and workers' remittances in Khyber Pakhtunkhaw (KP): suggested measures for maximising development benefits'. Working paper F-37108-PAK-1. The International Growth Centre (IGC).

ADB (Asian Development Bank) and World Bank (2009) Preliminary Damage and Needs Assessment Immediate Restoration and Medium Term Reconstruction in Crisis Affected Areas: Education Sector. Islamabad: ADB and World Bank.

ADB (Asian Development Bank), EC (European Commission), UN and World Bank (2010) Post-crisis Needs Assessment: Khyber Pakhtunkhwa and Federally Administered Tribal Areas. Islamabad: Government of Pakistan.

Alam, A. (2012). Women Role and Status in Pukhtoon Society: A Case Study of Village Sufaid Dheri, Peshawar. International Journal of Learning & Development 2012, Vol. 2, No. 3

Ali, M. (2015) Aid effectiveness in poverty alleviation in a post-conflict, post-disaster situation: A case study of Swat district, Pakistan. PSSP Working Paper 29. Washington, DC: IFPRI.

Awan, M. T., Khan, S and Khan, N. (2013). 'Assessing utilization patterns of remittances at household level in District Peshawar, Khyber Pakhtunkhwa, Pakistan', International Journal of Arts and Commerce, 2(4), 172-183.

Bangash, S. (2012). Socio-economic conditions of post-conflict Swat: A critical appraisal. TIGAH, a Journal of Peace and Development. volume: II, December 2012, FATA Research Centre, Islamabad

Bardasi, E., Beegle, K., Dillon, A. and Serneels, P. (2010) 'Do labor statistics depend on how and to whom the questions are asked? Results from a survey experiment in Tanzania'. Policy research working paper 5192. Washington, D.C.: World Bank.

Baum, C. (2006) An introduction to modern econometrics using Stata, 1st edition. Texas, USA : StataCorp LP

Bhatti, H. A. (2015). 'Development and conflict: The economic impacts of civil war in Swat: Pakistan'. Ph.D thesis. University of Waikato.

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

Brick, J. M., & Kalton, G. (1996). Handling missing data in survey research. Statistical Methods in Medical Research, 5(3), 215-238. doi:10.1177/096228029600500302

Call, C. T. and E. M. Cousens (2008). Ending wars and building peace: international responses to war-torn societies. International Studies Perspectives (2008) 9, 1–21.

Clarke et al. (2010) The choice between fixed and random effects models: some considerations for educational research. DoQSS Working Paper No. 10-10. Institute of Education. Available at http://repec.ioe.ac.uk/REPEc/pdf/qsswp1010.pdf

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

Denney, L., Mallett, R. and Mazurana, D. (2015). 'Relevance: why service delivery matters for peace building'. Thematic paper on peace building and service delivery. Centre for Policy Research, United Nations University.

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

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

Elahi, N. (2015). 'Development in Crisis: Livelihoods and Social Complexities in Swat, Khyber Pakhtunkhwa, Pakistan'. PhD Thesis. Norwegian University of Life Sciences, NMBU, Norway.

Fair C., P. M. Kuhn, N. Malhotra and J. N. Shapiro (2015). Natural Disasters and Political Engagement: Evidence from the 2010-11 Pakistani Floods. Stanford University. http://web.stanford.edu/~neilm/FKMS.pdf

FAO (2016). 'Peace and Food Security: investing in resilience to sustain rural livelihoods amid conflict'. Food and Agriculture Organization of the United Nations.

Gioli G., Khan, T and Scheffran, J. (2013). 'Remittances and Community Resilience to Conflict and Environmental Hazards in Northwestern Pakistan'. The Frederick S. Pardee Center for the Study of the Longer-Range Future, Boston University.

Godamunne, N. (2015). 'The role of social protection in state legitimacy in the former conflict areas of Sri Lanka'. Secure Livelihoods Research Consortium Report 6. Overseas Development Institute UK.

Government of KP (2014). 'Development Statistics of Khyber Pakhtunkhwa' Bureau of Statistics Planning & Development Department, Government of Khyber Pakhtunkhwa.

Government of Pakistan (2010). 'Post Crisis Needs Assessment: Khyber Pakhtunkhwa & Federally Administered Tribal Areas'. Government of KP, and the FATA, Pakistan.

Government of KP. (2015). 'Reclaiming Prosperity in Khyber Pakhtunkhwa: A Medium Term Strategy for Inclusive Growth'. International Growth Centre, Pakistan Program. Planning & Development Department, Government of Khyber Pakhtunkhwa (KP), Peshawar

Government of Pakistan (2016). Lower Dir district at a glance. Pakistan Bureau of Statistics. Statistics House, 21-Mauve Area, G-9/1, Islamabad, Pakistan.

Haar, R.J and Rubenstein, L. S. (2012) 'Health in post-conflict and fragile states'. United States Institute of Peace, Washington, DC.

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

Hayat, A. (2014). 'Strategy not tactics: better governance for social stability in Pakistan'. Institute for Policy Reforms.

Hendrix, C and Brinkman, H (2013). 'Food Insecurity and Conflict Dynamics: Causal Linkages and Complex Feedbacks'. Stability: International Journal of Security & Development, 2(2): 26, 1-18.

Husain, T., Khan, A.I., Garner, D and Khattak, A.I. (2014). Khyber Pakhtunkhwa Reconstruction Program Mid-Term Performance Evaluation Report. USAID, Pakistan

Irfan, M., Arif, G. M., Ali, S.M, Nazli, H. 1999. The Structure of Informal Credit Market in Pakistan. Research Report No. 168. ISBN 969-461-079-6. Pakistan Institute of Development Economics, P. O. Box 1091, Islamabad.

Khan, J and Khan, A. (2015). 'Incidence of dengue in 2013: Dengue outbreak in District Swat, Khyber Pakhtunkhwa, Pakistan'. International Journal of Fauna and Biological Studies, 2(1), 1-7.

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

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

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

Kosec, K and H. M. Cecilia (2015). Aspirations and the Role of Social Protection: Evidence from a Natural Disaster in Rural Pakistan. http://cpd.berkeley.edu/wp-content/uploads/2015/10/Aspirations_Pakistan_2015_1002.pdf

Mallett, R., Hagen-Zanker, J., Slater, R and Sturge, G. (2015) 'Surveying livelihoods, service delivery and governance: baseline evidence from the Democratic Republic of Congo, Nepal, Pakistan, Sri Lanka and Uganda'. SLRC Working Paper 31. London: Secure Livelihoods Research Consortium.

Maxwell, Dan & Caldwell, Richard (2008) 'The Coping Strategies Index: Field Methods Manual', Cooperative for Assistance and Relief Everywhere, Inc. (CARE)

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

Nyborg, I., Nawab, B., Khan, K. and Ali, J. (2012). Rural development in Swat, Pakistan: Understanding Food and Livelihood Security in Post-Conflict Contexts. Noragric Report No. 62. Department of International Environment and Development Studies.

Pascal Marino, P. 2005. Beyond Economic Benefits: The contribution of microfinance to post-conflict recovery in Asia and the Pacific. The Foundation for Development Cooperation Brisbane, Australia.

Pritchett, L., Woolcock, M. and Andrews, M. (2012) 'Looking like a state: techniques of persistent failure in state capability for implementation'. Working paper 239. Cambridge, MA: Center for International Development, Harvard University.

PPAF (2014). Development Profile of Lower Dir dostrict. Situation Analysis & Baseline Surveys For Poverty Reduction through Rural Development in KPK, FATA & Balochistan. Pakistan Poverty Alleviation Fund.

Rabe-Hesketh, S., & Skrondal, A. (2008). Multilevel and longitudinal modeling using Stata. STATA press. Pp 96 and 159 in particular

Rehman, A., 2014. Swat: an unquiet calm. Dawn Karachi. http://www.dawn.com/news/1133198

Särndal, C.-E. and Lundström, S. (2005). Estimation in Surveys with Nonresponse. Chichester, UK: Wiley.

SLRC (2015) The first round of the SLRC Panel Survey: The Process Paper

Shah, Q.A and B. Shahbaz. (2015). 'Perceptions of post-conflict livelihood interventions in Khyber Pakhtunkhwa, Pakistan: targeting, access and relevance'. SLRC Working Paper 29. London: Secure Livelihoods Research Consortium.

Shahbaz et al. (forthcoming). 'Local Institutions in conflict-affected Khyber Pakhtunkhwa, Pakistan'. SLRC Working Paper series. London: Secure Livelihoods Research Consortium.

Shams-ur-Rehman, G. (2015). Pashtunwali and Islam: The Conflict of Authority in the Traditional Pashtun Society. Pakistan Journal of Social Sciences (PJSS) Vol. 35, No. 1 (2015), pp. 297-307

Slater, R., Merry, E., de Bibiana M.T. and Jang, S . (2016). Service delivery in fragile settings. Forum Policy Brief No. 12. Stockholm International Peace Research Institute.

Suleri, A. Q. and Haq, S. (2009). 'Food Insecurity in Pakistan'. Sustainable Development Policy Institute, Islamabad, Pakistan.

Suleri, A.Q., Shahbaz, B. and Shah, Q.A. (2016). 'Recovering from war and living in hope: Fruit and vegetable markets in Pakistan's Swat Valley'. SLRC Working Paper 43. London: Secure Livelihoods Research Consortium.

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

UNDP (2012) 'Perception survey on Reconciliation in Malakand Division', United Nations Development Programme and SDPI, Islamabad, Pakistan.

UNDP (2016). 'Community Resilience in Malakand, Khyber Pakhtunkhwa'. United Nations Development Programme, Islamabad, Pakistan.

Wahid, F and Rehman, Z.U. (2014) Share of the Informal Loans in Total Borrowing in Pakistan: A Case Study of District Peshawar, Journal of Managerial Science, 8(1), 104-113.

WFP (2015). 'Khyber Pakhtunkhwa Food Security Phase Classification' Integrated Food Security Phase Classification. World Food Programme, Islamabad.

World Food Programme (WFP) (2015) Integrated Food Security Phase Classification – Khyber Pakhtunkhwa. Retrieved from https://www.humanitarianresponse.info/en/system/files/documents/files/kp_ipc_jun_2015.pdf

Appendix: Complete 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 section 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)[51]. For the function that relates x to y there is the unobserved error term ε for each individual[52]:

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

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 which 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 which 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.)

---

[51] 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).

[52] This section acknowledges its debt to Baum 2006, Chapter 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). Yet the assumption that individual effects are randomly distributed is rather strong. 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.[53] 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.

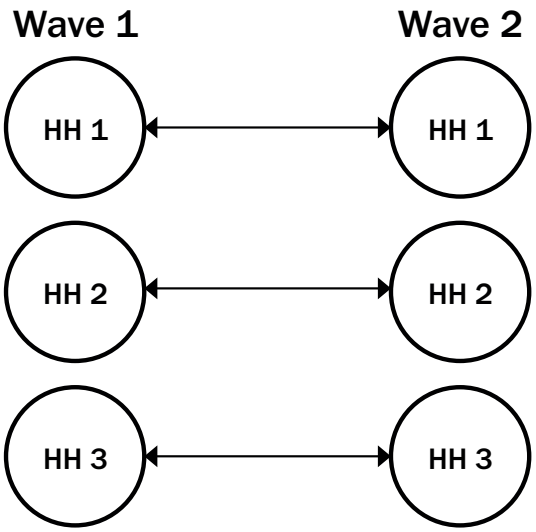
A drawback of the FE model is that it cannot estimate the effect of time invariant variables. This is because when 'controlling for' the unobserved differences between individuals, the model can only estimate within-individual effects. These rely on there being a change between waves 1 and 2 for a given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

[53] 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 & Skrondal (2008) and Dougherty (2011), Chapter 14.

Figure 22: An illustrated example of the difference between FE and RE models.

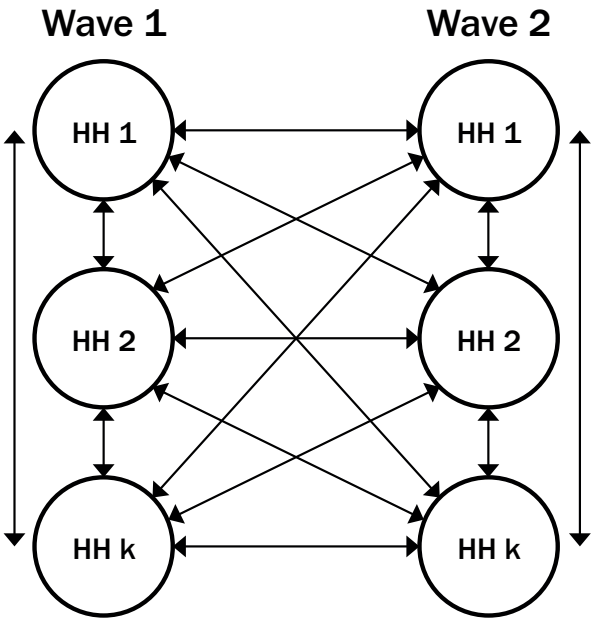
In this example there are three households, each represented by a circle. There are two panel waves and each household has an observation in both. Assume each household has a value for Coping Strategies Index (CSI) wherever that household appears. We are testing the effect of CSI on an outcome variable, 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 is both a conceptual and statistical decision. It is possible to test whether the assumptions of the RE model *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 to correct 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.[54] 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 which 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.

[54] '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.

Secure Livelihoods Research Consortium

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

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

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

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

ODI
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
WAGENINGEN UNIVERSITY WAGENINGEN UR

Secure Livelihoods Research Consortium

Researching livelihoods and services affected by conflict

Tracking change in livelihoods, service delivery and state legitimacy

Evidence from a 2012–2018 panel survey in Pakistan

Antoine Lacroix, Gemma Hennessey and Jessica Hagen-Zanker

October 2019

Contents

Tables

Figures

1 Introduction

Following surveys in 2012 and 2015, a third and final round of the SLRC panel survey was conducted in Pakistan in 2018, in which 1,764 of the original 2,114 respondents were re-interviewed, providing a third wave of data for longitudinal analysis. This paper presents the findings of the panel survey across the three waves. The survey was conducted in three union councils (UCs) in Swat (Baidara, Bar Abakhel and Charbagh) and two UCs in Lower Dir (Haya Sarai and Lal Qila) during August and September 2018. All settlements/villages were sampled within each UC and the same number of respondents was selected from each settlement/village within each UC. The strategy was to interview the same respondents interviewed in 2012, even if they had moved. In 2018, the same methodology was used with slight changes in the questionnaire. We interviewed the same person to measure changes over time across the waves.

The survey covered the following themes of the SLRC research agenda:

1. 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?
2. 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?

The paper is structured as follows. Section 2 presents the survey methodology for Pakistan in greater detail, discussing the specific sampling methods used and describing the basic characteristics of the final sample. Section 3 describes some of the major changes that have taken place in the sample between the first and second waves of data collection that may have a bearing on changing livelihoods and wellbeing, access to and satisfaction with services, and perceptions of government actors. Sections 4–6 constitute the analytical core of the paper, respectively exploring which factors influence livelihood status; which factors influence people's access to and experience of services and social protection; and which factors influence people's perceptions of governance. Section 7 concludes with initial policy implications and suggestions for additional research moving forwards.

2 Methods

2.1 Design process

2.1.1 Changes to the survey instrument

Conducting a panel survey implies asking the same questions so that changes can be measured over time. In each of the SLRC panel survey countries, some minor changes were made to the survey instrument between waves. These were of two types: (1) the addition of questions or choice of answers in order to capture changes in context or circumstances; and (2) the removal of redundant questions. The addition of new questions or answers explains why in some cases analysis is available for the only third wave.

In Pakistan, one module was added to the third-wave survey instrument. Concerning state legitimacy, the new module was added to the end of the survey to avoid disrupting the flow and to ensure greater consistency between waves.

2.1.2 Timing of survey

The baseline survey was conducted in September and October 2012. Fieldwork for the third wave took place from August 2018, to prevent a clash with the elections scheduled for later that year; this was at a similar time as for wave 2. There was a break for Eid festivities. The tracking of missing respondents continued until October 2018.

2.1.3 Data collection

Preparation for the data collection consisted of a five-day training, the purpose of which was to familiarise enumerators with the objectives of the survey and the content of the survey instrument and to give them interview practice. The training sessions were designed in a participatory manner, in order to engage the participants through practice interviews and exercises.

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. This included their address, phone number (for some respondents), and the household roster (in order to describe the household to others living in the same community). Furthermore, in order to prepare for the third wave of the survey, respondents were already tracked down in July 2018. A small team of enumerators attempted to establish the whereabouts of all respondents and informed them that another round of the survey would take place. The pre-test found a high attrition rate of 17%, with attrition somewhat higher in Lower Dir.

The sample size in 2012 was calculated to equal 120% of what would be needed in order to achieve statistical significance at the study and village level, and representativeness at the village level. This meant that in the second wave it would be necessary to find approximately 83% of the original respondents in order to maintain statistical power at those levels (an attrition rate of 17%). Given the expectation of high attrition established by the pre-test, local consultants were hired to locate respondents and to establish trust among local people prior to the enumerators arriving in the field. During the first ‘phase’ of fieldwork, enumerators tried to locate each respondent at least once. The reasons for not being able to find respondents included: incorrect data on the respondent having been recorded at baseline, suspicion and security threats (both general and directed at the field team), and the difficulty of locating male respondents during business hours.

Ideally, when not all missing respondents can be intensively tracked due to resource constraints, a random selection would be drawn to be tracked, so as to minimise the risk of bias from convenience

sampling. However, in practice there was no alternative but to track those located in the most accessible locations.

Sampling and weighting for non-response

The first round of the survey was conducted in Swat and Lower Dir districts of KP between September and October 2012. Both of these districts were selected purposively because of the violent conflict[1] that engulfed both districts during 2007–2009, and immediately after the war both districts were severely affected by the floods in 2010. From each of the two districts, five union councils (UCs) were selected: three from Swat (Charbagh, Baidara and Bar Abakhel) and two from Lower Dir (Haya Serai and Lal Qila). The criteria for selection of UCs was conflict and flood-affectedness and the rehabilitation by the national and international agencies. The baseline survey was representative at the UC level and the sample size was calculated using 95% confidence level and a confidence interval of 5. The sample was increased by 20% to account for possible future waves, to ensure the sample size in later waves is likely to still be statistically significant. Households were selected randomly and about 34% of the respondents were females.

At the baseline there were 2,114 completed surveys (or responses). In the second wave we were able to complete 1,762 (4 additional respondents were found but did not consent to be interviewed). Attrition overall was 17% and non-random, partly since it had not been possible to randomise the tracking of respondents who had moved houses between waves. In wave 3, 1,764 respondents were found. As Table 1 illustrates, attrition level overall was 17%, mostly accounted for by the lower attrition rate in Swat (14%) than in Lower Dir (21%). In Swat, more respondents were found in two UCs – Charbagh and Bar Abakhel – than were found in wave 2, so the response rate was actually higher in wave 3 than in wave 2. This was assumed to be a result of migrants having returned home for Eid and to vote in the elections.

Of those who were not re-interviewed, 81 had died between waves 2 and 3. Of the 125 reported as migrants, half had migrated within Pakistan, and the other half had migrated internationally. Only one woman had migrated internationally, to Saudi Arabia. Nearly all the other (male) international migrants had migrated to Saudi Arabia, and 5 to UAE, 1 to Italy and 1 to Malaysia. Nearly all international migrants migrated for work.

Table 1: Number of respondents and attrition by union council

				Wave 3		
District	**Union Council**	**Wave 1**	**Wave 2**	**Wave 3**	**Response rate %**	**Attrition %**
Lower Dir		**844**	**705**	**666**	**78.9**	**21.1**
	Haya Serai	421	348	355	84.3	15.7
	Lal Qila	423	357	311	73.5	26.5
Swat		**1,270**	**1,057**	**1,098**	**86.5**	**13.5**
	Charbagh	414	334	356	86.0	14.0
	Baidara	433	374	372	85.9	14.1
	Bar Abakhel	423	349	370	87.5	12.5
Total		**2,114**	**1,762**	**1,764**	**83.4**	**16.6**

To minimise attrition bias, non-response weighting adjustments are used in the wave 3 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,

[1] Occupation of Swat by Taliban and then war between the Pakistani army and Taliban militants.

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 was necessary to adjust the design weight to restore the proportions of the original sample (Kish, 1990; Brick and Kalton, 1996). See Appendix 1 for full weighting methods.

Analytical methods

When it came to analysing the data, the complexity of the dataset could pose a serious challenge. There are now up to three 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 individual factors which 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. In the context of panel data, there is a danger that these things will be correlated over time, for example that some people will always be more negative than others, and that the models used in cross-sectional analysis may not account for this.

When it comes to modelling such a relationship, there are ways of addressing this bias. One approach is to assume that these individual differences are 'randomly' distributed across individuals and uncorrelated with everything else in the model. This is known as the random effects (RE) model An alternative model, the fixed effects (FE) model, rejects this assumption and assumes that there is a correlation between the individual-level effects and the repressors.

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. 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.

Note on the interpretation of the fixed effect regressions

As explained in Appendix 1, the fixed effects model estimates correlation between changes *within* households as opposed to *across* households as it is done in a standard regression analysis with cross-sectional data. Therefore, when estimating a fixed effects model, we are looking at whether changes in our dependent variable are correlated with changes in the explanatory variables over time within each household. As this is a three-wave panel survey, there are three observations per household to estimate the co-movement of the variables of interest. When describing the correlation between changes in our variables, changes have to be understood as average changes across the three waves. In fact, the model chosen does not take into account in which year the changes have happened.

Outline of analysis

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 all three waves and the number of 'switchers and stayers' between waves. This terminology (our own) refers to the differentiation between respondents who kept their answer to a given question the same between waves and those who switched their answer. Switching is often further disaggregated into an 'upward' or 'downward' switch, or similar. The outcome variables of interest are broadly the same as in the baseline analysis (Shahbaz et al., 2014) and are shown in Table 2.

Table 2: Summary of outcome variables

	Outcome area	Outcome indicators	Explanation of indicators
1	Livelihoods and wellbeing	CSI and FCS	Indexes capturing: (1) the level of household food insecurity, and (2) the quantity and quality of food (see Maxwell and Caldwell, 2008; Vaitla et al., 2015).
2		Morris score index	An index measuring household asset wealth (see Morris et al., 1999)
3	Access to basic services	Access to health centre	Journey time (in minutes) to reach the health centre that the respondent typically uses
4		Access to school	Journey time to reach the primary school that children attend
5		Access to principal water source	Time (in minutes) taken for a return journey to the household's main source of drinking water
6		Access to social protection	Has anyone in the household received a social protection transfer in the past year?
7		Access to livelihood assistance	Has anyone in the household received a livelihood assistance transfer in the past year?
8	Experience of basic services	Satisfaction with health centre	Overall satisfaction with the health centre.
9		Satisfaction with school	Overall satisfaction with the school. (Only possible to run regression for boys' schooling)
10		Perception of water quality	Is your drinking water clean and safe? (yes/no)
11	Perceptions of governance and state legitimacy	Perception of local government	1. Do you agree with the statement: The local government is concerned about my opinion? (yes/no) 2. To what extent do you feel that the decisions of those in power at the local government reflect your own priorities? ('Never' to 'Completely')
12		Perception of central government	1. Do you agree with the statement: The central government is concerned about my opinion? (yes/no) 2. To what extent do you feel that the decisions of those in power at the central government reflect your own priorities? ('Never' to 'Completely')
13		Government perception index	Indexes comprised of the perception of local and central government variables
14		State legitimacy index	Index comprised of the state legitimacy variables, wave 3 only

3 The changing context in the survey sites

3.1 Conflict

Respondents were asked whether there has been any fighting between the army or the police and Taliban militants in the area in the last three years (Table 3). Nearly all respondents in wave 1 reported fighting in the area, however in waves 2 and 3 (after 2015), there were very few reported incidents of fighting in our sampled areas.

Table 3: Experience of fighting in the past three years

	Wave 1		Wave 2		Wave 3	
Has there been fighting in this area in the last three years?	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
No	16	0.8	1,990	95.9	1,976	93.5
Yes	2,098	99.2	85	4.1	138	6.5
Total	2,114	100.0	2,075	100.00	2,114	100.0

Note: T-tests of proportions were run on the difference of fighting between waves. Both the difference in proportions between waves 1 and 2 and between waves 2 and 3 were statistically significant at the 1% level.

Looking at breakdown between districts, almost all households in both districts reported conflict in wave 1, but in wave 2 the number of respondents reporting fighting in Swat was almost negligible (1%), and higher in Lower Dir (9%) (Table 4). For wave 3, the number of households reporting fighting in the past three years remained the same in Lower Dir, but in Swat increased to 5% of households.

Table 4: Experience of conflict in the past three years, by district

	Wave 1		Wave 2		Wave 3	
District	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Lower Dir	834	98.8	70	8.7	72	8.5
Swat	1,264	99.5	14	1.1	66	5.2
Total	2,098	88.3	84	4.3	138	6.5

Note: A two-sample test of proportions was run on the difference of fighting between districts in each wave. The differences in proportions between Lower Dir and Swat were statistically significant (at the 10% level) in waves 1, 2 and 3 (at the 1% level).

3.2 Shocks

Table 5: Change in number of shocks experienced

Survey wave	Average number of shocks
Wave 1	2.1
Wave 2	1.4
Wave 3	1.8

Note: A two-sample t-test was run to compare the difference in means between waves 1 and 2 and between waves 2 and 3. In each case, the difference in means was statistically significant at the 1% level.

The survey also asked respondents about different shocks the household may have experienced in the past three years. Between wave 1 and wave 2 the average number of shocks per households decreased and then it went up again between wave 2 and wave 3, to reach a level of 1.8 shocks

experienced per household over the last three years (Table 5). We can see that Table 6 confirms this trend; the probability of having experienced any kind of shock between waves has increased from 67.6% to 80.2%. This is mainly due to a sharp increase in the occurrence of shocks in Swat.

Table 6: Changes in the frequencies and percentages of households experiencing any kind of shocks

	Wave 1		Wave 2		Wave 3	
	Freq.	%	Freq.	%	Freq.	%
Swat	979	77.1	746	58.7	980	77.1
Lower Dir	549	65.1	683	80.9	715	84.7
Overall	1,528	72.3	1,428	67.6	1,694	80.2

The disaggregated figures per type of shocks in Table 8 shows that this substantial increase in Swat is mainly due to the increase in the occurrence of sudden health problems. The fact that the rise in the number of sudden health problems has been concentrated in only one of the districts contradicts the hypothesis that this increase would be due to an increase in the age of the sample. Furthermore, an analysis of the link between the age and the occurrence of health problem shows that the age of the oldest person in the household and the average age of the adults of the household is significantly linked with the occurrence of long-term health problems only, and not with the occurrence of a sudden health problem, holding everything constant. In other words, there is evidence to show that an increase in the age of the adult household members is linked to an increase in long-term health problems only. In conclusion, as opposed to the sharp rise in sudden health problems in Swat, the increase in long-term health problems observed across both districts is probably partly explained by the ageing of the households comprising the panel survey. In fact, we can see in Table 7 that the households got older on average by 1.24 years between wave 1 and wave 2, and by two years between wave 2 and wave 3.

Table 7: Evolution of the average age per household across the three waves, with the average and median change between wave 1 and 2, and 2 and 3

	Wave 1	Wave 2	Wave 3	Change wave 1–2	Change wave 2–3
Mean	24.21	25.13	27.03	1.24	2.00
Median	23.50	24.27	26.43	1.71	2.38

Reporting of economic shocks of inflation or price hikes was high in wave 1 (and very high in Swat with 85% of households), but dropped in wave 2 (35% in Swat and 4% in Lower Dir). However, in wave 3, reporting of economic shocks increased again with 54% of households in Swat and 37% in Lower Dir having experienced economic shocks between waves 2 and 3. The trend of fewer households reporting problems with loss of crops or livestock between waves 1 and 2 continued in wave 3.

Table 8: Households who experienced different types of shocks (during the past three years)

		Wave 1		Wave 2		Wave 3	
		Freq.	%	Freq.	%	Freq.	%
House fire	Lower Dir	7	0.8%	19	2.2%	34	4.0%
	Swat	84	6.6%	20	1.6%	43	3.4%
Sudden health problem or accident	Lower Dir	150	17.8%	475	56.3%	436	51.7%
	Swat	151	11.9%	380	29.9%	731	57.6%
Long-term health problem	Lower Dir	142	16.8%	376	44.5%	508	60.2%
	Swat	175	13.8%	353	27.8%	420	33.1%
Death of a family member	Lower Dir	55	6.5%	87	10.3%	85	10.1%
	Swat	112	8.8%	104	8.2%	82	6.4%
Inflation and price hikes	Lower Dir	718	85.1%	299	35.4%	459	54.4%
	Swat	616	48.5%	46	3.6%	474	37.3%
Loss of work of a household member	Lower Dir	7	0.8%	30	3.6%	53	6.3%
	Swat	76	6.0%	24	1.9%	37	2.9%
Loss of land/assets	Lower Dir	23	2.7%	22	2.6%	20	2.4%
	Swat	142	11.2%	12	0.9%	12	1.0%
Land grabbed	Lower Dir	1	0.1%	13	1.5%	16	1.9%
	Swat	5	0.4%	6	0.5%	4	0.3%
Failure or loss of family business	Lower Dir	15	1.8%	52	6.2%	22	2.6%
	Swat	50	3.9%	28	2.2%	19	1.5%
Low market prices for livestock/crops	Lower Dir	2	0.2%	13	1.6%	6	0.7%
	Swat	39	3.1%	23	1.8%	22	1.7%
Poor market access	Lower Dir	1	0.1%	6	0.7%	0	0.0%
	Swat	75	5.9%	11	0.9%	8	0.6%
Loss of crop(s)/livestock	Lower Dir	309	36.6%	230	27.2%	44	5.2%
	Swat	392	30.9%	93	7.3%	39	3.1%
Loss of housing	Lower Dir	118	14.0%	34	4.0%	41	4.8%
	Swat	510	40.2%	36	2.8%	30	2.4%
Soil problem/losing fertility	Lower Dir	275	32.6%	29	3.4%	24	2.8%
	Swat	40	3.1%	8	0.7%	9	0.7%
Imprisonment	Lower Dir	0	0.0%	8	1.0%	2	0.3%
	Swat	18	1.4%	7	0.6%	0	0.0%
Loss of irrigation channel	Lower Dir	1	0.1%	19	2.3%	37	4.4%
	Swat	26	2.0%	31	2.5%	19	1.5%

3.3 Experience of crime

Experiences of crime have also changed across waves. In wave 1, 18% of households had experienced any crime in the past three years, compared to 7% in wave 2 and increasing to 12% in wave 3 (Table 9). However, across all waves, the majority of households reported that they did not experience any crime – eight out of ten households in wave 1, and nine out of ten households in waves 2 and 3.

Table 9: Frequency and percentage of households that experienced crime

Any crimes experienced	Wave 1		Wave 2		Wave 3	
	Freq.	%	Freq.	%	Freq.	%
No	1,733	82	1,968	93.1	1,857	87.9
Yes	381	18	146	6.9	257	12.1
Total	2,114	100	2,114	100	2,114	100

Note: A two-sample t-test was run to compare the probability of experiencing any crime between waves 1 and 2 and between waves 2 and 3. In each case, the difference in means was statistically significant at the 1% level.

Households that experienced crime were asked to indicate the nature of the crime (Table 10). After having fallen between wave 1 and wave 2 thefts have gone back up to 4.4% between wave 2 and wave 3. Verbal threats followed the same trend and increased to 4.7% between wave 2 and 3. While it was almost non-existent before wave 1, land-grabbing affected 1.8 and 2% of the households between waves 1 and 2 and between waves 2 and 3, respectively.

Table 10: Changes in types of crime in each wave

Experience of crime by wave	Wave 1		Wave 2		Wave 3	
	Freq.	%	Freq.	%	Freq.	%
Verbal threats	179	8.5%	43	2.1%	93	4.4%
Theft	198	9.4%	62	2.9%	100	4.7%
House break-in	97	4.6%	7	0.3%	9	0.4%
Abduction	6	0.3%	1	0.1%	2	0.1%
Robbery	8	0.4%	3	0.2%	8	0.4%
Revenge killing	0	0.0%	2	0.1%	0	0.0%
Murder	14	0.7%	2	0.1%	8	0.4%
Cattle rustling	18	0.9%	11	0.5%	18	0.9%
Child abuse	2	0.1%	0	0.0%	5	0.2%
Land-grabbing	2	0.1%	38	1.8%	43	2.0%
Sexual assault	1	0.0%	4	0.2%	0	0.0%
Physical attack	2	0.1%	4	0.2%	11	0.5%
Torture	21	1.0%	9	0.4%	27	1.3%

Respondents were asked how safe they felt in their neighbourhood. Between waves 1 and 2, there was a reduction in the proportion of respondents who felt very safe in their neighbourhood (mainly absorbed by an increased in the number of respondents who felt *quite* safe). However, in wave 3, there was an increase in the number of respondents perceiving their neighbourhoods to be safe, with three quarters reporting feeling very safe, and only 5% rather unsafe or not safe (Table 11).

Table 11: Perceptions of safety within the village across waves

	Wave 1		Wave 2		Wave 3	
	Freq	%	Freq	%	Freq	%
Very safe	1,794	84.9	1,145	54.3	1,611	71.8
Quite safe	283	13.4	781	37.1	378	17.9
Rather unsafe	28	8.1	172	8.1	117	5
Not safe	9	0.4	11	0.5	8	0.4
Total	2,114	100	2,109	100	2,114	100

We also analysed whether respondents felt more or less safe than in the previous wave (Table 12). More respondents switched to feeling less safe (40%) than more safe (9%) between waves 1 and 2, meanwhile respondents households (37%) felt *more* safe between waves 2 and 3 than less safe (14%). District-level data on neighbourhood safety shows that more respondents in Lower Dir felt less safe in wave 3 than in wave 2 (16%), compared to Swat where only 13% felt less safe in Wave 3.

Table 12: Change in the perception of safety within the neighbourhood, across waves by district

	Wave 1–Wave 2			Wave 2–Wave 3		
	Lower Dir (%)	Swat (%)	All (%)	Lower Dir (%)	Swat (%)	All (%)
No change	46.7	53.8	51.0	48.3	49.6	49.1
Less safe	42.6	38.2	39.9	16.2	13.3	14.4
More safe	10.7	8.0	9.1	35.5	37.1	36.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

Respondents were also asked about their perceptions of safety moving to other places *outside* of the neighbourhood. Again, there was a marked improvement in the numbers of respondents who perceive moving outside the village to be very safe. This comes after a marked decrease in perceptions of safety outside the village between waves 1 and 2 (Table 13).

Table 13: Perceptions of safety outside the village across waves

	Wave 1		Wave 2		Wave 3	
How safe do you feel moving around to other places	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
Very safe	1,495	71.6	745	35.7	1,437	68.0
Quite safe	230	11.0	1,077	51.7	562	26.6
Rather unsafe	226	10.8	241	11.6	110	5.2
Not safe	137	6.6	22	1.0	6	0.3
Total	2,088	100.0	2,084	100.0	2,114	100.0

The data on changes in perception of safety outside the village indicate the largest share of respondents felt more safe in wave 3 than in wave 2, after the majority of respondents felt less safe in wave 2 than in wave 1 (Table 14). There were more switchers (that is respondents who reported a change) between waves 2 and 3 in Lower Dir, with over half reporting feeling safer than in wave 2.

Table 14: Change in the perception of safety outside the village (by district)

	Wave 1–Wave 2			Wave 2–Wave 3		
	Lower Dir (%)	**Swat (%)**	**All (%)**	**Lower Dir (%)**	**Swat (%)**	**All (%)**
No change	30.8	31.5	31.2	34.2	42.9	39.5
Less safe	62.9	37.8	48	15.2	11.9	13.2
More safe	6.3	30.7	20.8	50.7	45.1	47.3
Total	100	100	100	100	100	100

There are also key differences between male and female respondents (Figures 1 and 2 below. While male respondents had a higher perception of safety inside the village in wave 1, it went down to a great extent in wave 2 to reach a level lower than the one of the female respondents. Differences between male and female respondents then almost disappeared in wave 3 after the proportion of respondents feeling very safe increased significantly for both sexes. As we can see in Figure 2, perception of safety outside the village shows a different pattern. Female perception of safety outside of the village was consistently lower than for male respondents across the three waves. It went down significantly in wave 2 before going back up in wave 2 to a level marginally lower than for male respondents.

Figure 1: How safe do you feel in neighbourhood/village? Percentages by gender

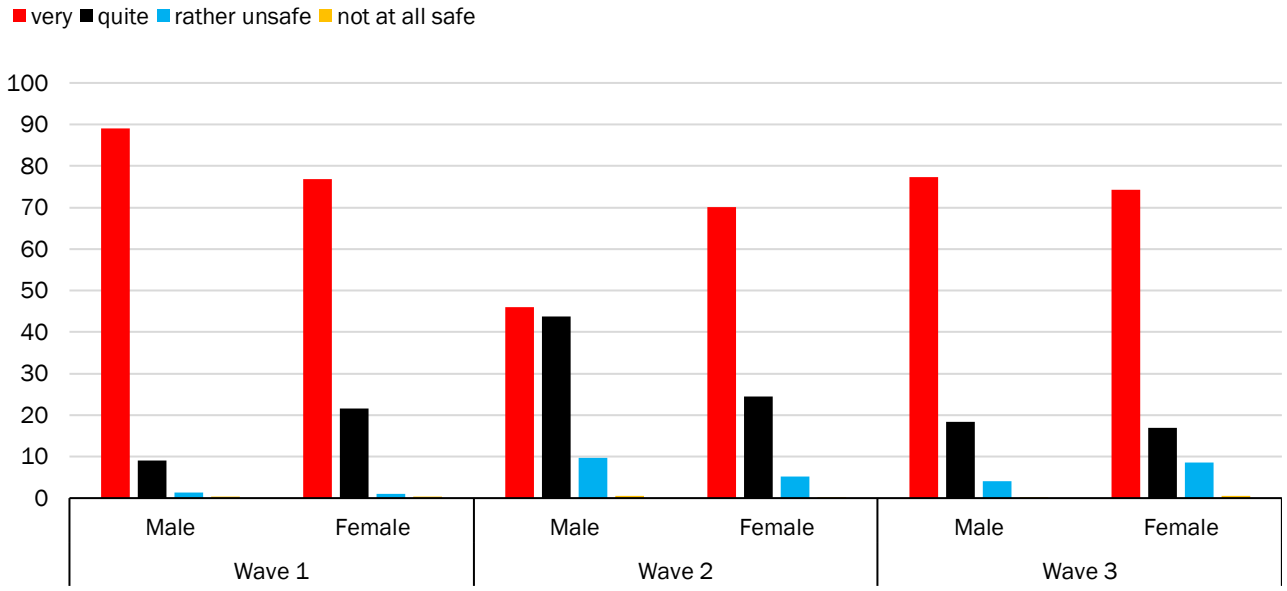
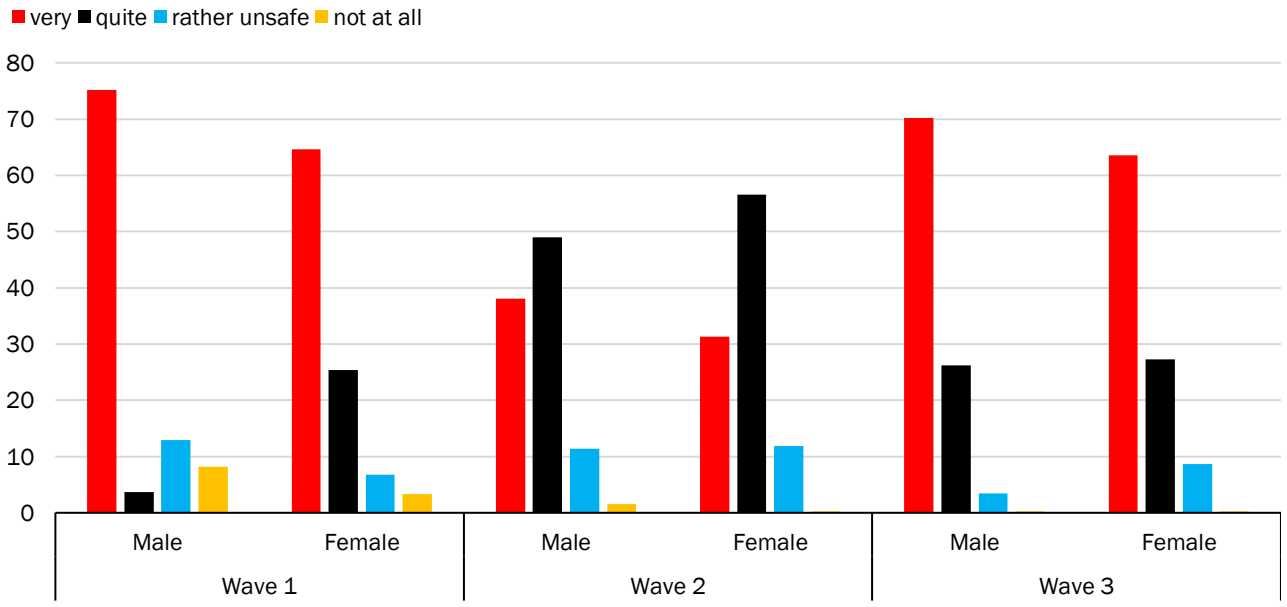


Figure 2: How safe do you feel moving outside the neighbourhood/village? Percentages by gender



A regression analysis (see annex 5) of the determinants of the perception of safety inside and outside of the village shows that the experience of crimes has a bigger effect on perception of safety *outside* of the village than on the perception of safety *inside* the village. The occurrence of fighting in the last three years has a moderately negative effect on the perception of safety outside of the village only. Households located in Swat have a much lower perception of safety both inside and outside of the village. Similarly, rural households tend to have a significantly lower perception of safety. Taking into account the other characteristics, the gender of the respondent does not appear to significantly influence the perception of safety. Finally, the analysis shows that the age of the respondents has no effect on the perception of safety.

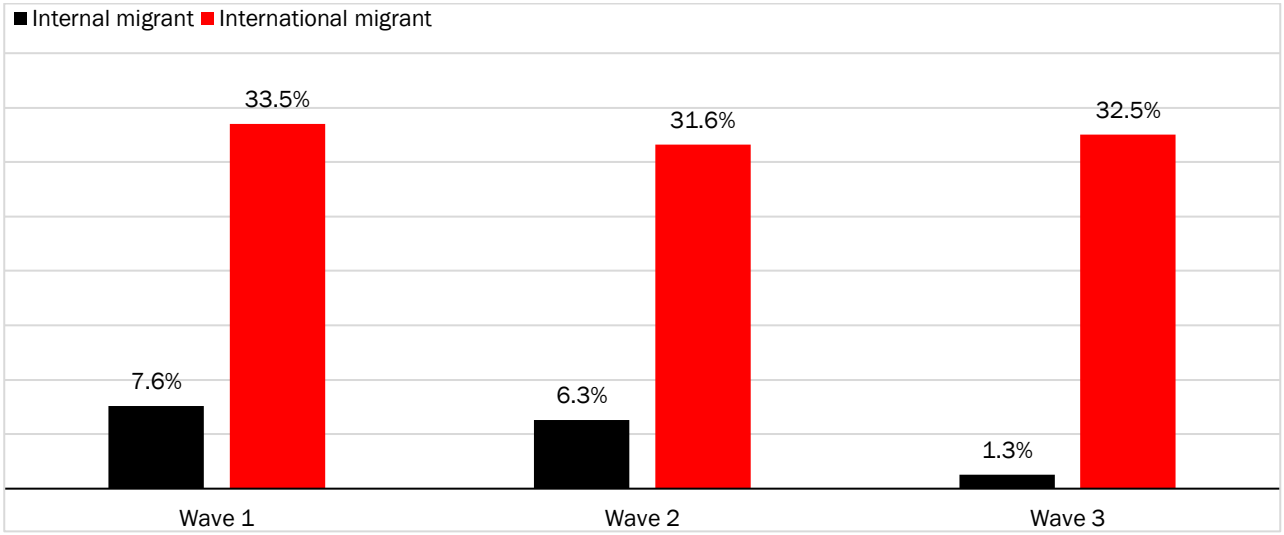
4 Changing livelihoods and wellbeing

This section presents the main findings for changes in the status of livelihoods and wellbeing for our sampled households. We use different indicators to understand the changes: the Morris score index (MSI) for household wealth and the coping strategies index (CSI) and food consumption score (FCS) for food insecurity, as well as information on livelihood activities, the role of migration and access to credit.

4.1 Migration and remittances

International migration is a common livelihood strategy for households within our sample, with a third of households having had a member migrate internationally within the last three years in all waves (Figure 3). Internal migration is far less common, and decreased across waves from being reported by 8% of respondents in wave 1 to 6% in wave 2 to just 1% in wave 3.

Figure 3: Has any member of your household migrated in the past three years?



Across all waves, approximately a third of households received remittances in the past three years, although the proportion has slightly decreased from 37% in wave 1 to 35% in wave 2 to 33% in wave 3 (Table 15).

Table 15: Households that received remittances in last three years

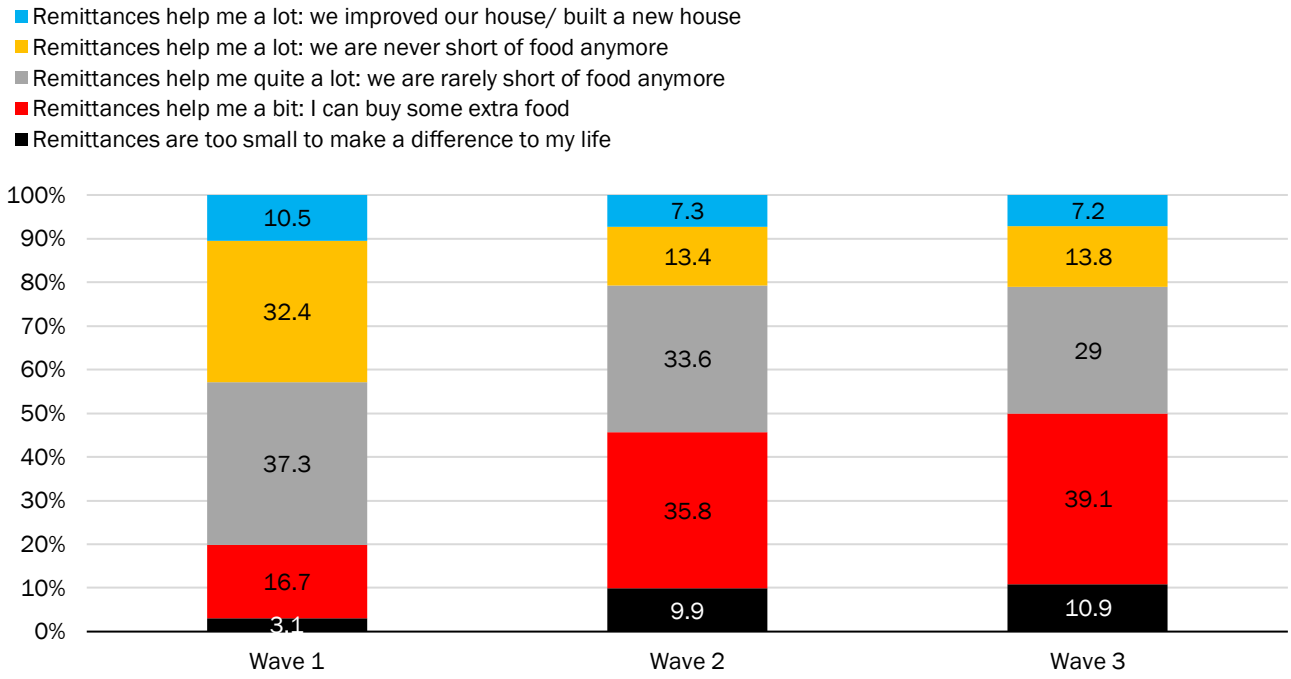
	Wave 1		Wave 2		Wave 3	
	Freq.	%	Freq.	%	Freq.	%
No	1,333	63.1	1,384	65.5	1,425	67.4
Yes	781	36.9	728	34.5	689	32.6
Total	2,114	100.0	2,112	100.0	2,114	100.0

Note: A two-sample t-test was run to compare the probability of receiving remittances between waves 1 and 2 and between waves 2 and 3. In none of the cases was the difference in means statistically significant.

To understand the changing role of remittances in our study area, recipient households were asked to describe how helpful remittances were for household wellbeing (Figure 4). Between waves 1 and 2, there was a reduction in the perceived helpfulness of remittances to households; in wave 3 usefulness remained at a similar level to wave 2, although there was a slight increase in those stating remittances are too small to make a difference and remittances help only a bit. In wave 3, 21% of recipient

households reported remittances help a lot and 11% that remittances were too small to make a difference.

Figure 4: Changes in the usefulness of remittances for household wellbeing

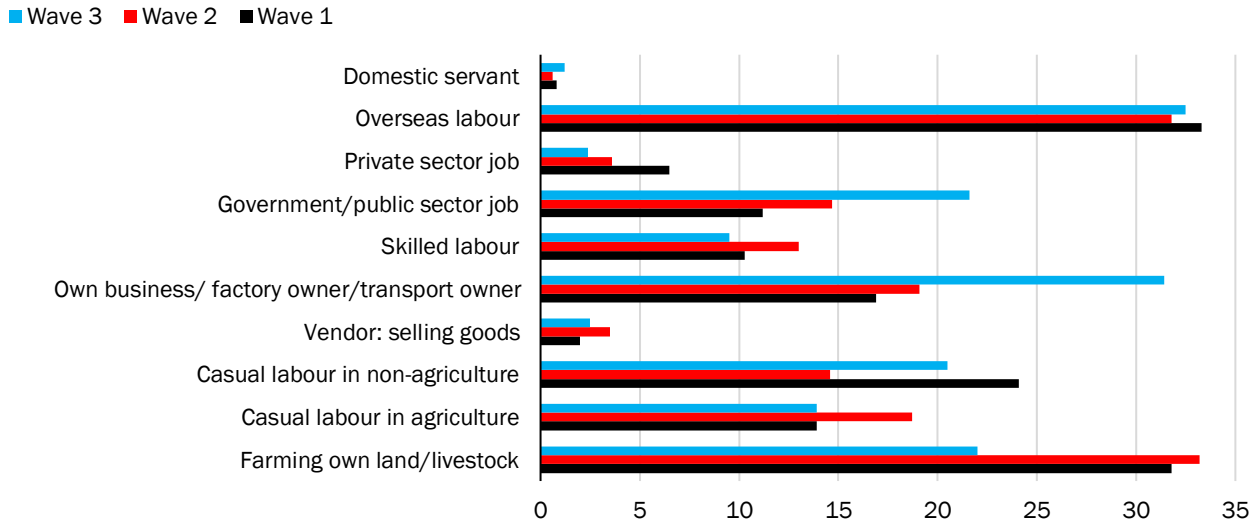


4.2 Livelihood activities

This section presents the main livelihood activities as well as the sources of income (cash and/or subsistence) of the households. We consider main activities in terms of both income earned and time spent. The main livelihood activities in terms of income are calculated at the household level – i.e. the activity/strategy contributing the most to the family income – while the main livelihood activity in terms of time is calculated at the individual level. Therefore, for the main activities in terms of time spent, the percentage displayed shows the share of households having at least one member participating in the livelihood activity considered in the past six months.

The first figure (Figure 5), presenting the main livelihood in terms of time spent shows that the share of households having at least one member participating in farming activities in the past six months fell to 22% in wave 2 from a level of 33% in wave 1. Interestingly, the percentage of households having one member working abroad or sending remittances went up slightly to 32% in the last wave, while the percentage of households for which remittances and overseas labour are the main activity decreased considerably to 25%.

Figure 5: Percentages of households having at least one member for which the livelihood activity is the main activity in the past six months (in terms of time spent)

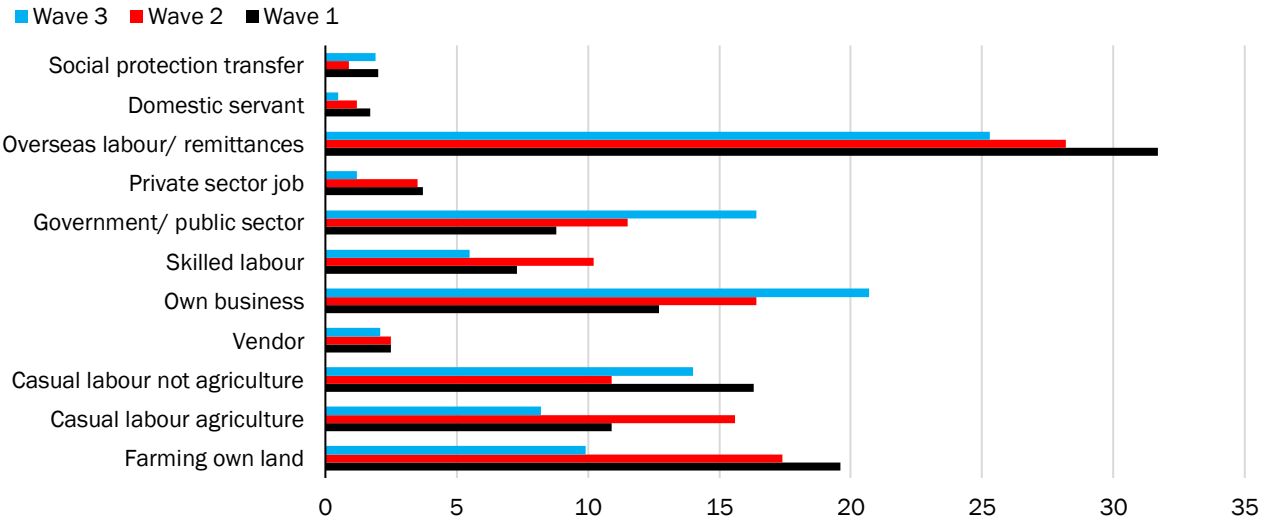


Note: The sums of the percentages for each wave exceed 100%, as most households have more than one member participating in any activity.

Figure 6 presents the main source of income of the households surveyed. As the main source of income is based on the share of each source in the total household income, changes in the share of each activity cannot be interpreted as changes in the average total amounts the activity brings to the household.

As mentioned above, contradicting the slight increase observed in the previous graph, the downward trajectory of the share of households for which overseas labour and remittances is the main source of income continued in wave 3. While it is still by far the biggest source of income, the average share dropped from 28% in wave 1 to 25% in wave 3. In line with Figure 5, the number of households reporting overseas labour as a source of income (so not their biggest income source) remains roughly the same at 34% however (see Table 16). This supports the indication that remittances tend to be slightly less important to households than they used to be in the two previous survey periods.

Figure 6: Percentages of households per main source of income in each wave



Note: The sums of the percentages slightly exceed 100%, as some activities have equal contribution to income.

We can observe in Table 16 that although 43% of the households have income from farming, farming activities are the main household income source for only 10% of the households. The percentages of households for which farming is the main income source continued decreasing sharply between waves 2 and 3. From a level of almost 20% in wave 1, the share of households for which farming is the main contributor to income is less than 10% in wave 3 (Figure 6).

Similarly, the percentages of households receiving the largest part of their income from casual labour in the agricultural sector substantially dropped between the last two waves. On the other hand, the share of households receiving earnings from public service jobs and own businesses continued on an upward trend and showed a significant increase in the last wave (Figure 6 and Table 16). Last, the percentages of households receiving social protection has considerably increased between wave 2 and wave 3, probably due to an increase in coverage of the Benazir Income Support Programme (BISP) and health card interventions in our sample. While many households receive social protection transfers, they are less significant in terms of size. Social protection transfers are the main source of income for a very small share of households (less than 3%).

Table 16: Share of households receiving earnings for each of the different income source across the three waves

	Wave 1		Wave 2		Wave 3	
	Freq.	%	Freq.	%	Freq.	%
Farming on own land/livestock	997	47.2	970	45.9	913	43.2
Casual labour (daily wage) in agriculture/farming/fruit picking & packing/forestry	311	14.7	506	24	297	14
Casual labour (daily wage) non-agriculture including construction, transport	492	23.3	325	15.4	436	20.6
Vendor: selling goods	47	2.2	88	4.2	59	2.8
Own business/transport/shop/food outlet	394	18.6	480	22.7	660	31.2
Skilled labour	205	9.7	309	14.6	196	9.3
Government/public sector job	235	11.1	343	16.2	457	21.6
Private sector job (non-agriculture)	127	6	102	4.8	45	2.1
Overseas labour/remittances	786	37.2	774	36.6	715	33.8
Domestic servant (work in somebody else's house as paid servant, in cash or kind)	21	1	24	1.2	27	1.3
Social protection transfer	433	20.5	118	5.6	748	35.4

4.3 Debt and access to credit

The proportion of households that currently owe money to anyone increased from 69% in wave 1 to 78% in wave 2, and slightly decreased to 76% in wave 3. Almost half of the households (44%) reported being in debt in all three waves – three in four households in wave 3. Only 5% of households didn't experience debt in any of the three waves, and around half of households were in debt in one or two of the three waves (Figure 7 and Table 17).

Figure 7: Changes in the percentage of households with debt

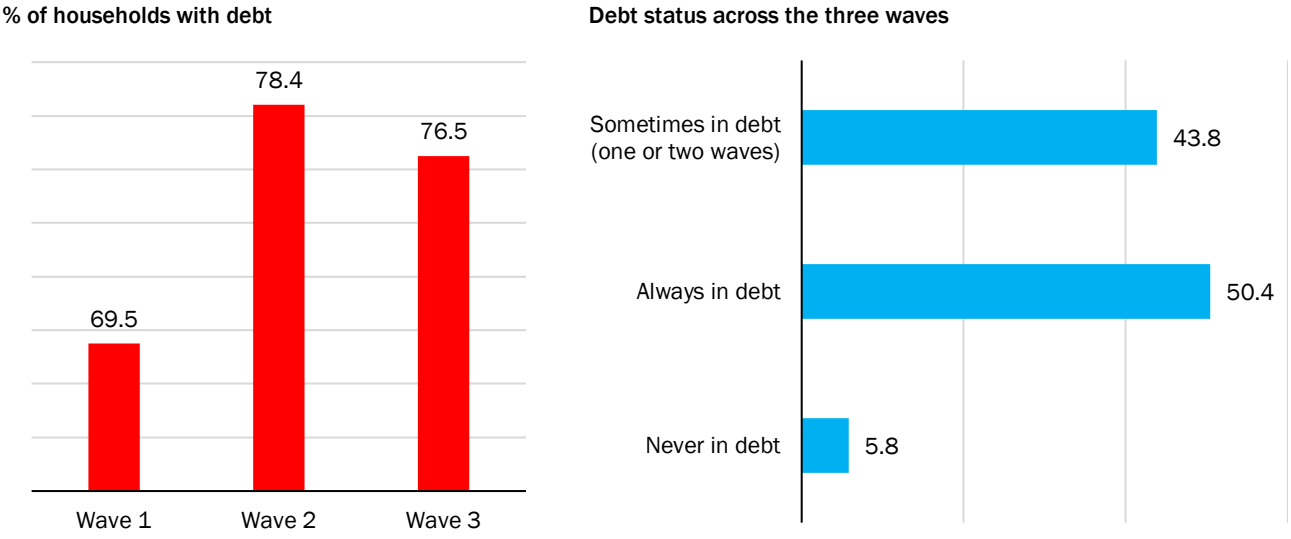


Table 17: Main source of credit across the three waves

To whom do you owe money	Wave 1		Wave 2		Wave 3	
	%	Freq.	%	Freq.	%	Freq.
To formal lender or bank	2.3	33	1.4	24	1.7	27
To informal money lender	22.5	330	27.6	457	7.4	118
To family/friends	71.2	1,045	69.3	1,149	84.6	1,358
To landlord or employer	3.8	56	1.5	25	5.9	94
To savings group	0.2	3	0.0	0	0.5	7
Don't know	0.0	0	0.1	2	0.0	0
Total	100.0	1,467	100.0	1,656	100.0	1,606

The vast majority of indebted households have borrowed money from family or friends – 85% of indebted households in wave 3. Formal lending remained rare at just under 2% in wave 3.

Respondents were also asked if they would be able to borrow money if they were to suddenly need to pay PKR 10,000 for a health treatment. We can see in Table 18 the results disaggregated by gender. Female respondents seemed to be able to rely significantly less on family and friends for emergency lending across the three waves. On the other hand, they appear to be able to rely slightly more on formal or informal money lenders.

Table 18: Emergency source of credit disaggregated by gender

	Wave 1 (%)		Wave 2 (%)		Wave 3 (%)	
	Male	Female	Male	Female	Male	Female
Don't know/No	3.77	1.85	5.81	18.39	6.33	15.94
Formal lender or bank	0.37	1.43	1.03	1.71	0.35	0.72
Informal money lender	0.74	3.99	3.33	9.93	0	0
Family/friends	93.57	91.3	88.27	69.34	90.98	80.92
Landlord or employer	1.55	1.28	0.87	0.62	2.34	2.25
Savings group	0	0.14	0.69	0	0	0.17
Total	100	100	100	100	100	100

Table 19 shows that the majority of the loans were taken on to cover immediate basic needs in wave 3, as in previous waves. The share of households having taken on debt for productive use decreased from 13% in wave 1 to 5% in the last wave. In line with the spike in health-related shocks observed, loans taken on for health purposes increased substantially in the last wave.

Table 19: Reasons for borrowing money

	Wave 1		Wave 2		Wave 3	
Household borrowed money for:	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Productive use	269	12.7%	254	12.0%	95	4.5%
Immediate basic needs (food, cloth)	801	37.9%	848	40.1%	875	41.4%
Health	264	12.5%	551	26.1%	724	34.2%
Education	38	1.8%	92	4.3%	118	5.6%
Construction	155	7.3%	0	0.0%	90	4.3%
Other	0	0.0%	392	18.5%	823	38.9%

4.4 Asset wealth

The Morris score index (MSI) is used as a proxy for household asset wealth (Morris et al., 1999). The MSI is a weighted asset indicator that weights each asset owned by the household by the share of households owning that particular asset – households are considered better off (have a higher MSI) when they own assets *not* owned by most households in the sample.

The average MSI increased slightly from 27.4 in wave 1, to 28.4 in wave 2, before decreasing to 26.8 in wave 3 (Table 20). While the average MSI for sampled households in Swat was higher than Lower Dir in wave 1, average MSI scores were higher in Lower Dir than Swat in waves 2 and 3. This increase in Swat is due to the rise of the MSI in Charbagh, which is the only union council that has not experienced a drop in the average level of assets owned.

Table 20: Mean Morris Score Index (MSI) over time, by district and UC

District	Union Council	Wave 1	Wave 2	Wave 3
Lower Dir	Haya Serai	29.48	35.62	30.59
	Lal Qila	17.81	33.35	28.42
	Total	23.63	34.48	29.51
Swat	Charbagh	28.69	21.40	26.46
	Baidara	33.15	26.19	23.87
	Bar Abakhel	27.71	25.38	24.95
	Total	29.89	24.41	25.07
Total		27.39	28.43	26.84

Note: Two-sample t-tests were run to compare the total averages of the Morris score index between waves 1 and 2 and between waves 2 and 3, respectively. Only the decrease from wave 2 to wave 3 was significant (at the 10% level).

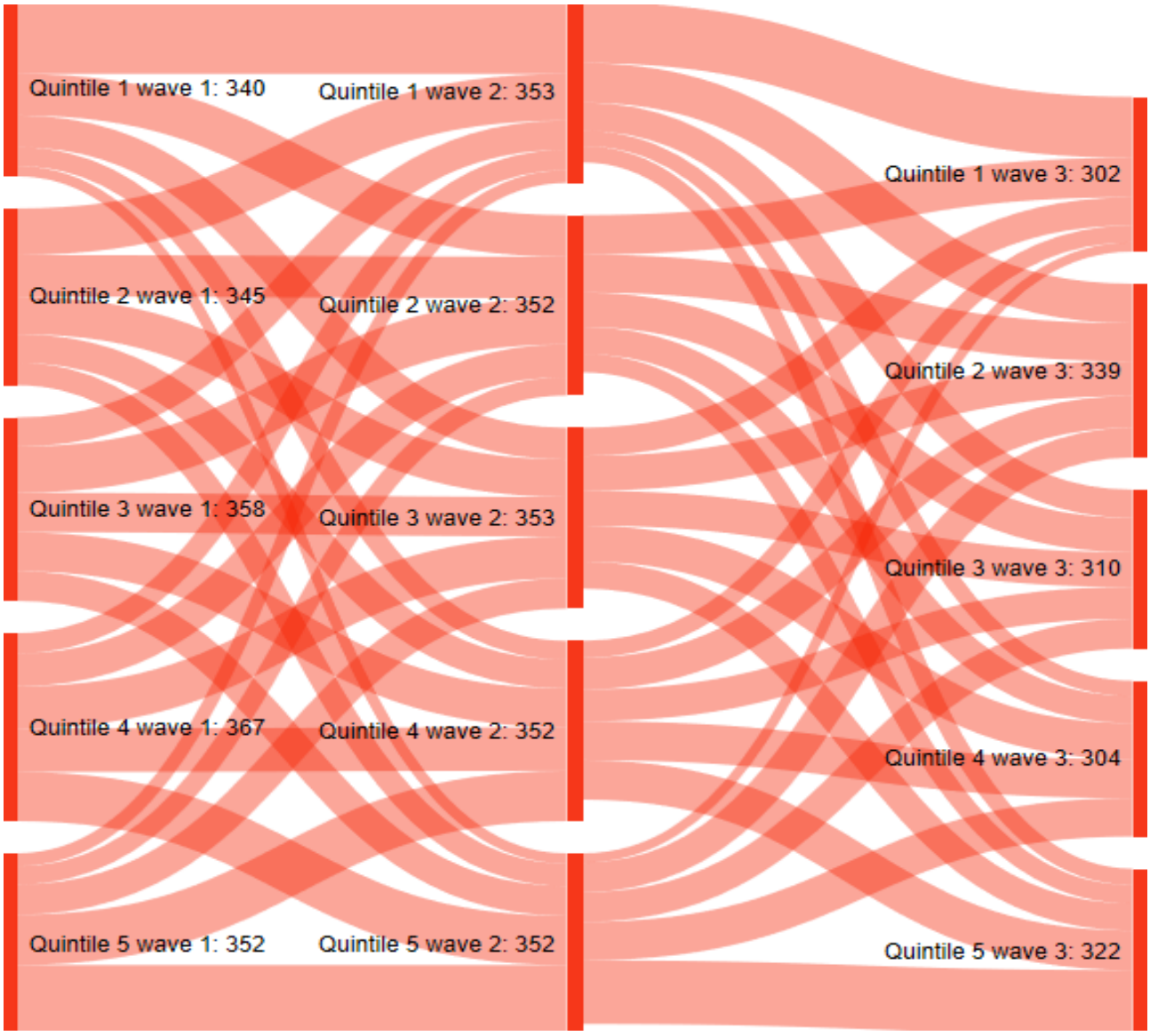
As Table 21 shows, half of the sample experienced a fall in asset level between waves 1 and 2, while half increased their asset level. Between waves 2 and 3, the majority of households (54%) suffered a fall in their asset level. Around 44% of sampled households in Lower Dir increased their assets between waves 2 and 3 while 56% of households saw a reduction of their asset wealth. Similarly, the majority of households in Swat (53%) saw a decrease in their asset ownership between the last two waves.

Table 21: Change in MSI between waves, by district

	Waves 1 to 2 (%)			Waves 2 to 3 (%)		
	No change	Got worse	Got better	No change	Got worse	Got better
Lower Dir	0.1	32.2	67.7	0	55.6	44.4
Swat	0	62.1	37.9	0	52.5	47.5
Total	0.1	49.8	50.1	0	53.7	46.3

The Sankey diagram in Figure 8 displays the flow of households as they move to different quintiles of the asset distribution. While the bottom quintile (richest households) and top quintile (poorest households) seem to be more stable, there is a lot of mobility between the other quintiles. Interestingly, households located in the third quintiles in waves 1 and 2 have roughly equal probability to move to any other quintile in the next period.

Figure 8: Sankey diagram of Morris Index, showing changes in quintiles over the three survey waves



Note: The Sankey diagram shows the churning of households across waves, between different quintiles of the MSI. Each wave is split into quintiles of MSI, for instance 'Quintile 1 wave 1' is the first quintile of the Morris Index, representing the poorest 20% of households, meanwhile quintile 5 represents the most asset-rich households.

4.4.1 Regression: MSI

Regression analysis identifies several explanatory factors for changes in household asset wealth, which can be divided into three clusters: livelihood, risk/security/shocks and household characteristics (the full regression findings can be found in Appendix 4). The results included here are conditional correlations, meaning that they apply when all other factors are held constant. In the interest of brevity, we will not repeat 'holding all else constant' when describing regression findings, although it should be considered to apply to all regression results presented in the report.

First, looking at the *livelihood* factors, households that became less food insecure also owned on average more assets than they used to. Households that saw an increase in diversity of income sources between waves, as measured by number of livelihood activities, also owned more assets than they used to. Those who have a member who migrated abroad in the last three years at some point in the period covered also possessed more assets than before. Households having become indebted, however, tended to own less assets than previously. Those having started to receive livelihood assistance or social protection saw an increase in their asset possession.

Secondly, regarding the *risk and shocks* factors we can see that households having experienced fighting in the last three years have lower asset wealth than before. Similarly, living in a village which is perceived by respondents to be safer than it used to is linked to an increase of the household asset level.

Finally, considering *time-invariant household characteristics*, (those that do not change between waves), female-headed households own on average fewer assets than their male-headed counterparts. Households whose members have been to secondary school own more assets than the ones whose members do not have any kind of education. The size of the households was also linked to significantly different Morris score index, with bigger households having on average a higher level of assets. Living in rural areas was also positively correlated with asset ownership, possibly because many of the assets included in the survey instrument are primarily relevant to rural households (e.g. livestock). As observed in the descriptive statistics, households located in Swat district possess on average fewer assets than those located in Lower Dir.

4.5 Food insecurity

Food insecurity has been measured in the panel survey using the coping strategy index (CSI) which estimates the severity of different coping strategies employed by households when they do not have enough food, and is weighted by the frequency of households employing a certain coping strategy. A higher CSI indicates a higher level of food *insecurity*.

The average CSI has increased overall across the three waves. From a score of 2.5 in wave 1, the CSI has increased to 4.3 in wave 2, before finally reaching a value of 8.3 in wave 3 (Table 22), expressing a rise in the food insecurity in our sample in the period covered by the survey. Food insecurity increased in all union councils and in both districts. The increase has been the most pronounced in Lower Dir where, for instance, the average CSI in Lal Qila increased from 1.2 in wave 1 (the lowest score out of the union councils sampled) to 8.6 in wave 3. On average, however, food insecurity is still higher in Swat district and reaches a maximum of 9.4 in the union council of Bar Abakhel.

Table 22: CSI (measuring food insecurity), by wave and UC

District	Union Council	Wave 1	Wave 2	Wave 3
Lower Dir	Haya Serai	1.93	4.33	7.41
	Lal Qila	1.15	5.56	8.56
	Total	1.54	4.94	7.98
Swat	Charbagh	3.83	3.83	7.66
	Baidara	3.31	3.93	8.47
	Bar Abakhel	2.26	4.26	9.37
	Total	3.13	4.01	8.51
Total		2.49	4.33	8.33

Note: Two-sample t-tests were run to compare the total averages of coping strategy index between waves 1 and 2 and between waves 2 and 3. The averages per wave were all statistically different at the 1% level.

Looking at changes between waves (Table 23), more households changed their food insecurity score ('switchers') between waves 2 and 3 than between waves 1 and 2. The majority of households who saw change became more food insecure (63%) between waves 2 and 3, compared to 26% who became less food insecure. Notably, in Bar Abakhel, Swat, 77% of households became more food insecure between waves 2 and 3.

Table 23: Changes in CSI between waves, by UC.

		Wave 1–Wave 2			Wave 2–Wave 3		
District	Union Council	No change	More food insecure (higher CSI)	Less food insecure (lower CSI)	No change	More food insecure (higher CSI)	Less food insecure (lower CSI)
Lower Dir	Haya Serai	38.8	47.3	13.9	16.7	50.3	33.1
	Lal Qila	41.4	51.5	7.0	16.6	52.1	31.3
Swat	Charbagh	30.5	38.9	30.6	11.3	65.5	23.2
	Baidara	28.5	39.3	32.3	9.1	69.1	21.8
	Bar Abakhel	31.4	46.5	22.1	5.0	76.6	18.5
Total		34.1	44.7	21.2	11.8	62.6	25.6

4.5.1 Regression: CSI

The regression analysis of the changes in CSI revealed that several explanatory factors were associated with changes in food insecurity. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

First, looking at livelihood factors, as seen in the previous sub-section, an increase in household wealth from one wave to another is associated with a lower CSI scores, meaning that wealthier households tend to be less food insecure. More livelihood activities in a household's livelihood portfolio is similarly associated with reduced food insecurity. Having a household member enter casual labour – an insecure profession – is associated with increased food insecurity. Households who became indebted also saw on average an increase in their food insecurity compared to when they were debt-free.

Interestingly, households who started to receive social protection transfers were more food insecure than before. Although the data cannot provide evidence regarding the direction of causality between food insecurity and social protection receipt, this finding probably reflects the fact that vulnerable households have a higher probability of receiving social transfers. BISP, for instance is a poverty-targeted social protection transfer.

Perceptions of *risks, security and shocks* also appeared to be associated with a significantly different level of CSI. First, having gone through an economic shock in the last three years is linked to a substantial increase in food insecurity. Perceiving the neighbourhood to be safer than in the previous wave is associated with lower food insecurity than before. An additional shock, without distinction of the type of shock, is associated with a significant rise in the level of food insecurity.

In order to explain the substantially higher food-insecurity level of households having experienced economic shocks, additional analyses have been undertaken. The analysis of the effect of economic shocks disaggregated by type of shock showed that the increase in food insecurity is linked only to price hikes/inflation. Low market prices for agricultural outputs and poor market access have no positive impact on the food insecurity.

When studying the relationship between inflation/price hikes with food insecurity by ethnicity, we see that the two are significantly positively associated only for the Yousafzai, although the magnitude of the effect is the highest for the Miagan and the Sayyid. The relatively small number of Miagans and Sayyids in the sample does not allow us to draw any clear conclusions about which ethnicity is the most impacted by inflation and price hikes among the three. However, the data indicates that the relationship between inflation/price hikes and food insecurity is particularly weak for the Gujars, the Mullah and the Parashas.

Lastly, regarding the invariant *household characteristics*, female-headed households tended to be *less* food insecure than male-headed counterparts. Households where most adults obtained secondary education were less food insecure than households with fewer educated adult members. Finally, in line with the results on asset wealth, households located in the Swat district were on average more food insecure than the ones located in Lower Dir.

4.6 Food consumption

Food consumption, measured in the SLRC survey by the food consumption score (FCS) is a measure of dietary quality and diversity, constructed by asking respondents about the different types of food consumed by the household during the past 30 days. A higher FCS score means that households have a better food consumption. On average, food consumption slightly increased from 45 in wave 1 to 46 in wave 2, before decreasing slightly to 44 in wave 3 (Table 24). A two-sample t-test was run on the difference in means between waves 1 and 2 and waves 2 and 3, and both differences were found to be all statistically significant at the 1% level, meaning that households in our sample had on average a lower level of food consumption in wave 3 than in wave 2. The decline in food consumption was seen across all union councils.

Table 24: Average food consumption score (FCS) over time by UC

District	Union Council	Wave 1	Wave 2	Wave 3
Lower Dir	Haya Serai	46.03	47.84	44.24
	Lal Qila	44.48	44.86	43.31
	Total	45.25	46.35	43.78
Swat	Charbagh	44.93	47.35	43.55
	Baidara	44.92	45.26	42.59
	Bar Abakhel	45.02	46.44	44.51
	Total	44.96	46.31	43.55
Total		45.07	46.32	43.64

Note: Two-sample t-tests were run to compare the total averages of Food Consumption Index between waves 1 and 2 and between waves 2 and 3. The successive decrease in food consumption was statistically significant at the 0.1% level.

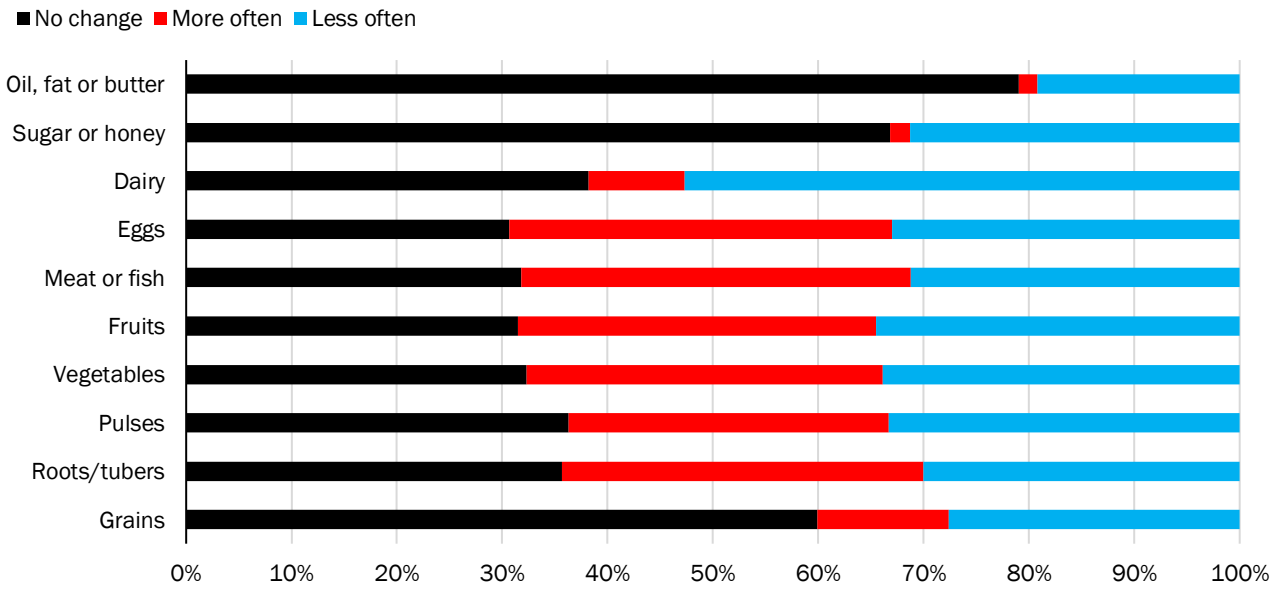
While the majority of households (53%) reported increased levels of food consumption between waves 1 and 2, the majority of households reported a lower level of food consumption between waves 2 and 3 (Table 25).

Table 25: Change in Food Consumption Score (FCS) over time

		Wave 1–Wave 2			Wave 2–Wave 3		
District	**Union Council**	**No change**	**Better food consumption (higher FCS)**	**Worse food consumption (lower FCS)**	**No change**	**Better food consumption (higher FCS)**	**Worse food consumption (lower FCS)**
Lower Dir	Haya Serai	4.1	61.1	34.9	5.0	37.0	58.0
	Lal Qila	4.7	49.6	45.7	3.8	40.0	56.3
Swat	Charbagh	4.0	55.2	40.9	2.9	33.4	63.7
	Baidara	4.3	49.2	46.5	4.5	33.6	61.9
	Bar Abakhel	5.0	48.5	46.5	3.2	46.7	50.1
Total		4.4	52.6	43.0	3.9	38.1	58.0

Results for the changes in consumption of food between waves 2 and 3 are presented in Figure 9. We can observe that changes in consumption patterns were marked by a significant decrease in dairy products. More than 30% of the households also experienced a decrease in their consumption of sugar and honey.

Figure 9: Changes in consumption of specific foods between wave 2 and wave 3



4.6.1 Regression: FCS

Regressions were also run with the food consumption score as an outcome variable. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

Firstly, several *livelihood* factors were statistically significant. Increased household wealth is associated with higher FCS scores, meaning households becoming richer in terms of assets are also increasing their level of food consumption. More livelihood activities in a household's livelihood portfolio is also associated with increased food consumption. Having a household member entering casual labour or farming is associated with a reduction of food consumption. Households who have received remittances

in the past three years also have a substantially higher food consumption score. Similarly, as with food insecurity, becoming indebted is correlated with a reduction of food consumption.

Perceptions of *risks, security and shocks* are also significant. Households who have experienced fighting in the area in the last three years have lower food consumption scores compared to when the area was conflict-free.

Lastly, *household characteristics*. The higher the average education level of household members, the higher is the food consumption score of the household. Households located in rural areas have on average a lower food consumption score.

4.7 Summing up

Looking at livelihood activities of households, we saw that overseas labour is still the main source of income of households. However, the share of households reporting overseas labour to be their main source of income continued to decrease significantly in the last wave, in line with the reduction in remittances' usefulness.

Changes in livelihood were also marked by a decrease in internal migration, with only 1.3% of households having had a member who migrated internally between waves 2 and 3. The share of households having a member who moved abroad in the last three years, however, increased slightly to almost one third of the sample surveyed by wave 3. Remittances, on the other hand, continued on a downward trend in the last wave. Households also reported a decrease in the usefulness of the remittances received.

Regarding the credit situation of the households surveyed, despite having decreased slightly between the last two waves, the proportion of households being in debt remained very high; 44% of the households sampled reported having debts in all of the survey waves. The overwhelming majority of households with debt owed money to their family or friends. The proportion of loans contracted for immediate basic needs such as food or clothes has increased in the last period while the proportion of loans taken for productive use diminished greatly.

Looking at the wellbeing indicators, it was first shown that the Morris score index, measuring the level of assets of households, decreased in all the union councils surveyed with the exception of Charbagh. Asset wealth was positively correlated over time with food consumption. Being indebted was linked to a decrease in asset wealth. It was also shown that households had higher levels of assets after receiving social protection and livelihood assistance transfers, keeping everything else constant. Households living in (perceived) safer village or in areas having had no occurrence of fighting also had, on average, higher levels of assets. Overall, the level of assets in Swat was lower than in Lower Dir.

Regarding food insecurity, there was an increase in the Coping Strategy Index in each of the union councils included in the survey (i.e. households were more food insecure). Taking on a loan was on average linked to an increase in food insecurity. Inflation and price hikes were also associated with an increase in food insecurity. Similar to [lack of] asset wealth, food insecurity was shown to be higher in Swat that in Lower Dir.

5 Changes in access to and satisfaction with basic services, social protection and livelihood assistance

In this section, changes in both access to and satisfaction with each basic service (health, education and drinking water), social protection, and livelihood assistance are described. Regression analyses were also conducted to identify possible explanatory factors behind the changes observed.

In the survey, the main measure of access to services was the time taken, in minutes, for each respondent to either reach the service (for schools and health centre) or of a round trip to service (for water source). Findings from this survey, and previous SLRC analyses have made it clear that journey time to basic services is only a partial indicator of access. For instance, a better-quality health service may be further away, and thus journey time is not necessarily an indicator of respondents' access. Hence, the findings should be interpreted with caution. Access to social protection and livelihood assistance is measured as any household member receiving any type of social protection transfer or livelihood assistance in the past year.

5.1 Health

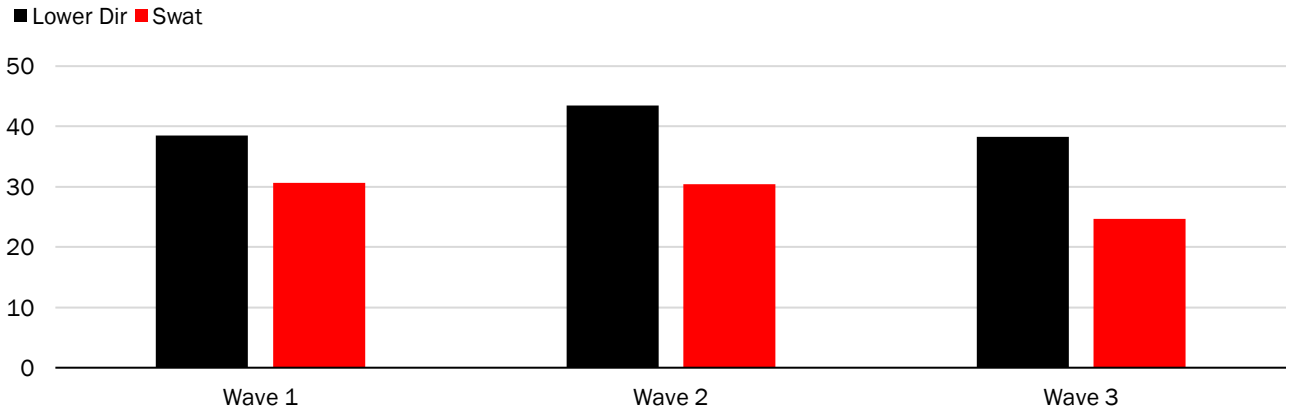
5.1.1 Access to health

The average travel time to the nearest health centre used by the sampled households has reduced in wave 3: in wave 1 it was 34 minutes, 36 minutes in wave 2, and 30 minutes in wave 3.

Our data show that, on average, travel times to health centres in Lower Dir were longer than for households in Swat (Figure 10). On average, journeys in Lower Dir took 38.5 minutes in wave 1, 43.5 minutes in wave 2 and 38.3 minutes in wave 3. At the same time in Swat, average journey times in wave 1 and wave 2 were roughly the same – 30.6 minutes and 30.4 minutes, respectively – but shortened on average to 24.7 minutes in wave 3.

At the union council level, we find that, while sampled households in Haya Sarai (Lower Dir) had to travel 10 more minutes in wave 2, this had reduced by 10 minutes in wave 3. Similarly, travel times for households in Charbagh (Swat) increased by 7 minutes between waves 1 and 2, but shortened by an average 11 minutes in wave 3. Average journey times shortened for all union councils between waves 2 and 3, after lengthening for most union councils between waves 1 and 2 (except in Baidara and Bar Abakhel, both in Swat).

Figure 10: Length of journey (in minutes) to health centre



In wave 3, 78% reported using the same health centre as in wave 2, meanwhile in wave 2 nearly all respondents (95%) reported using the same service as in wave 1 (while it should be noted that this was a *self*-reported change). Looking at breakdown at district level shows clear differences – 42% of respondents in Lower Dir switched health service in wave 3, compared to only 9% in Swat. What accounts for the large increase in switching health services between waves? Looking at why people switched health centres, the quality of service is the most salient issue in both waves (Table 26). In wave 3, the cost of healthcare was also an important reason for switching – 44% switched for this reason.

Table 26: Change of health centre, and reasons for switching

		Wave 2		Wave 3
Switched health service	**Freq**	**%**	**Freq**	**%**
Lower Dir	64	7.6	358	42.4
Swat	38	3.0	118	9.3
Total	102	4.9	476	22.5
Why did you switch?	**Freq**	**%**	**Freq**	**%**
Previous one no longer exists	3	2.9	27	5.7
This one is closer	8	7.8	7	1.5
This one is cheaper	1	1	206	43.8
This one has better service quality	90	88.2	230	48.9
Total	102	100	470	100

We can see in Table 27 that, both between waves 1 and 2 and between waves 2 and 3, the percentage of people seeing their journey time to their health centre increasing has been higher in Lower Dir than in Swat. The average time increase for those having longer travel time were also bigger in Lower Dir for both waves 2 and 3. Those results are confirmed when looking only at the differences superior to 5 minutes (Table 28): 30.8 of households had travel time longer than 5 minutes in Lower Dir against 27.8 % in Swat.

Table 27: Changes in the length of journey time to the health centre between waves

		Wave 1 to 2			Wave 2 to 3	
Length of journey to health centre	**No change (%)**	**Longer (%)**	**Shorter (%)**	**No change (%)**	**Longer (%)**	**Shorter (%)**
Lower Dir	16.6	46	37.5	16.8	35.5	47.6
Swat	18.0	43.9	38.1	17.1	34.5	48.4
Total	17.4	44.7	37.9	17.0	34.9	48.1
Mean change in minutes	**No change (mins)**	**Longer (mins)**	**Shorter (mins)**	**No change (mins)**	**Longer (mins)**	**Shorter (mins)**
Lower Dir	0	30.3	25.7	0	23.3	26.8
Swat	0	24.4	29.4	0	17.8	24.5
Total	0	26.8	27.9	0	20.0	25.4

Table 28: Changes in the length of journey time to the health centre between waves 2 and 3

			Wave 2 to 3
Length of journey to health centre	**No change of more or less than 5 minutes (%)**	**Longer by 5 minutes (%)**	**Shorter by 5 minutes (%)**
Lower Dir	27.4	30.8	41.8
Swat	31.1	27.8	41.4
Total	29.7	29	41.4
Mean change in minutes	**Change of more or less than 5 minutes (mins)**	**Longer (mins)**	**Shorter (mins)**
Lower Dir	–0.3	26	–30
Swat	–0.1	21	–28
Total	–0.2	23	–29

Respondents were asked when anyone in their household had last used a health centre (Table 29). Similarly, as in the previous two waves, the majority of households had used the health centre in the last week in wave 3.

Table 29: When did you or other members of your household last use the health centre?

	Wave 1		Wave 2		Wave 3	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**
In the last week	1,201	56.9	1,099	52.1	1,091	51.6
In the last month	756	35.8	817	38.7	719	34
In last six months	133	6.3	158	7.5	183	8.7
In the last year	13	0.6	23	1.1	48	2.3
Over a year ago/never	8	0.4	15	0.7	73	3.5
Total	2,111	100	2,112	100	2,114	100

Note: The categories are not cumulative, so 'In the last month' means between 8 and 30 days ago.

The number of visits to health centres per household in the past year differ between waves, and across districts. On average, the number of visits per household increased between waves 1 and 2, from 13 to 17, before decreasing in wave 3, to 14 visits. Households in Swat visited health centres on average 5 times more than in Lower Dir, in wave 1, whereas households in Lower Dir visited the health centre 6 times more often in wave 2 (Table 30. In wave 3, there was no statistically significant (p value equal to 0.5) difference between the two districts.

Table 30: Number of times visited health centre in last year

Mean number of visits to health centre by household in the last year	**Wave 1**	**Wave 2**	**Wave 3**
Lower Dir	9.58	20.2	14.54
Swat	15.45	14.07	15.04
Total	13.1	16.64	14.2

The data also show that the majority of health centres are reported by respondents to be run by government (77–80% across all waves). However, looking at the district level, in Swat there has been an increase in respondents reporting health centres to be government-run, and a decrease in private. Meanwhile in Lower Dir the opposite trend can be observed in wave 3 (Table 31).

Table 31: Who runs the health centre? By wave and district.

	Total			Lower Dir			Swat		
Who runs the health facility?	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)
Government	78.4	76.7	79.7	84.4	76.4	71.8	74.3	76.9	85
Private	21	23.2	20	14.4	23.6	28	25.4	23	14.7
NGO	0.6	0.1	0.2	1.2	0	0.2	0.2	0.1	0.3
Total	100	100	100	100	100	100	100	100	100

The results for the payment of fees show that fewer households (65%) reported paying official fees for health services in wave 3 than in wave 2 (69%) and wave 1 (82%). In addition, while paying informal fees increased in wave 2 (16%), they decreased in wave 3 to 4% (Table 32).

Table 32: Paying fees for health services

	Wave 1	Wave 2	Wave 3
Paying official fees	82%	69%	65%
Paying informal fees	2%	16%	4%

5.1.2 Regression: access to health

Regression analysis identified several explanatory factors being correlated to changes in journey time to health centres. Those factors are clustered below into *service-related* factors, *economic/livelihood* factors, *risk, security and shocks* factors, and *household characteristics.* The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

Firstly, when looking at the service-related factors, we can see that payment of either official *or* informal fees were statistically significantly linked to a decrease in access to health centres (longer journey times). Surprisingly, households who had to use health services more often had on average shorter journey times to their health centre.

Regarding economic and livelihood changes, an increase in asset wealth was associated with shorter journey length to health centres. More surprisingly, at the same time, a higher CSI score (the indicator for food *in*security) is associated with a slightly shorter journey length to health services. Also surprising is that an increase in the number of livelihood activities is associated with an increase in journey length to health services. A potential explanation of the negative correlation between the wellbeing indicators and the accessibility of health services is that households who can afford it are shifting for health facilities that are further away but delivering better services. Further evidence for this hypothesis is that the majority of households switching service provider do so for quality reasons.

The perception of safety both within and outside the neighbourhood was statistically linked to a decrease in distance to health facilities. Neighbourhood safety was also associated with a shorter journey time. Feeling safer in the neighbourhood is associated with a 7-minute decrease in journey time. Meanwhile feeling safe going out of the neighbourhood is associated with a 3-minute *increase* in journey time. The households who feel more secure traveling are potentially more willing to get better-quality health services that are located further away. Experiencing an agricultural shock is associated with longer journey times than not experiencing an agricultural shock.

Lastly, several *household characteristics* were identified. Bigger households had on average longer journey times, Similarly, households with a higher proportion of dependents were using facilities further away. Sampled households in Swat tend to have shorter journey times than those in Lower Dir, by 12

minutes, holding all else constant. Those households who had relocated between waves also have shorter journey times.

5.1.3 Changes in satisfaction with health centre

Following the trend in wave 2, there was an increase in the proportion of respondents feeling satisfied or very satisfied with the overall quality of the health services in wave 3 (Table 33). Satisfaction with health services remained high on average in Swat across all waves (around 80%), and kept on improving substantially in Lower Dir, from a level of 52% in wave 1 to 72% wave 3. However, the number of respondents being very satisfied with health centres in Swat was more than five times higher as in Lower Dir in the last wave.

Table 33: Satisfaction with health centre in each wave and by district

	Total			Lower Dir			Swat		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Very dissatisfied	4.4	5.2	2.6	9.5	10.0	2.4	0.9	2.1	2.8
Dissatisfied	18.9	15.1	17.9	29.4	18.2	24.5	11.9	13.0	13.5
Indifferent	6.9	8.8	1.5	8.1	11.8	0.6	6.1	6.8	2.1
Satisfied	57.0	59.6	64.0	35.1	45.4	68.0	71.4	69.0	61.1
Very satisfied	12.9	11.1	13.9	17.8	14.3	4.3	9.6	9.0	20.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

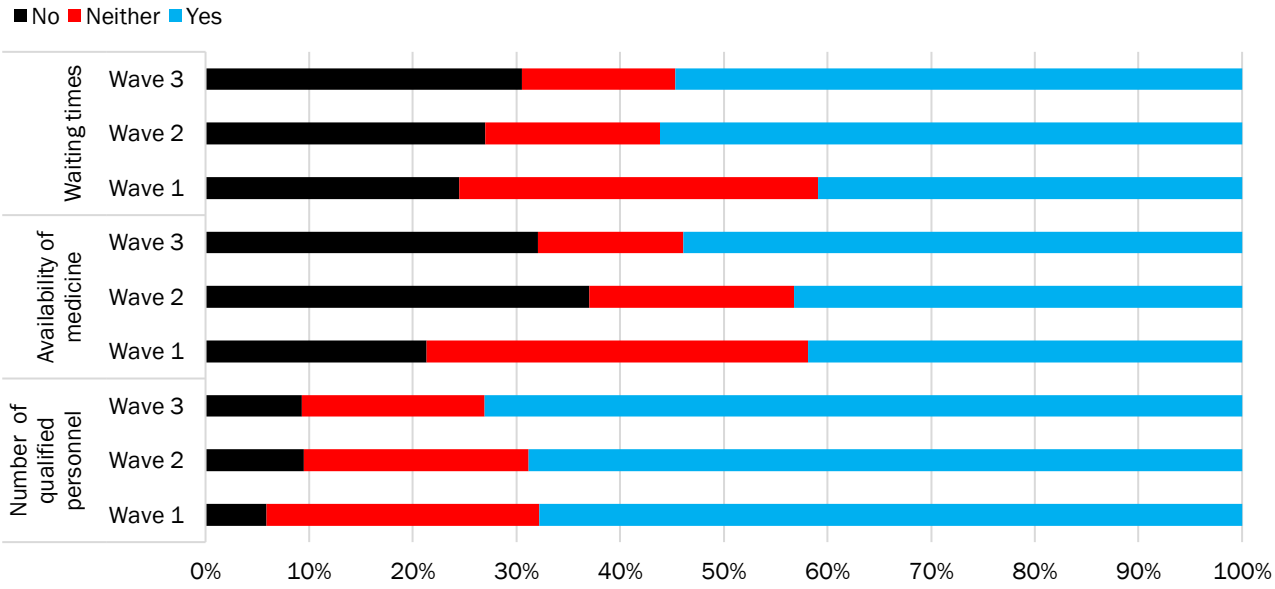
Between waves 1 and 2, 33% of respondents changed from being satisfied (very satisfied, satisfied and indifferent) to dissatisfied (very dissatisfied and dissatisfied) or vice versa and 32% between waves 2 and 3 (Table 34). Nearly two thirds of respondents were always satisfied in waves 1 and 2, and in waves 2 and 3. There were more switchers in Lower Dir than in Swat, with 29% switching to satisfied in wave 2 and 21% in wave 3.

Table 34: Changes in levels of satisfaction with the health centre between waves

	Waves 1 and 2			Waves 2 and 3		
	Total	Lower Dir	Swat	Total	Lower Dir	Swat
Always dissatisfied (%)	5.4	10.5	2	4.5	8.2	2.3
Always satisfied (%)	61.4	43.7	73.3	63.2	52	70.2
Dissatisfied to satisfied (%)	18.3	28.7	11.4	16.3	21.4	13.2
Satisfied to dissatisfied (%)	14.8	17.1	13.4	15.9	18.5	14.3
Total (%)	100	100	100	100	100	100

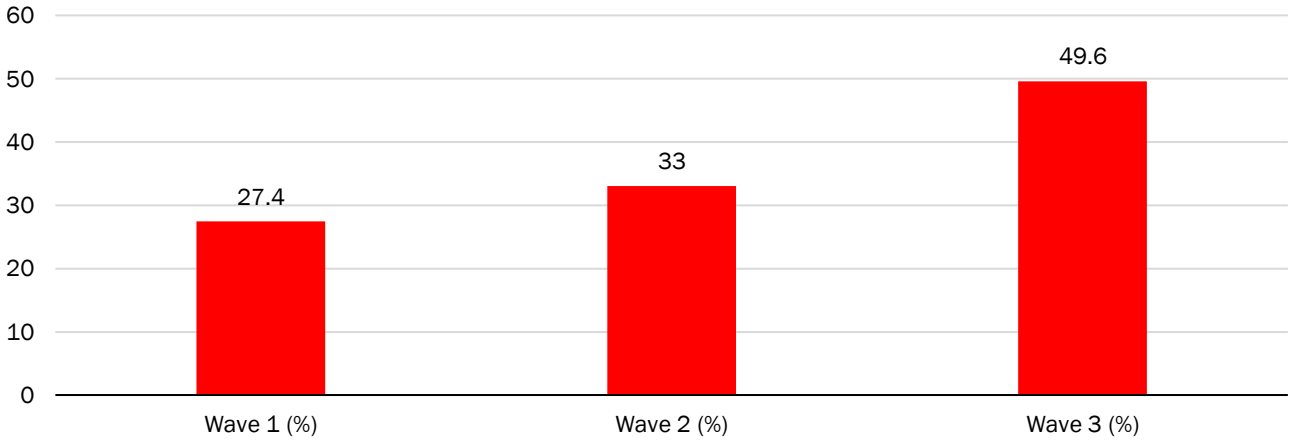
Respondents were also asked about their levels of satisfaction with different aspects of the health centre they use. Figure 11 shows changes in level of satisfaction with respect to waiting times, with a steady increase over waves with respondents being *dis*satisfied with waiting times, from 25% in wave 1, to 27% in wave 2 and 31% in wave 3. However, the majority of respondents were satisfied with waiting times in all three waves (55% in wave 3). The levels of satisfaction with the availability of medicines also changed. A total of 42% of respondents in wave 1 and 43% in wave 2 were satisfied with the availability of medicine, with an improvement of over 10 percentage points in wave 3. Lastly, the majority of respondents were satisfied with the number of qualified personnel in all waves, improving from 68% in wave 1, to 69% in wave 2 to 73% in wave 3.

Figure 11: Satisfaction with different aspects of the health centre



Interestingly, while respondents seem on the whole more satisfied with health services, the number of respondents who experienced a problem with the health service greatly increased across the three waves, with nearly half experiencing a problem in health in wave 3 (Figure 12).

Figure 12: Proportion of respondents who have experienced a problem with the health service across waves



5.1.4 Regression: satisfaction with health services

The regression analysis of overall satisfaction with health services as the outcome variable identified several statistically significant explanatory variables, discussed in the following. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

Unsurprisingly, several *health-service*-related explanatory factors were identified as statistically significant. Increases in levels of satisfaction with the number of qualified personnel, availability of medicine and waiting times were all correlated with increases in the likelihood of respondents being satisfied with the overall health services. As expected, households who have experienced a problem with the health services in the past year are less likely to be satisfied with health service as before.

Interestingly, households who switch health centres between waves are on average more likely to be satisfied with their new health centre. This supports the results on the reasons for a household

switching their health facility that indicated that people were mainly looking for better service quality. Respondents who had an increase in their journey time to their health centre were also more likely to be satisfied with health services. This supports the hypothesis that households may travel further in order to get better service. As a consequence, an increase in travel time may not necessarily be synonymous with a reduction in health service's accessibility. In contradiction with the hypothesis where most households would start paying fees in order to get better health services, we observe that the payment of official fees and informal fees are both associated with a lower health services satisfaction.[2]

Changes in a couple of *livelihood* variables were seen to be statistically significant. Households starting to receive remittances are twice as likely to be satisfied with the health centre they visited than before. Meanwhile, increases in the number of sources of income within a household is associated with a lower likelihood of satisfaction with health services.

Regarding safety and crimes, feeling safer outside the neighbourhood is associated with a higher likelihood of being satisfied with health services. Having experienced fighting in the area in the last three years is linked to a reduction of satisfaction with health services. Although an increase in the number of shocks experienced is associated with a lower chance of being satisfied with health services, households experiencing a health-related shock are twice as likely to be satisfied with health services.[3] The results indicate that people in Swat are 67% more likely to be satisfied with health services than those in Lower Dir.

5.2 Education

After a slight increase in travel time to schools between waves 1 and waves 2, from 18 minutes to 20 minutes for boys and 17 minutes to 19 minutes for girls, average journey times somewhat decreased for both boys' (19 minutes) and girls' schools (17 minutes) in wave 3, and across nearly all union councils (apart from girls' schools in Haya Sarai which saw a negligible average increase in journey time by 1 minute) (Table 35).

Table 35: Average journey time to school (minutes), by district and union council, over waves

		Boys' school			Girls' school		
District	Union Council	Wave 1 mean	Wave 2 mean	Wave 3 mean	Wave 1 mean	Wave 2 mean	Wave 3 mean
Lower Dir	Haya Sarai	18.75	22.73	19.09	16.81	17.97	18.63
	Lal Qila	17.51	19.39	17.54	17.45	18.68	16.29
	Total	18.15	20.99	18.42	17.12	18.35	17.46
Swat	Charbagh	20.49	20.92	19.37	19.47	18.63	18.05
	Baidara	17.47	20.64	18.49	17.63	19.88	17.07
	Bar Abakhel	14.86	18.77	17.82	15.04	17.57	16.99
	Total	17.63	20.07	18.6	17.43	18.71	17.37
Total		17.83	20.4	18.52	17.31	18.56	17.4

Of those who experienced a change, more respondents had a shorter journey in wave 3 for boys' schools than a longer journey (43% and 37%, respectively) (Table 36). Meanwhile roughly the same share of respondents reported a longer journey than shorter journeys to girls' schools (41%). The mean change in journey time for those who had a shorter journey was a reduction of 14 minutes for boys' and girls' school, and an increase of 13 minutes on average for girls' schools. When discounting journeys

[2] In addition, the linear version of the fixed effect identifies switching to government-run health facilities as being significantly linked to a decrease in satisfaction.

[3] The linear fixed effect model also identifies economic shock as being correlated with a decrease in satisfaction with health services.

that changed by 5 minutes in either direction, there is far less variation, with nearly half of journeys to boys' and girls' schools not changing (Table 37).

Table 36: Change in journey time to boys' and girls' school between waves 2 and 3, by district

	Boys' school			Girls' school		
	No change (%)	Shorter (%)	Longer (%)	No change (%)	Shorter (%)	Longer (%)
Lower Dir	16	45.8	38.2	19.9	40.3	39.8
Swat	23.1	41.3	35.6	16.6	41	42.4
Total	20.2	43.1	36.6	18.1	40.7	41.2
	Mean change (mins)	Mean change (mins)	Mean change (mins)	Mean change (mins)	Mean change (mins)	Mean change (mins)
Lower Dir	0	−14.7	12.2	0	−11.9	14.1
Swat	0	−13.6	19.9	0	−15	12.1
Total	0	−14	13.2	0	−13.6	13

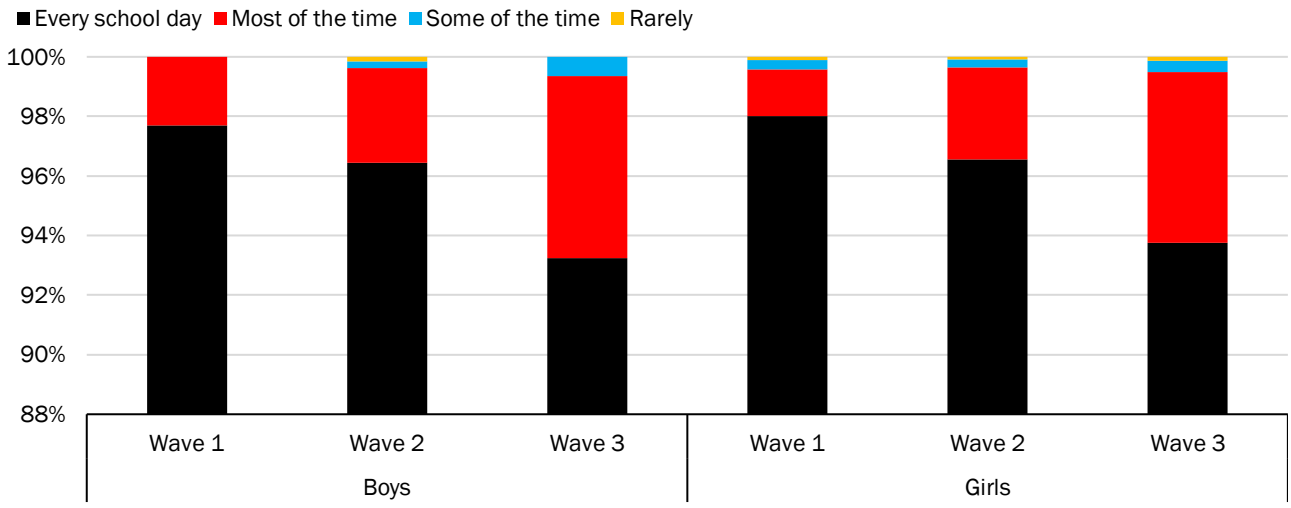
Table 37: Change in journey time to boys' and girls' school, by district, discounting changes less than 5 minutes

	Boys school			Girls school		
	No change (within 5 minutes) (%)	Shorter (by more than 5 minutes) (%)	Longer (by more than 5 minutes) (%)	No change (within 5 minutes) (%)	Shorter (by more than 5 minutes) (%)	Longer (by more than 5 minutes) (%)
Lower Dir	48.4	30.2	21.3	50	21.6	28.4
Swat	48.6	26.4	24.9	46.5	27.6	25.8
Total	48.6	28	23.5	48.1	24.9	27
	Mean change (mins)	Mean change (mins)	Mean change (mins)	Mean change (mins)	Mean change (mins)	Mean change (mins)
Lower Dir	0.19	−20.1	18.2	−0.7	−18.2	17.6
Swat	−0.4	−18.4	18	0.42	−19.8	16.9
Total	−0.2	−19.1	18.1	−0.1	−19.2	17.2

An overwhelming majority of respondents stated that they did not change boys' (2%) and girls' (1%) schools between waves 2 and 3, after 5% and 4% respectively stated switching boys' and girls' schools between waves 1 and 2.

Primary school attendance for both girls and boys show the overwhelming majority of boys and girls attend every day (above 93% in all waves). However, there has been a slight decrease in the proportion of boys and girls attending school every day over waves, although this is mostly absorbed by the 'most of the time' category (Figure 13).

Figure 13: School attendance for girls and boys, over time

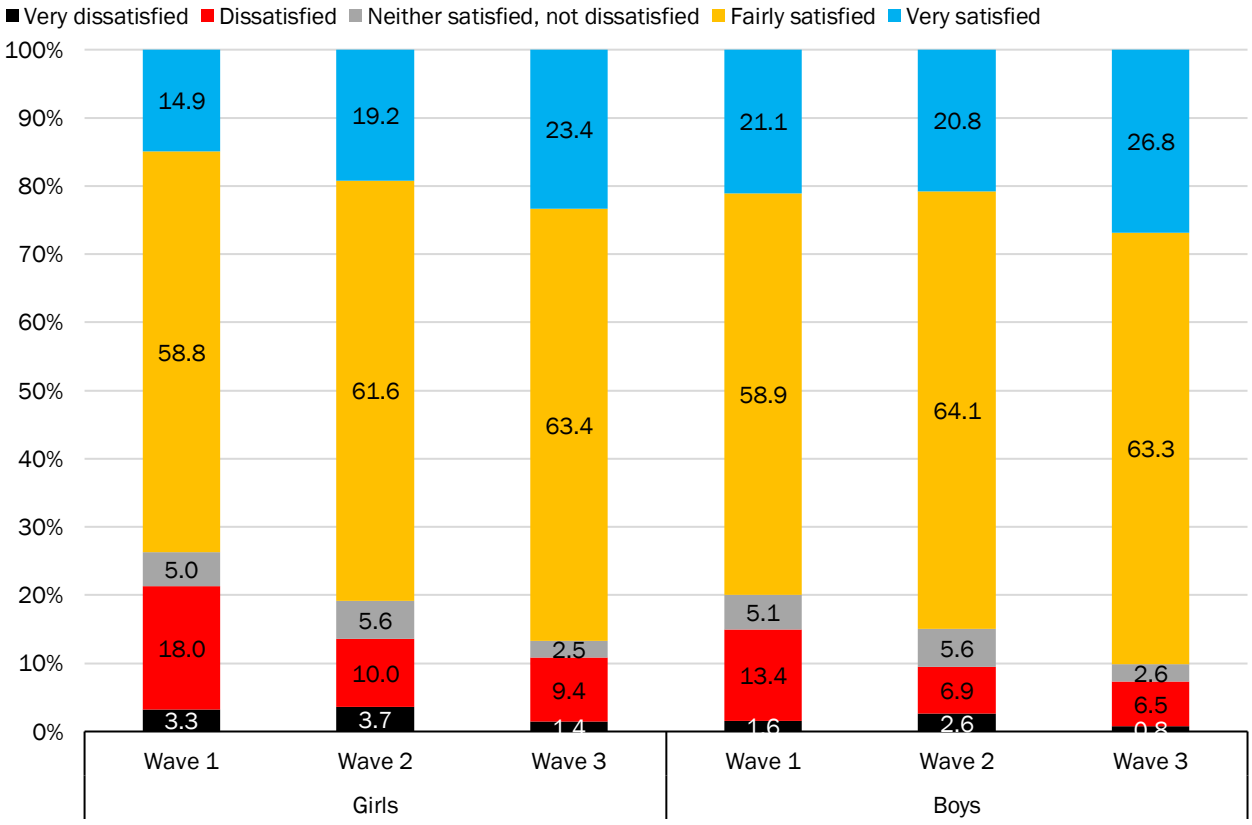


Note: The scale on the Y axis starts at 88%, not 0.

Around a third of those at boys' schools pay fees and a quarter of those at girls' schools in wave 3, representing a decrease of 2 percentage points from wave 2 for boys' schools and an increase of one percentage point for girls' schools.

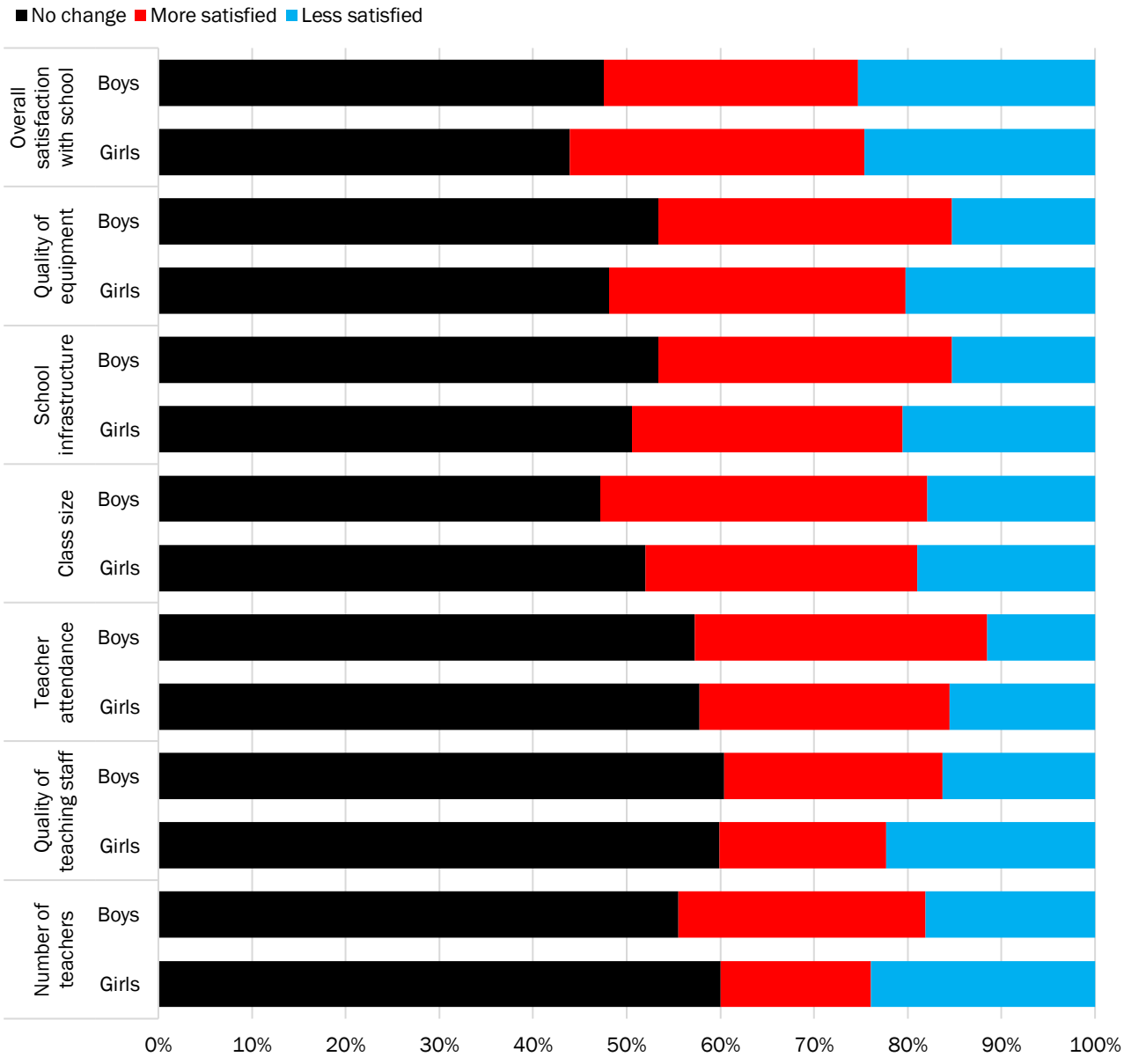
The data for levels of satisfaction for girls' and boys' schools show improvements in levels of satisfaction across the three waves (Figure 14). The increase in school satisfaction kept on improving for both sexes in the last wave. It is still slightly superior for boys than for girls (90% against 87%).

Figure 14: Satisfaction with girls' and boys' schools, across waves



Looking at changes in levels of satisfaction with specific indicators of school quality between waves 2 and 3 (Figure 15), more respondents became more satisfied than less satisfied across all indicators for girls' and boys' schools. For boys and girls, the biggest perceived improvement was with the quality of teaching staff. For both boys and girls, 34% were more satisfied in wave 3, compared to 22% less satisfied (with 44% no change in satisfaction levels).

Figure 15: Change in satisfaction with different aspects of school, between waves 2 and 3, by school type



Although our data does not disaggregate by gender of children attending schools when asking about problems with schools, there was a continuous increase in the percentage of households who experienced a problem with education services over the panel survey. While 17% of households experienced a problem in wave one, 20% experienced one in wave two and finally one in four households (26%) in wave three.

5.2.1 Regression; access to education

The regression analysis carried out to identify the variables correlated with education access showed that few variables were significantly associated with changes in travel times to school. Once again, the

results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant. Journey times to boys' schools are longer for female-headed households by 5 minutes compared to their male-headed counterparts. Children from rural households are on average facing return journeys to schools 3 minutes longer than the urban children. Relocating between waves is associated with longer journey times to girls' schools.

5.2.2 Regression: satisfaction with education

Next, a regression analysis was performed to analyse the variables correlated with changes in satisfaction with boys' and girls' school separately. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

Unsurprisingly, several school-related variables were statistically significant. For both boys' and girls' schools, being satisfied with the school infrastructure was identified as an important explanatory factor for overall satisfaction with schools, increasing the likelihood of being satisfied with schools by 5 times (girls) and 4 times (boys). For boys' schools, becoming more satisfied with class sizes was also associated with a higher likelihood of overall satisfaction with schools, meanwhile for girls' schools, satisfaction with the quality of teaching and the number of teachers were both identified as leading to higher likelihood of overall satisfaction with schools. Changing to paying fees were significantly associated with neither boys' satisfaction with school nor girls' satisfaction with school. However, using a random effect model not looking at changes we can see that those paying school fees for girls' schools are on average much more likely to be satisfied with their school. An increase in distance to school was not correlated with an increase in satisfaction with school for either girls' or boys' schools.

5.3 Water

The length of a return trip to a household's drinking water source is used as an indicator for access to water. In waves 1 and 2, households' average travel time to a drinking water source was 16 minutes, which increased to an average of 20 minutes in wave 3 (Table 38). Running a two-sample t-test, the difference in means between waves 2 and 3 is statistically significant (the difference in means between the wave 1 and wave 2 samples is not statistically significant).

Table 38: Average return journey to water source (minutes), across waves

	Wave 1	Wave 2	Wave 3
Lower Dir	20.1	19.4	27.8
Swat	12.7	13.5	12.4
Total	15.9	16.0	20.0

Note: A two-sample t-test was run to compare the difference in means between Lower Dir and Swat households in each wave. In each case, the difference in means was statistically significant with the p value<0.01.

There was a lot of variation between waves 2 and 3 in journey times, compared to between waves 1 and 2. Between waves 1 and 2, the majority of respondents (69%) experienced no change in journey time; meanwhile, between waves 2 and 3, only 13% reported the same journey time, with nearly half experiencing a longer journey and 39% experiencing a shorter journey (Table 39).

Table 39: Changes in the length of journey time to the water source between waves

				Waves 1 to 2			Waves 2 to 3
Length of journey to health centre	**No change (%)**	**Longer (%)**	**Shorter (%)**	**No change (%)**	**Longer (%)**	**Shorter (%)**
Lower Dir	65	16	19	11	56	13
Swat	72	17	11	16	39	47
Total	69	17	14	13	47	39
Mean change in minutes	**No change (mins)**	**Longer (mins)**	**Shorter (mins)**	**No change (mins)**	**Longer (mins)**	**Shorter (mins)**
Lower Dir	0	17.1	–13.9	n/a	24.8	–18.8
Swat	0	13.1	–13.8	n/a	11.0	–12.9
Total	0	14.7	13.8	0	19.3	–15.5

When discounting small journey changes (of 2 minutes longer or shorter) the average increase in journey time was 20 minutes (for 46% of respondents), and the average decrease was by 16 minutes (for 38% of respondents) (Table 40). So not only have the majority of households experienced changes, but they are also quite large changes, on average. More households in Lower Dir experienced an increase in journey length, and by a longer time in minutes, than in Swat in wave 3, compared to wave 2.

Table 40: Changes in the length of journey time to the water source between waves 2 and 3, with 2-minute changes discounted

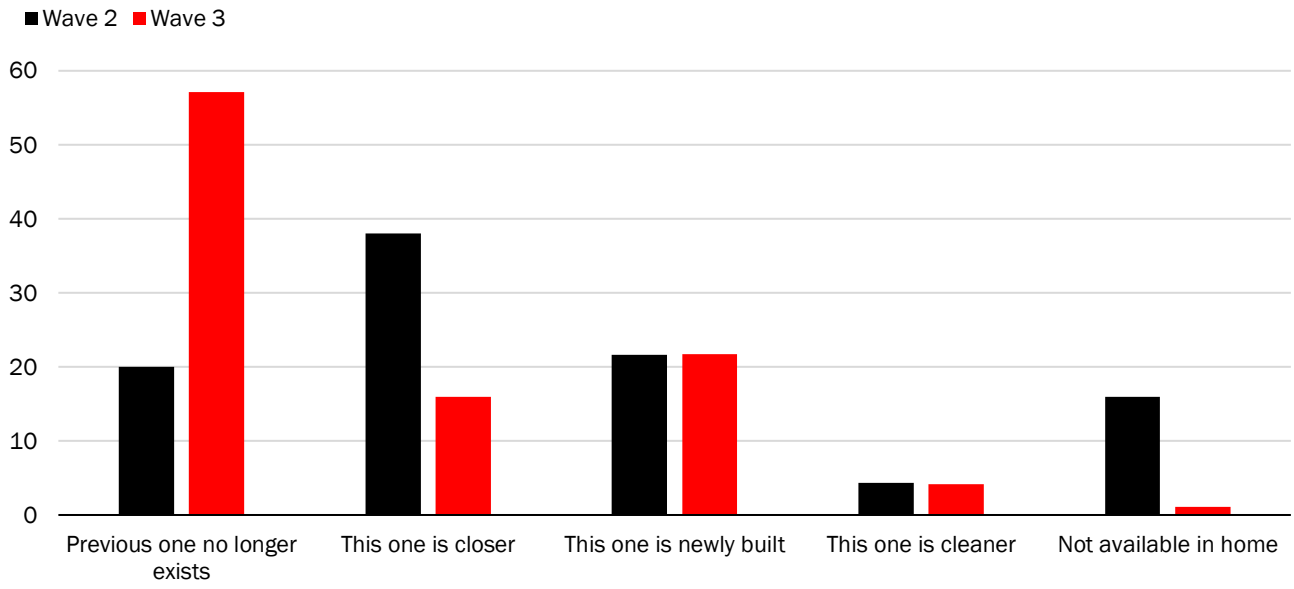
		Waves 2 to 3	
Length of journey to health centre	**No change of more or less than 2 minutes (%)**	**Longer by 2 minutes (%)**	**Shorter by 2 minutes (%)**
Lower Dir	12.2	54.9	32.9
Swat	21	36.8	42.2
Total	16.7	45.7	37.6
Mean change in minutes	**Change of more or less than 2 minutes (mins)**	**Longer (mins)**	**Shorter (mins)**
Lower Dir	0.1	25	–19
Swat	0.2	12	–13
Total	0.2	20	–16

Table 41: Percentages of households having switched water source in waves 2 and 3

District	**Wave 2**	**Wave 3**
Lower Dir	7%	26%
Swat	4%	8%
Total	5%	15%

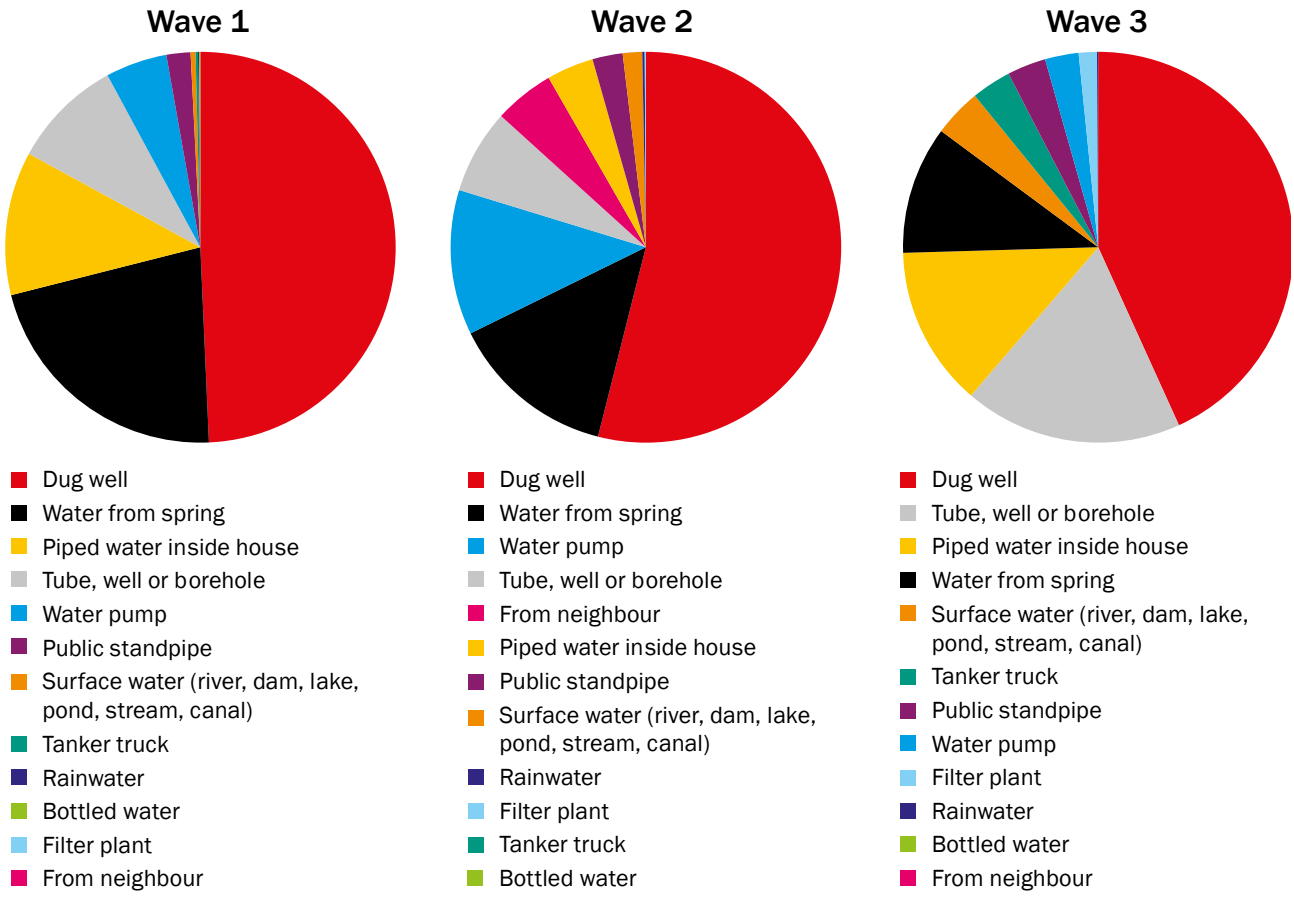
Results in Table 41 show that, while only 5% of respondents had changed water source between waves 1 and 2, the proportion jumped to 15% between waves 2 and 3. This overall rise was explained by a sudden increase in the number of water sources that ceased to exist. Indeed, of those who switched water source, the main reason given in wave 2 was about better access – that the new source was closer (Figure 16). However, the majority of respondents in wave 3 (57%) stated that the change of water source was the consequence of the closure of the previous one. It could be inferred that a number of respondents were required to switch to a water source further away due to their original source being discontinued, accounting for the longer average journey to water observed.

Figure 16: Why did you switch water source?



The main source of drinking water across all waves is dug wells – 49% were using water from dug wells in wave 1, 54% in wave 2 and 43% in wave 3 (Figure 17). There was an increase in wave 3 in the percentage of households using tube, well or borehole (18%), doubling from previous waves. Promisingly, after a decrease in wave 2 of respondents with piped water in the house (4% compared to 12% in wave 1), this increased to 13% of respondents in wave 3, representing the third most important source of drinking water to our sample.

Figure 17: Sources of drinking water across waves



At the same time, the proportion of respondents who stated that they must pay for drinking water *increased* in wave 3 – in wave 1, 85% did not need to pay for drinking water, 94% in wave 2, but only 76% in wave 3 (Table 42). The majority of those in wave 3 who do pay for drinking water do so on a monthly basis.

Table 42: Percentages of households paying for water

Do you pay for water?	Wave 1	Wave 2	Wave 3
No	85.2%	93.5%	75.8%
Yes, weekly	2.9%	1.7%	5.6%
Yes, monthly	12.0%	4.8%	18.6%

From Table 43 we can see that more than half of the households sampled were maintaining their own water supply in the first two waves, but the percentage dropped to 36% in the last wave. This is mostly accounted for by an increase in community-maintained water sources (39%). Government-maintained water sources stayed relatively constant across the three waves (between 13% and 16%). There are interesting differences between districts – in Lower Dir, 80% of households maintained their own water source, meanwhile in wave 3 this had drastically reduced to 21%. Community-maintained water sources were more prevalent in Lower Dir (47%) than in Swat (34%), as were government-maintained sources (18% and 11%, respectively). Interestingly, there was a marked (self-reported) decline in wave 3 of children mostly collecting water. The percentage of households reporting that water was mostly collected by children increased from 38% to 47% between wave 1 and 2, before dropping to only 13% in wave 3.

Table 43: Percentages of households per institutions responsible of maintaining their water source

	Wave 1			Wave 2			Wave 3		
	Lower Dir	Swat	Total	Lower Dir	Swat	Total	Lower Dir	Swat	Total
Government	9%	16%	13%	7%	21%	16%	18%	11%	14%
NGO/INGO	1%	1%	1%	3%	2%	2%	1%	1%	1%
Community	9%	17%	14%	35%	11%	21%	46%	34%	39%
Charity	1%	5%	3%	3%	7%	5%	7%	4%	5%
Community organisation	1%	3%	2%	7%	3%	4%	7%	5%	6%
Self-maintenance	80%	59%	67%	46%	56%	52%	21%	46%	36%

Reported problems with water sources kept on increasing to reach a level of almost 45% of households having had at least one issue in the past year (Table 44). The occurrence of problems with water seems fairly uncorrelated over time, in other words it does not seem to be linked to people having had problems before. Looking at Table 45 to who switched from having a problem to not having a problem and vice versa, we can see that there is substantial 'churning' between the waves.

Table 44: Problems with water source

Problems with water source	Wave 1	Wave 2	Wave 3
No	59.4	57.3	55.3
Yes	40.6	42.7	44.7
Total	100	100	100

Note: Two-sample t-tests were run to compare the probability of experiencing a problem with the water source between waves 1 and 2 and between waves 2 and 3. None of the differences are significantly distinct.

Table 45: Problems with water services – churning between waves

Problems with water source	Waves 1 to 2	Waves 2 to 3
Always no	39.5	34.8
Always yes	22.5	22.5
No to yes	20.1	21.9
Yes to no	17.9	20.7
Total	100	100

Despite the fact that reported problems with water services kept on increasing, the perception of quality of drinking water in all waves remained high. After dipping slightly in wave 2 at 88%, it reached 94% in the third wave, like in the first wave.

Table 46: Percentages of respondents agreeing with the fact that their water is clean and safe, across the three waves

District	Union Council	Wave 1	Wave 2	Wave 3
Lower Dir	Haya Serai	96.4%	85.5%	90.5%
	Lal Qila	96.5%	79.7%	89.8%
	Total	96.4%	82.6%	90.2%
Swat	Charbagh	89.1%	97.0%	94.3%
	Baidara	88.9%	83.9%	97.7%
	Bar Abakhel	96.2%	94.6%	99.4%
	Total	91.4%	91.6%	97.2%
Total		93.4%	88.0%	94.4%

Note: Two-sample t-tests were run to compare the total percentages of households having clean water between waves 1 and 2 and between waves 2 and 3. The overall average in wave 2 is significantly lower than the average in wave 1 at the 0.1% level and the average in wave 3 is significantly higher than the average in wave 2 at the 0.1% level.

5.3.1 Regression: access to water

The following paragraphs list the variables which have been identified in the regression analysis to be correlated with change in access to water. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

Unsurprisingly, most of the water-services-related variables were statistically significant. Having to start to queue for water was associated with a longer travel distance to the water source. This correlation could be explained by a reduction in the number of water sources in the villages. Indeed, most households who switched water sources in the last wave reported doing so following the disappearance of their previous source. Households that have experienced a problem with their water source are also seen to have longer journey times to the source, with a 2-minute increase in journey time compared to households that have not experienced a problem. Once again, problems with the water source could be linked to the disappearance of the previous source used.

Increase in household asset levels was found to be linked to shorter journey times to a water source. Having a larger household livelihood activity portfolio was also correlated with shorter journey times to water. Yet, at the same time, having a household member engaged in casual labour, selling goods or farming their own land are all associated with longer journey times to a water source. And a higher CSI score (higher food *in*security) is curiously also associated with a shorter journey length to a water point. Also, curiously, households who become the owner or a car, jeep or van are reporting longer journey times to the water sources than previously.

In terms of *risk, security and shocks*, households that experienced an economic shock had on average longer return journeys to a water source.

Those living in rural households are associated with a 2-minute longer journey time than those in urban areas. And one ethnic group emerged as statistically significant in the regression analysis – Sayyid have shorter journey times than the reference category 'other'. Households in Swat tend to have shorter journey times than those living in Lower Dir.

5.3.2 Regression: satisfaction with water quality

The binary response to 'is your water clean and safe' was used as the outcome variable for the regression analysis on water satisfaction. The analysis identified several factors correlated with changes in satisfaction with water source. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

Several *water-source*-related factors were significantly correlated with changes in water quality. Surprisingly, switching from not having to pay for water to having to pay for it is associated with a lower likelihood of being satisfied with the water quality. An increase in journey time is linked to a decrease in the perceived water quality. Households which have seen an increase in their distance to the water source are on average less satisfied with their water. Similarly, having to start queuing for water is linked to a decrease in the perceived quality of the water. Unsurprisingly, switching water source from tube, well or borehole to tap was associated with a higher likelihood of being satisfied with the quality of the water.

While no livelihood variable was identified in the regression, several factors related to the *perceptions of safety* were found to be statistically significant. A higher perceived safety level outside of the village was associated with a higher water quality satisfaction. Households who have experienced more shocks tend to be less likely to be satisfied with water.

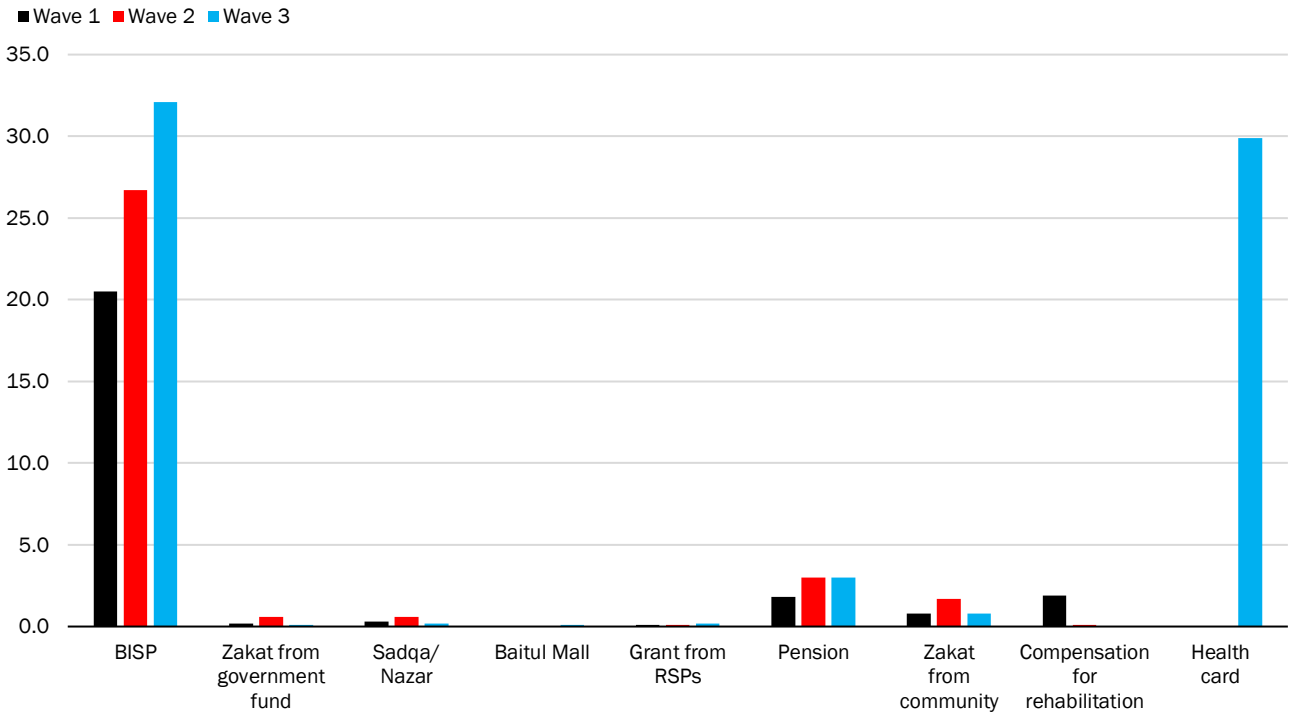
Finally, households that are more educated are less likely to be satisfied with the water source: those with secondary- and tertiary-level education are less likely to be satisfied with water source than those with no schooling.

5.4 Social protection

Overall, the proportion of households receiving any social protection transfer has significantly increased over the course of the SLRC survey, from 25% in wave 1, to 31% in wave 2 and 46% in wave 3. Almost one in two households surveyed was found to be benefiting from a social protection transfer in the last wave. Households in our sample received different types of social protection, including the Benazir Income Support Programme (BISP), zakat from the government (a religious tax paid by wealthy people to support the poor), sadqa/nazar (charity from wealthy individuals), and the health card, which is a relatively new social protection intervention.

The most prevalent type of social protection transfer is BISP (32%) – which has steadily increased in access across waves, consistent with government policy – followed by the health card (30%). The increase in coverage of the social protection transfers is mostly explained by the start of the health card in the period between waves 2 and 3 (Figure 18).

Figure 18: Recipients of social protection transfers across waves



There are key differences between female- and male-headed households, (Table 47). Over half of female-headed households receive social protection by wave 3, predominantly from Zakat from the community (29%) and BISP (27%). Meanwhile, slightly fewer male-headed households (46%) received any social protection transfer by wave 3. Interestingly, their coverage with BISP and health card is higher, with around a third of male-headed households receiving these.

Table 47: Recipients of social protection, by transfer and gender of household head

	Female-headed households			Male-headed households		
Social protection transfer	**Wave 1 %**	**Wave 2 %**	**Wave 3 %**	**Wave 1 %**	**Wave 2 %**	**Wave 3 %**
BISP	13.0%	19.5%	26.7%	21.1%	27.7%	32.2%
Zakat from government fund	0.0%	0.0%	0.0%	0.2%	0.6%	0.1%
Sadqa/nazar	0.6%	1.9%	0.0%	0.3%	0.5%	0.2%
Grant from Baitul Mall	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Grant from RSPs (e.g. NRSP UC Poverty Program) or other NGOs	0.0%	0.0%	4.2%	0.2%	0.1%	0.1%
Pension	1.9%	5.1%	0.0%	2.0%	2.9%	3.0%
Zakat from community	3.7%	4.2%	28.9%	0.5%	1.5%	0.5%
Compensation for Rehabilitation (housing)	1.2%	0.0%	0.0%	2.0%	0.1%	0.0%
Health card	n/a	n/a	8.3%	n/a	n/a	30.1%
Other (specify)	n/a	n/a	0.0%	n/a	n/a	0.0%
Any social protection transfer	19.1%	27.6%	51.6%	25.1%	31.3%	45.7%

As can be seen in Table 48, in previous waves, households in Swat were more likely to receive social protection (35% in wave 2 and 32% in wave 1) than those in Lower Dir (24% in wave 2 and 13% in wave 1). However, in wave 3, a greater share of households in Lower Dir (49%) received social protection than in Swat (44%).

Table 48: Percentages of households receiving a social protection transfer per district

Union councils	Districts	Wave 1	Wave 2	Wave 3
Lower Dir	Haya Serai	14.7%	22.4%	43.7%
	Lal Qila	12.1%	26.1%	53.4%
	Total	13.4%	24.2%	48.5%
Swat	Charbagh	40.6%	37.1%	55.1%
	Baidara	25.9%	35.4%	38.6%
	Bar Abakhel	29.8%	32.5%	38.8%
	Total	32.0%	35.0%	44.0%
Total		24.6%	30.7%	45.8%

Note: Two-sample t-tests were run to compare the total probability of receiving social protection between waves 1 and 2 and between waves 2 and 3. The increase in overall probability of receiving social protection transfers across the waves is significant at the 0.1% level.

We can see in Table 49 that 22% of households started receiving social protection transfers in wave 3. This high number of new recipients is to a large extent explained by the introduction of the health card.

Table 49: Changes in receipt of social protection across waves

Recipients of any social protection transfer (%)			Change wave 2 to wave 3 (%)			
Wave 1	Wave 2	Wave 3	Never received it	Always received it	Started receiving	Stopped receiving it
25	31	46	47.58	23.74	21.71	6.98

BISP – the Pakistani government's flagship social protection programme – is the most received form of social protection among respondents. The majority of respondents in wave 3 stated that the BISP transfer always arrived on time. There was a slight increase in the proportion of respondents stating the transfer arrives 'rarely' or 'never' on time in wave 3 (14% compared to 9% in wave 2 and 8% in wave 1). There appeared to be a decrease in the self-reported impact of the BISP transfer, with 54% of recipients stating it was too small to make a difference to their life, up from 34% in waves 1 and 2.

5.4.1 Regression: receipt of social protection

The results of the regression analysis presented below show the explanatory variables being significantly correlated with the fact of receiving social protection. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

Firstly, families that have become more food insecure are more likely to have received social protection transfers, as are households in debt. Recipients of livelihood assistance are 49% more likely to also receive social protection transfers, showing that the two kinds of transfers are strongly correlated. Conflicting the finding that worse-off families are more likely to receive social protection, a higher asset-ownership level is associated with a slight but significantly *higher* likelihood of receiving social protection. An increase in the number of livelihood activities within a household is associated with a lower likelihood of receiving social protection. As the analysis of the correlation between variables does not allow the inference of any causation, it is difficult to disentangle the impact of the transfers on the households' welfare from the selection bias of the households eligible for such transfers.

Secondly, regarding the risk, security and shocks variables, we can see that a higher perception of safety was correlated with a higher probability of receiving a social protection transfer across the waves. Experiencing fighting in the area, on the other hand, was linked to a decrease in the probability of receiving a social protection transfer compared to when there was no fighting in the area. Experiencing more crimes had the opposite effect: an increase in the number of crimes experienced was correlated

with a higher chance of getting a social protection transfer. Similarly, experiencing a health or agricultural shock was linked to a higher likelihood of receiving a transfer in comparison to when the household had not experienced such a shock.

Lastly, households composed of older members as well as larger households are more likely to receive social protection. Primary-educated households (on average) are less likely to receive social protection transfers than uneducated households. Households in Swat are four times more likely to receive social protection than those living in Lower Dir. Living in a rural area is associated with a lower likelihood of receiving social protection than urban areas.

5.5 Livelihood assistance

The survey also asked about livelihood assistance/services, which includes interventions like seeds and tools, inputs and trainings. The percentage of respondents receiving livelihood assistance decreased further in wave 3 to just 2%, after a drastic decrease from 24% in wave 1 to 5% in wave 2. The main forms of livelihood assistance are shown in Table 50.

Table 50: Received livelihood assistance, by type, across waves

	Wave 1		Wave 2		Wave 3	
	Freq.	% (of those who received any livelihood assistance transfer)	Freq.	% (of those who received any livelihood assistance transfer)	Freq.	% (of those who received any livelihood assistance transfer)
Seeds and tools	226	50.8%	39	38.6%	6	17.1%
Agricultural extension	13	2.9%	8	7.9%	1	2.9%
Training provisions	20	4.5%	19	18.8%	10	28.6%
Livestock	76	17.1%	8	7.9%	3	8.6%
Fruit saplings	55	12.4%	7	6.9%	5	14.3%
Poultry	172	38.7%	12	11.9%	0	0.0%
Agriculture inputs	39	8.8%	8	7.9%	8	22.9%
Fodder/vaccination	27	6.1%	20	19.8%	1	2.9%
Fertiliser/pesticide	135	30.3%	15	14.9%	1	2.9%
Cash transfer/loan	–	–	2	2.0%	4	11.4%
Households who received any livelihood assistance	**445**	**0.2%**	**101**	**0.1%**	**35**	**0.0%**

Note: A household can receive more than one type of household assistance, so the total in the last line is not a sum of the column.

We were unable to run regression analysis as the receipt of livelihood assistance has decreased so substantially over waves (to just 35 respondents in wave 3). This would undermine the conclusions we would be able to draw from regression analysis, so is omitted in this report.

5.6 Summing up

It was first shown that the average travel time to health centres decreased in the last wave. Accessibility to health services seems substantially better in Swat that in Lower Dir. The majority of households who switched facility did so in order to get better-quality services. The proportion of households paying official fees for health services kept on decreasing and reached 65% in the last wave. The analysis of the change in travel time showed that households which started to pay fees for health services saw their travel time increased. An increase in the assets owned by the household from one wave to another was also correlated with an increase in the travel time to the health facility used. Households were on average more satisfied with the number of qualified personnel as well as with the availability of

medicine in the last wave. Waiting time was the only criterion which showed a slight decrease in satisfaction. These findings were reflected by the increase in overall satisfaction with health services witnessed in each of the union councils in the last wave. Those changes happened despite a sharp rise in reported problems with health services. The analysis of the evolution of the overall satisfaction with health services revealed that households that have switched health facility reported an improvement in the quality of the service received. Respondents who travelled for longer to reach the facility were also seen to be more satisfied with the facility used. Those results suggest that an increase in travel time does not always translate into a decrease in the accessibility of a service. Starting to pay fees for health services, however, is not correlated with an increase in overall satisfaction with health services.

Secondly, looking at education, it has been shown that, overall, travel time to school has decreased. School attendance dipped slightly in the last wave; a smaller percentage of both girls and boys reported going to school every day. Satisfaction with education services continued to increase in the last wave both for girls and boys. Regression analyses showed that very few variables were significantly correlated with changes in accessibility or satisfaction with education.

Third, the analysis of the evolution of the use and perception of water services revealed that water accessibility increased sharply in Lower Dir while decreasing slightly in Swat. A total of 15% of the households changed water source in the last three years. Of those 15%, the vast majority of households did so because their previous sources ceased to exist. A major drop, from 47% to 13%, in the proportion of households relying on children to fetch the water was observed in the last wave. The proportion of respondents reporting drinking water as clean and safe substantially increased in the last wave after having dropped between waves 1 and 2. The perception of water quality was significantly lower in Lower Dir, in line with the lower accessibility observed in that district. Although the satisfaction with water increased substantially, the number of problems respondents reported increased in the last period. Households that have experienced an increase in their travel distance to the water source were also less satisfied with the water quality.

Finally, the proportion of households receiving social protection transfers increased considerably in the last wave. This increase in coverage was mainly the result of the appearance of the health card and (to a lesser extent) of the increase of the number of households receiving BISP transfers. The share of respondents claiming that the BISP transfers had no impact on their life greatly decreased between the last two waves. It is difficult to draw a conclusion on the impact of the social protection transfers as the households who started to receive transfers are likely to have faced more shocks and been more food insecure than they used to be, due to targeting of the transfers. The only measure of wellbeing that was observed to be increasing in line with the receipt of a social transfer was the level of assets.

6 Changes in perceptions of governance

The following analysis considers people's perception of service-related problems and responses to this by the government, and then draws on both descriptive statistics and regression analysis to explore what factors influence change in people's perception of government actors. Respondents were asked: (1) whether they feel that local and central governments care about their opinion, and (2) to what extent government decisions reflect the priorities of respondents. This gives us an idea of the sense of participation and ownership in the governance process.

In addition, this section presents findings from the new module on state legitimacy: descriptive statistics and (cross-sectional) regression analysis on this additional data from one time point only, in 2018.

6.1 Government responsiveness to service-related problems

Figure 19 summarises the results on problems with services presented in the last section. As discussed, although there has been a general increase in satisfaction with services in the last wave of the survey, the numbers of problems with services reported by respondents have increased for all services. The increase has been the most pronounced for health services, with almost half of the respondents having experienced a problem in the past year. We can see in Figure 20 that a substantial percentage of those households having experienced a problem in the past year decided to make a complaint. In the last wave, the rate of complaint was the highest for the water services, with 57% of the households deciding to report the problem to the authorities.

However, it can be seen in Figure 21 that most of the complaints are directed toward figures of authority other than the more traditional ones listed in the questionnaire. At this stage of the analysis it is not clear what the 'other' responses refer to. For all services, elders come in second position, with between 10% and 24% respondents turning to elders.

Figure 19: Percentages of respondents having experienced problems with services in the past year

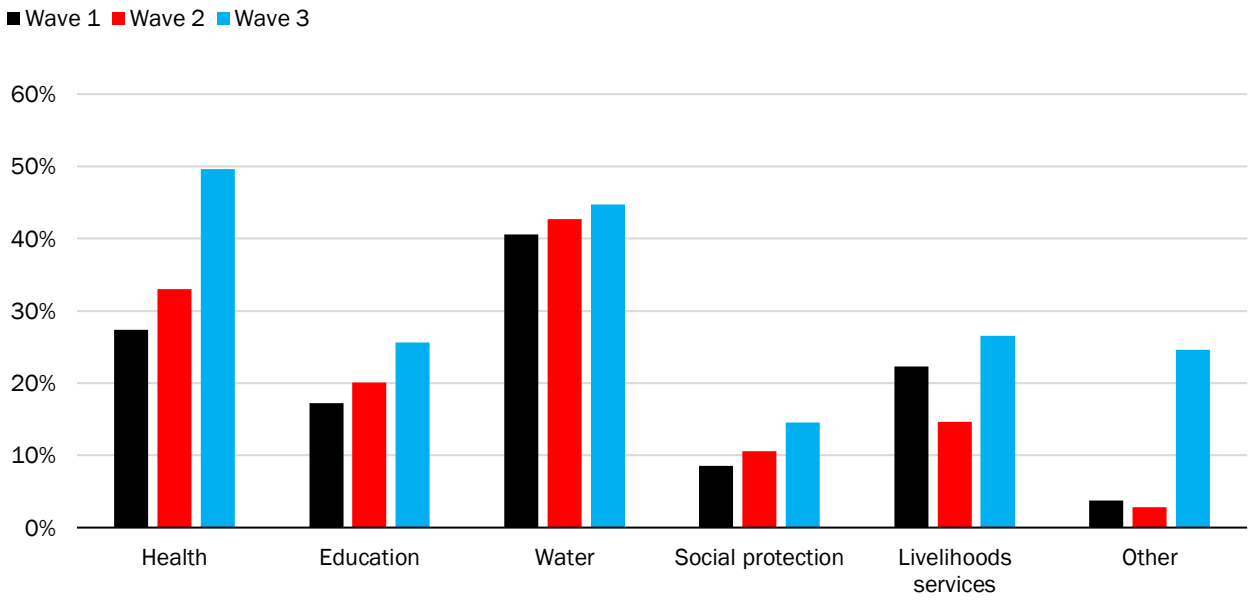


Figure 20: Percentages of households having experienced problems with services who decided to make a complaint, across the three waves

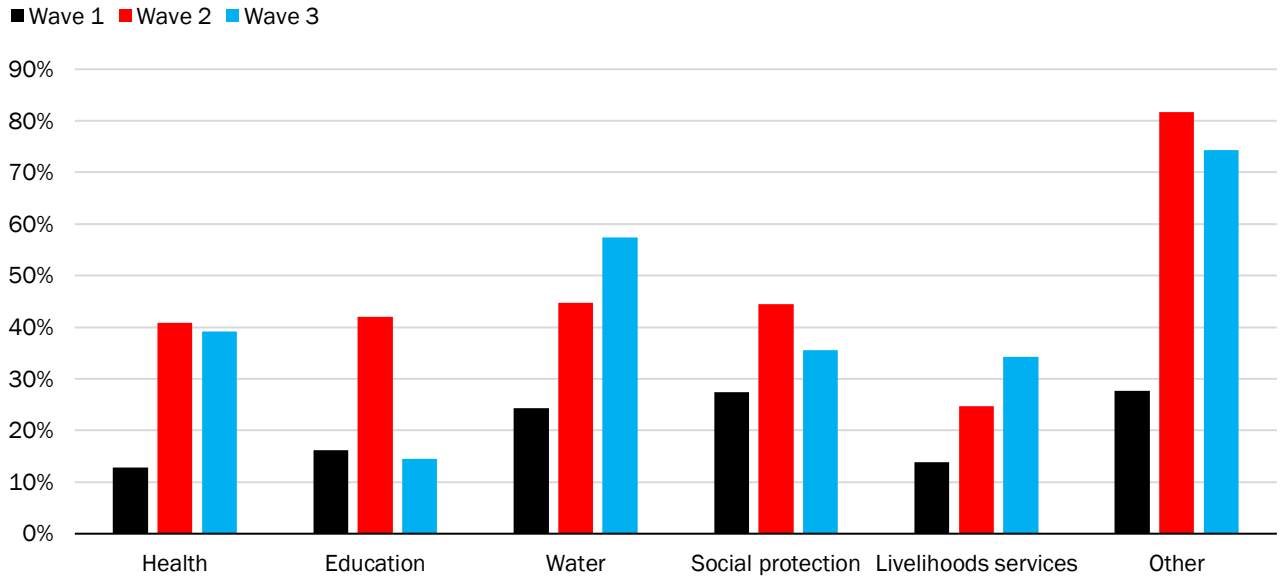
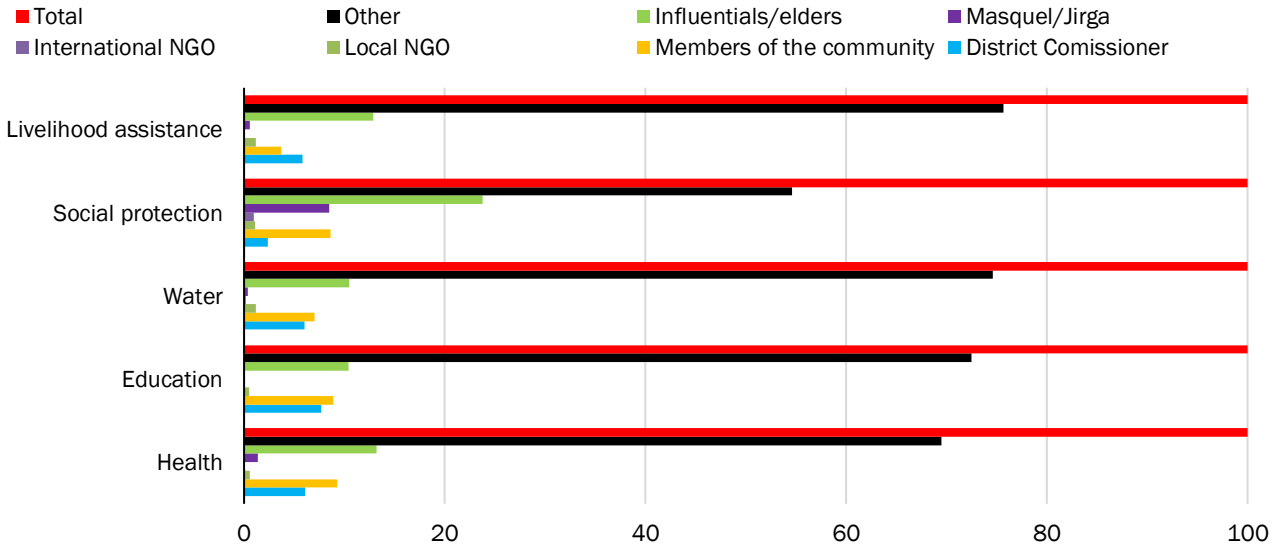
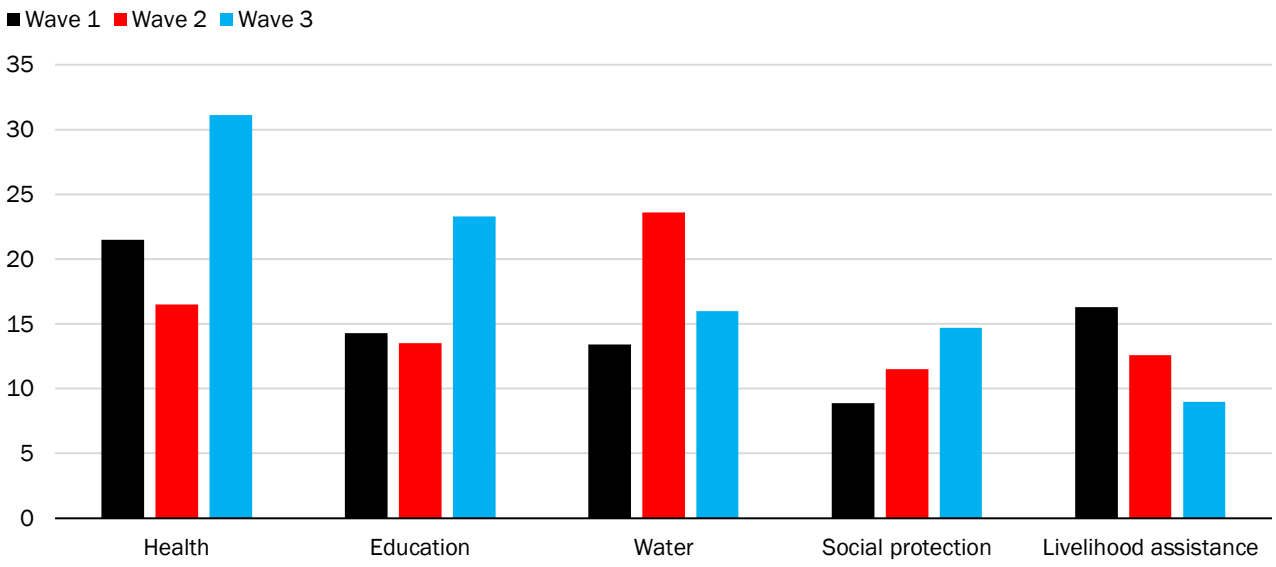


Figure 21: Percentages of complaints made for each of the services in the third wave



The proportion of complaints eliciting an answer increased in the last two waves for most of the specified services (health, education, social protection). It can be seen in Figure 22 that health-related complaints are the ones for which the authorities are the most responsive, with a response rate of almost 31%.

Figure 22: Percentages of complaints that led to a response across the three waves



Although the authorities overall seem to have been more responsive about problems with services, the percentage of households having been consulted in any way about the service in the last 12 months dropped between the last two waves (Table 51). With 4.5% of households having been consulted, water remained the service for which the households were the most consulted.

Table 51: Frequencies and percentages of households having been consulted about services

Services	Wave 1		Wave 2		Wave 3	
	%	Freq.	%	Freq.	%	Freq.
Health	0.7%	15	6.0%	128	3.5%	75
Education	1.0%	21	6.5%	137	4.3%	90
Water	2.7%	58	9.7%	204	4.5%	96
Social protection	0.1%	3	2.6%	54	1.0%	21
Livelihood services	0.2%	5	0.4%	8	0.6%	12
Other	0.0%	0	2.0%	41	0.6%	13

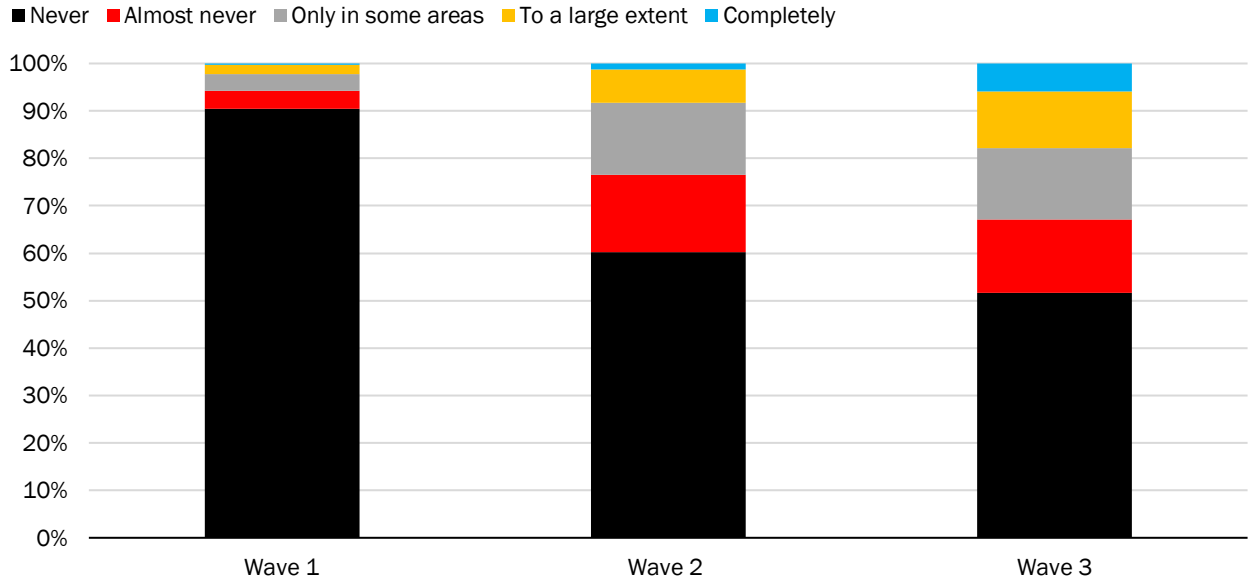
In conclusion, the proportion of households that have experienced problems with services continued increasing in the third wave. Occurrence of problems was especially high for water and the health services. Secondly, despite the fact that official ways to make complaints became much more broadly known for all services in the third wave, the proportions of households having experienced a problem who decided to make a complaint increased only for the water services and dropped for all the others. On the other hand, the response rates from the service provider increased for most of the services, signalling an improvement in the authorities' responsiveness. Finally, after decreasing between waves 2 and 3, consultation rates continue to be low for all the services.

6.2 Perception of local and central government

To assess the respondents' perceptions of formal state governance, the following question was asked to each of the respondents: 'To what extent do you feel the decisions of those in power in (local and central) government reflect your priorities?' We can observe a clear trend in the evolution of the respondents' perception of central and local government (Figure 23). The improvement in perceptions observed in wave 2 has continued into wave 3. While in wave 1, 91% of the respondents said that the

decisions of those in power 'never' reflected their priorities, the proportion in wave 3 had decreased to 51.6%, with one third having a fairly positive opinion of local government.

Figure 23: To what extent do the decisions of local government reflect respondents' priorities



The change was even more pronounced for the perception of central government (Figure 24), with 41% of respondents saying that the central government's decisions reflected their priorities at least in some areas.

Figure 24: To what extent do the decisions of central government reflect respondent's priorities?

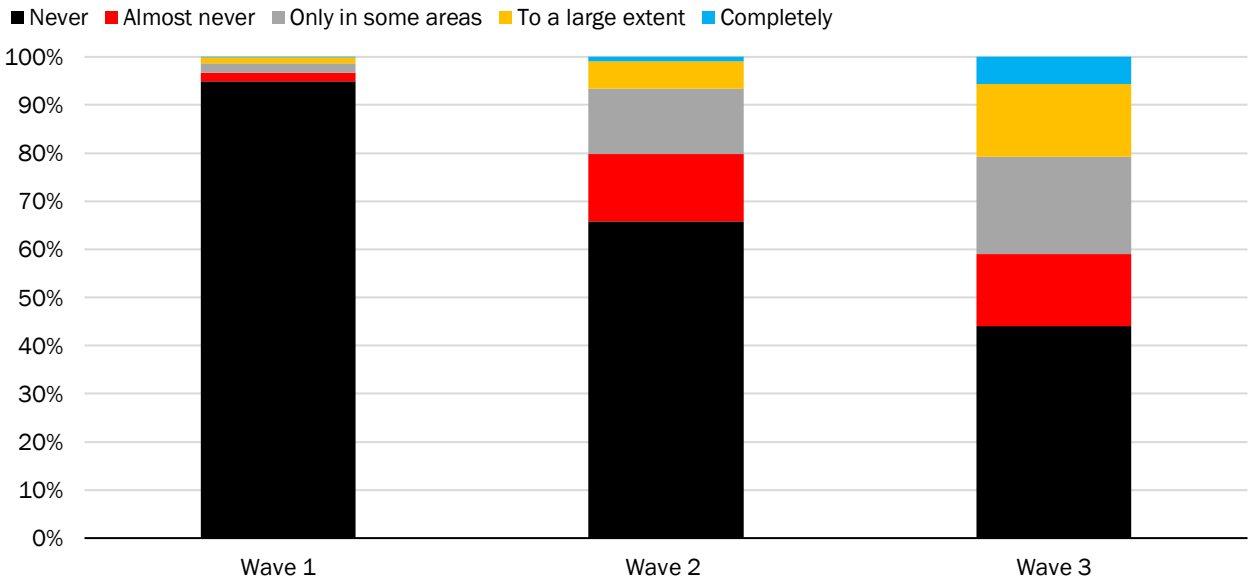


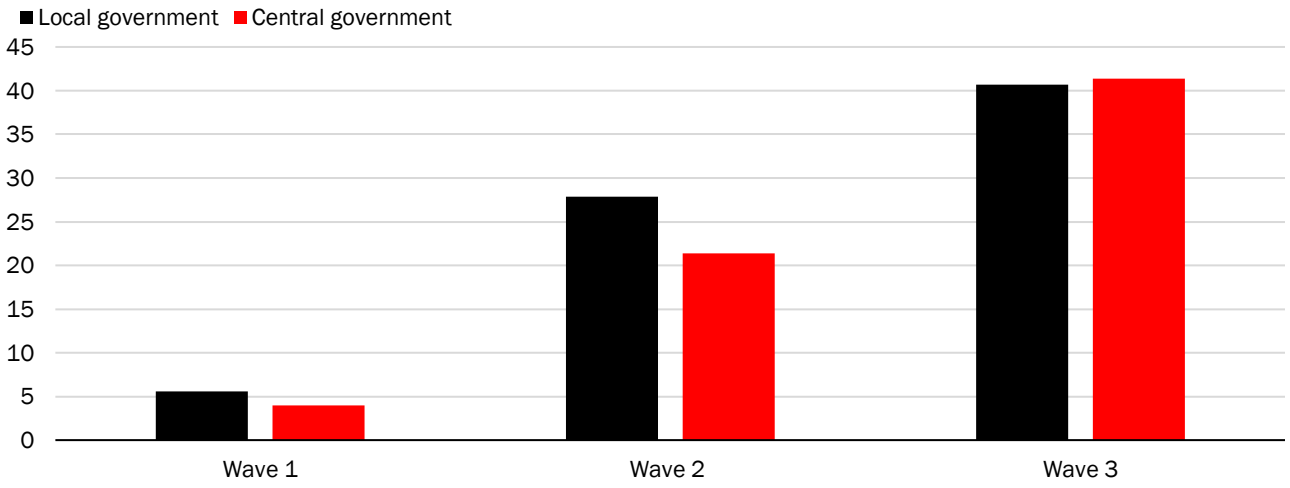
Table 52 shows the government perception disaggregated by gender. The gap in perception between male and female respondents has narrowed, even if there is still evidence that female respondents tend to perceive local and central government more unfavourably. In the first wave, almost none of the female respondent had a fairly positive view of the central and local government, and there are now 30% and 28% respectively to say that central and local government's decisions reflected their priorities in some areas at least.

Table 52: To what extent do the decisions of local/central governments reflect respondents' priorities? (gender-disaggregated)

	Local government						Central government					
	Wave 1		Wave 2		Wave 3		Wave 1		Wave 2		Wave 3	
	male	female	male	female	male	female	male	female	male	female	male	female
Never	86.1	98.6	51.5	78.5	52.3	50.2	92.7	99.0	65.3	67.1	44.2	43.8
Almost never	5.6	0.1	21.4	6.0	12.1	22.3	2.8	0.0	14.4	13.1	9.2	26.6
Only in certain areas	5.0	0.8	16.6	11.8	13.4	18.3	2.7	0.6	12.1	17.0	18.9	22.8
To a large extent	3.0	0.3	8.8	3.7	14.8	6.4	1.7	0.3	7.0	2.7	20.3	4.7
Completely	0.4	0.1	1.7	0.0	7.4	2.9	0.1	0.1	1.2	0.2	7.5	2.1
Total	100	100	100	100	100	100	100	100	100	100	100	100

The evolution of the perception of government's decisions is aligned with perception of whether central and local government care about people's opinion. Indeed, the share of respondents agreeing that the local and central government care about their opinion has increased by 96% and 46% respectively compared to the second wave. The gap between perceptions of local and central government also narrowed and flipped. Local government, perceived more favourably in the first two waves, is now perceived positively by a slightly smaller share of respondents (Figure 25).

Figure 25: Percentage of respondents saying that the local and central government care about their opinion



Interestingly, the evolution of the perception of whether central and local government care about people's opinion disaggregated by gender is even more pronounced than for the previous question. For this question, the proportion of female respondents agreeing to the statement is higher than that for male respondent (Table 53).

Table 53: Local and central government care about my opinion

	Local government						Central government					
	Wave 1		Wave 2		Wave 3		Wave 1		Wave 2		Wave 3	
	male	female	male	female	male	female	male	female	male	female	male	female
No	66.4	83.9	91.9	99.2	61.3	55.3	94.5	98.9	74.5	88.2	60.3	55.3
Yes	33.6	16.1	8.1	0.8	38.7	44.7	5.5	1.1	25.5	11.8	39.7	44.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

We also considered possible links between perceptions of government and perceptions of safety. Table 54 shows that there seems to be some correlation between the positive change in the perception of local and central government and improved perception of safety outside the village. Higher proportions of respondents have a better opinion of government among those who feel safer outside their villages than in wave 2.

Table 54: Change in people's perception of central and local government between wave 2 and wave 3, according to the change in the perception of safety outside and inside the village (%)

		Safety outside the village		Safety inside the village	
		Less safe	More safe	Less safe	More safe
Extent local government decision reflect people's priority	No change	43.73	31.89	45.78	37.77
	More	32.19	40.97	36.03	36.43
	Less	24.08	27.14	18.19	25.8
Extent central government decision reflect people's priority	No change	31.91	33.28	31.83	37.08
	More	44.27	45.38	47.08	43.66
	Less	23.82	21.34	21.08	19.26
Local government cares about opinion	Always no	49.28	38.27	45.76	44.13
	Always yes	12.59	11.34	9.06	13.43
	No to yes	20.89	32.59	28.46	26.16
	Yes to no	17.23	17.79	16.72	16.27
Central government cares about opinion	Always no	46.16	45.14	45.3	48.64
	Always yes	9.01	10.38	12.21	10.2
	No to yes	29.5	33.79	30.44	28.63
	Yes to no	15.32	10.69	12.06	12.53

Note: The percentages sum to one hundred vertically, among each category of safety.

6.3 Regression results for local government

Two regressions were run to identify factors that were associated with changes in perceptions of whether local governments' decisions reflect respondents' priorities and perceptions of whether the local government cares about a respondent's opinion. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

6.3.1 Extent to which decisions of local government reflect people's priorities

First, a few of the services questions appear to be associated with change in local government perception. Households having experienced more problems with services appeared to hold less favourable views regarding local government decisions. Being more consulted about services was also associated with a substantial increase in the probability of positively perceiving the local government. Respondents from households which used health services in the past year were also more likely to agree that the decisions of local government reflected their priorities compared to when they were not using any health facility.

The change in the economic situation of the households did not seem to be linked to any change in local government perception as changes in asset level or in livelihood activities occupied were not seen to be followed by a change in the way the local government was perceived.[4]

[4] However, the linear fixed effect regression identifies both having a household member who migrated outside and inside the country as being significantly linked to a higher likelihood of thinking that the local government cares about one's opinion.

Having a household member experiencing a health shock in the last three years was associated with a major decline in the likelihood of positively viewing the local government's actions. Apart from health, none of the other shocks seemed to be correlated with a change in local government perception. However, the occurrence of fighting in the area in the past three years was on average associated with a substantial decrease in the probability of positively viewing the local government's decisions. Living in a village considered safer than before, on the other hand, was linked to a higher probability of supporting the local government's decisions.

Looking at the time-invariant variables can allow us to better understand why certain type of respondents tend to more favourably view the government. As seen in the previous section, female respondents as well as respondents from female-headed households had much more negative views about local government. Respondents from households located in the Swat district have on average a greater probability of agreeing with the government's decisions. Finally, respondents from rural areas were also more likely to agree that the local government's decisions reflected their own priorities.

6.3.2 Perception of whether local government cares about people's opinion

When looking at the probability of thinking that the local government cares about people's opinion, we can see that, as for the previous regressions, experiencing problems with services was negatively correlated with local government perception. Respondents having been consulted about services were also on average more likely to trust the local government than before. Starting to pay for health services was associated with a more positive perception of local government.

As for the previous regressions, changes in asset level or livelihood activities is not correlated with the probability of agreeing that the local government cares about people's opinion.

Having experienced an economic shock in the last three years is linked to a much more negative perception of local government. Likewise, the occurrence of fighting in the area is linked to a substantial reduction in the probability of thinking that the local government cares about one's opinions. Living in a village perceived to be safer than in the previous wave was linked on the other hand to a much greater likelihood of trusting the local government.

As for time-invariant variables, female-headed household are much less likely to trust local government. Households located in rural areas are again more likely to think that the local government cares about their opinions.

6.4 Regression results for central government

6.4.1 Extent to which decisions of central government reflect people's priorities

Two similar regressions were conducted in order to analyse the changes in respondents and household characteristics associated with changes in perceptions of central government. The first one looks at the change in whether respondents thought that the central government decisions reflected their own priorities.

First looking at services, we can see that, as opposed to perception of local government, an improvement in water satisfaction is associated with a much higher probability of being satisfied with central government. Having experienced more problems with services was also on average linked to a lower probability of trusting central government. On the other hand, being aware of more grievance mechanisms is seen to be followed by a better perception of central government.

Similar to local government, changes in the level of assets were not seen to be followed by any significant changes in perceptions.[5]

[5] The linear fixed effect model identifies contracting debt as being a factor of lower government perception.

Experiencing one more shocks of any kind is associated with a lower level of trust in the central government, but economic shocks were the only shocks linked to a significantly lower government perception. Similarly as for the previous local government questions, change in the probability that a respondent believed that the central government's priorities reflected their own substantially decreased after the occurrence of fighting in the area. Likewise, living in a village perceived as safer than before was linked to a much higher probability of trusting the central government.

Finally, as for the time-invariant characteristics of the household, being in a female-headed household was linked to a lower perception of central government. Similarly, respondents from Swat indicated a lower central government perception.

6.4.2 Perception of whether central government cares about people's opinion

The second central government regression, looking at the question of whether central government cares about people's opinion, showed similar results. First, improvement in water quality is also strongly associated with an increase in the likelihood of agreeing with the statement that central government cares about people's opinion. Similarly, households who switched to having tap water have a higher chance of having a positive view of the central government, as before. An increase in the travel time to the health centre is linked to a reduction in the likelihood of trusting central government. Having to pay fees for health services was also, on average, followed by a major reduction in the likelihood of thinking that the government cares about people's opinion.

Changes in asset levels or food consumption were once again not correlated with changes in perceptions of central government.[6]

Perceptions of central government were also greatly reduced when households had an economic shock in the last three years. Likewise, living in an area having experienced fighting in the last three years is linked to a significantly lower government perception. Feeling scared of going out of the village was associated with a considerable worsening of central government perception.

Lastly, being a female respondent and being located in Swat were both negatively correlated with agreeing with the statement that the central government cared about people's opinions.

6.5 Government perception index

Based on the four government perception variables common to the survey instruments in all three waves (extent local and central government reflect priorities/care about opinions), a government perception index (GPI) was created, using Principle Component Analysis (PCA) (see Appendix 2 for details). The index calculated ranges from –1 (negative perceptions of governance) to 1 (highest perceptions of governance possible). The use of PCA was justified by the fact that all the government perception questions were very correlated; it is therefore a useful indicator to summarise them.

The GPI shows improvement in perceptions over time in Pakistan, consistent with the analysis presented above; yet, on average, government perceptions remained well under 0. Looking at changes between waves 2 and 3, 55% of respondents had a more positive view of government against 28% who had a more negative perception. Table 55 shows that, although the trend is common to the two districts considered, its magnitude differs strongly depending on the union council considered. The trend is indeed much more pronounced in Swat than in Lower Dir, with perception of government becoming even positive in the union council of Bar Abakhel, showing a favourable view of government.

[6] Again, the linear regression fixed effect identifies having a household member migrating outside or inside the country as being correlated with a higher perception of local government.

Table 55: Change in government perception per UC

				Wave 1–Wave 2 (%)			Wave 2–Wave 3 (%)		
Union Council	Wave 1	Wave 2	Wave 3	No change	Higher	Lower	No change	Higher	Lower
Haya Serai	–0.96	–0.76	–0.60	50.3	44.0	5.7	23.5	43.9	32.7
Lal Qila	–0.91	–0.73	–0.63	51.7	39.6	8.7	23.1	50.3	26.6
Charbagh	–0.91	–0.54	–0.39	45.7	45.9	8.4	20.8	48.5	30.7
Baidara	–0.95	–0.53	–0.12	49.0	44.8	6.2	12.3	62.2	25.5
Bar Abakhel	–0.87	–0.44	0.04	42.5	46.2	11.3	12.2	64.8	23.0
Total	–0.61	–0.48	–0.23	47.7	44.3	8.0	17.9	54.5	27.6

We can see in Table 56 that the evolution of government perception is significantly different across the different ethnicities. While 62% of the Parasha have a more positive view compared to wave 2, reaching a score of –0.09, only 45% of the Sayyid had a more favourable perception of government, with an index level of only –0.51.

Table 56: Change in government perception per ethnicity

				Wave 1–Wave 2 (%)			Wave 2–Wave 3 (%)		
Ethnicity	Wave 1	Wave 2	Wave 3	No change	Higher	Lower	No change	Higher	Lower
Other (Specify)	–0.94	–0.67	–0.53	47.3	45.3	7.4	21.8	49.4	28.8
Gujar	–0.86	–0.51	–0.15	38.5	45.3	16.2	16.4	52.7	30.9
Mian/Miagan	–0.96	–0.37	–0.32	29.5	70.5	0.0	6.7	57.5	35.8
Mullah/Mullian	–0.93	–0.56	–0.17	51.0	41.2	7.8	17.4	58.1	24.5
Parasha	–0.95	–0.48	–0.09	51.3	44.2	4.6	11.9	61.5	26.6
Sayyid	–0.97	–0.61	–0.51	44.4	48.9	6.8	18.8	45.2	36.0
Yousafzai	–0.91	–0.55	–0.20	49.1	43.6	7.4	16.6	58.4	25.0
Total	–0.61	–0.48	–0.23	47.2	45.2	7.6	17.9	54.5	27.6

6.5.1 Regression results for the government perception index

In order to understand the change in overall government perception, we ran a regression with the index as the dependant variable, with the same list of independent variables as in previous sections. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

Improvement in water satisfaction is significantly correlated with an improvement in perception of government, holding everything constant. Although satisfaction with health services was not significantly positively correlated with any of the separate components of government perception, it became significantly positively correlated when looking at overall government perception. Experiencing an additional problem with services was linked to a worsening of perception of government. On the other hand, households being more frequently consulted about services resulted in a more positive government perception.

Looking at crime and shocks, we can see that once again perception of safety was the main driver of changes in perception of government. The occurrence of fighting was seen to be followed by a much lower perception of government – as opposed to living in a (perceived) safer place that was correlated with a more positive perception of government. Inflation shocks were shown to be linked to a significant worsening in the overall perception of government.

Respondents from female-headed households as well as female respondents showed once again a significantly lower perception of government. Contrary to what has been seen for the view of central government, respondents from the Swat district had on average more favourable views on overall governance.

6.6 State legitimacy

In previous waves of the SLRC survey, questions of perceptions of local and central government were analysed as a proxy of perceptions of state legitimacy. In wave 3, an additional module on legitimacy of the state was included in the survey. State legitimacy was theorised following Beetham (1991) as a threefold concept, comprising the perception of state consent, legality and justification (Figure 26). Questions were accordingly designed to encapsulate these three aspects of state legitimacy.

In the following section, descriptive statistics from this new module will be summarised before the regression results of a state legitimacy index, based on wave 3 data only.

Figure 26: Beetham's state legitimacy

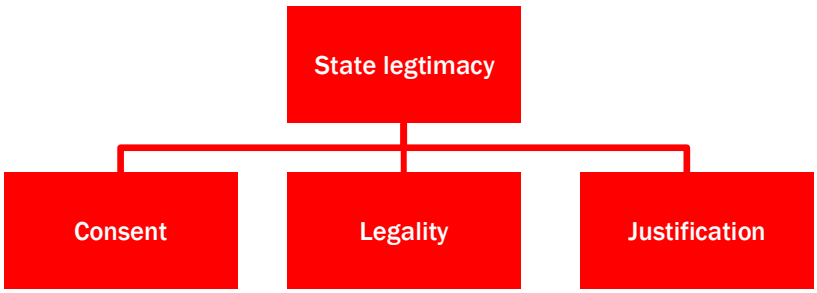


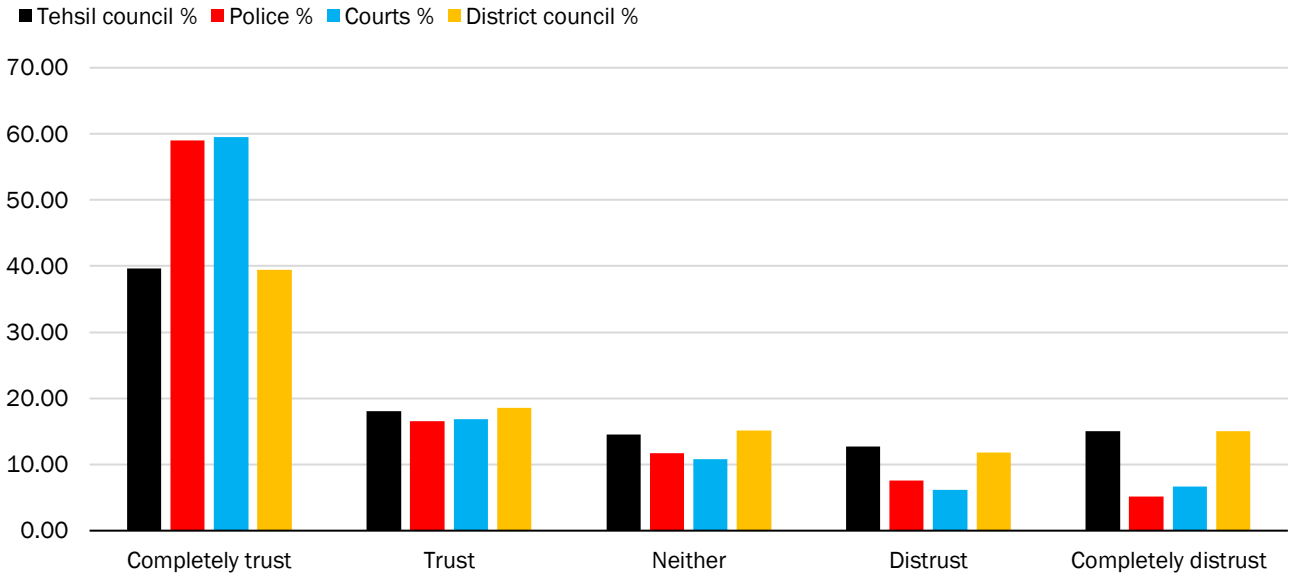
Table 57: Percentages of respondents having voted in the 2018 elections and heard of peaceful protests in the area

District	Union council	Did you vote in the 2018 national election	Have you heard of any peaceful protests against the government taking place
Lower Dir	Haya Serai	83.2	48.2
	Lal Qila	85.0	41.9
Swat	Charbagh	87.7	67.9
	Baidara	96.0	85.3
	Bar Abakhel	97.0	82.9
Total		89.8	65.4

We can see in Table 57 that overall the voting rate in our sample in 2018 was very high, despite a significantly lower rate in Lower Dir. On the other hand, people in Swat were much more likely to have heard of a protest against the government than in Lower Dir.

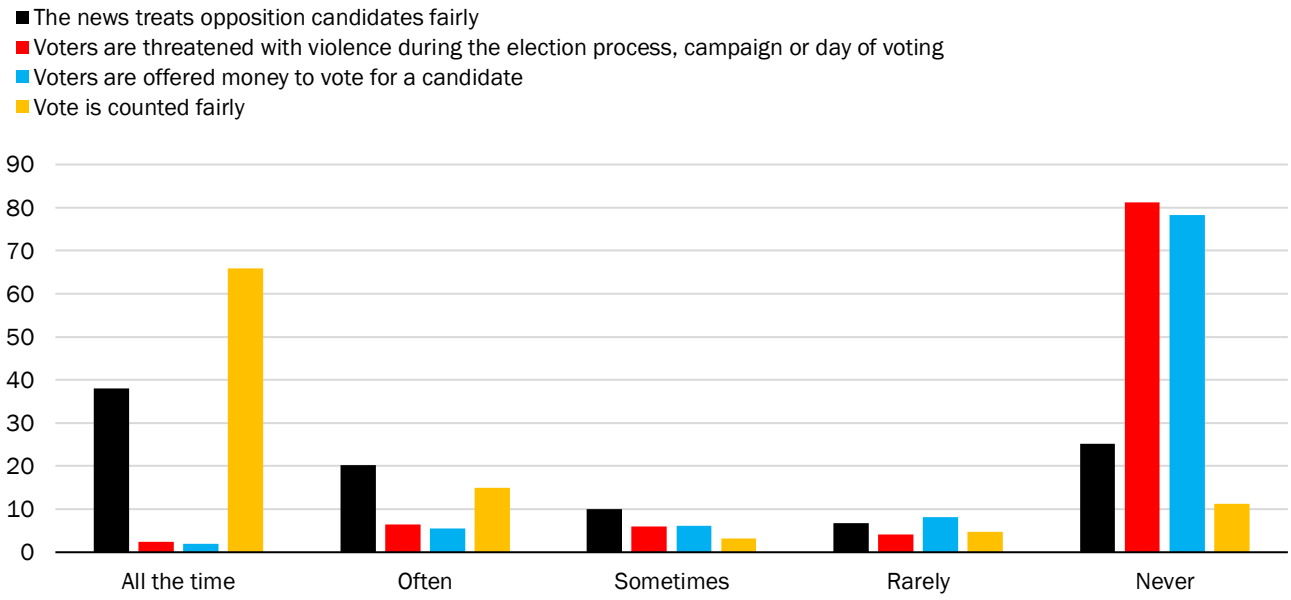
Figure 27 shows trust in different institutions in the country. Overall, reported trust in the institutions is high, with almost 60% of respondents completely trusting the police forces and the courts. Trust in the district council and the tehsil council was lower, with 40% of respondents completely trusting them, and 15% completely distrusting them.

Figure 27: Trust in the institutions of the country



Likewise, respondents seemed to trust the legality of the voting process (Figure 28). Although a majority of respondents expressed trust in all the components, respondents were less inclined to trust the treatment of the opposition, with more than a quarter of respondents thinking that the news never treats opposition candidates fairly.

Figure 28: Trust in the legality of the electoral process



6.6.1 State legitimacy index

A state legitimacy index (SLI) was created, based on the method by Gilley (2009), taking into consideration three aspects of state legitimacy – justification, consent and legality – as theorised by Beetham (1991).

The SLI consists of three parts: consent, legality and justification. Therefore, alongside the single SLI, we have also included analyses of consent-only, legality-only and justification-only SLI indices. In the

following, descriptive statistics and results from regression analysis will be summarised. Regressions were run with all four indices as outcome variables.

Although the three sub-components of the state legitimacy index were not statistically different per ethnicity or union council considered, the *overall* index was statistically significantly different according to both ethnicity and union council. Households living in Lower Dir (Haya Serai, Lal Qila) had on average a lower state legitimacy perception. Similarly, Sayyid households had on average a statistically lower state legitimacy perception than the five other ethnicities specified (Figures 29 and 30).

Figure 29: Level of state legitimacy per ethnicity

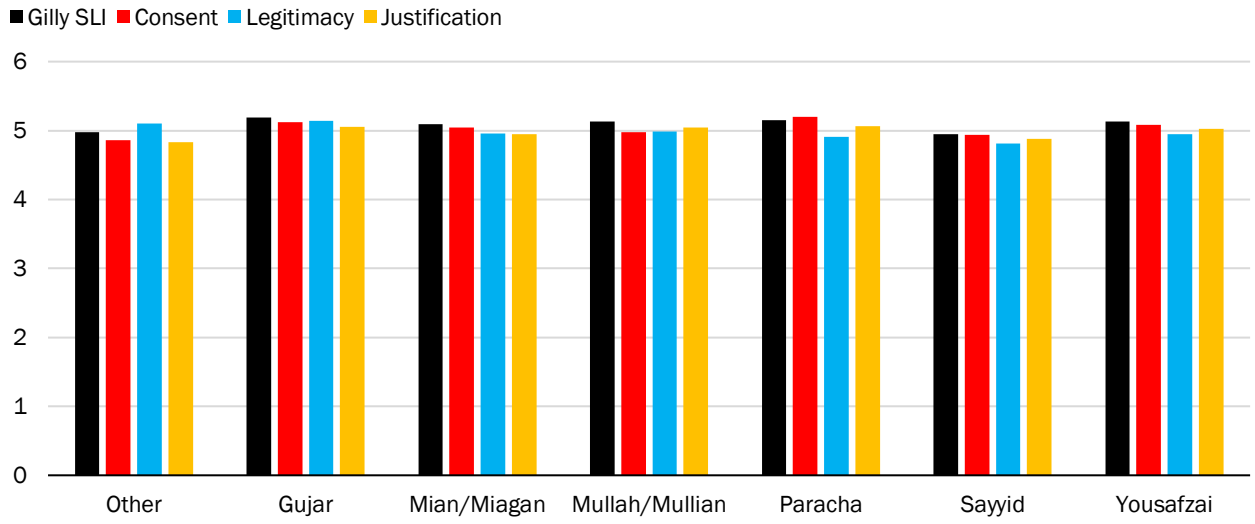
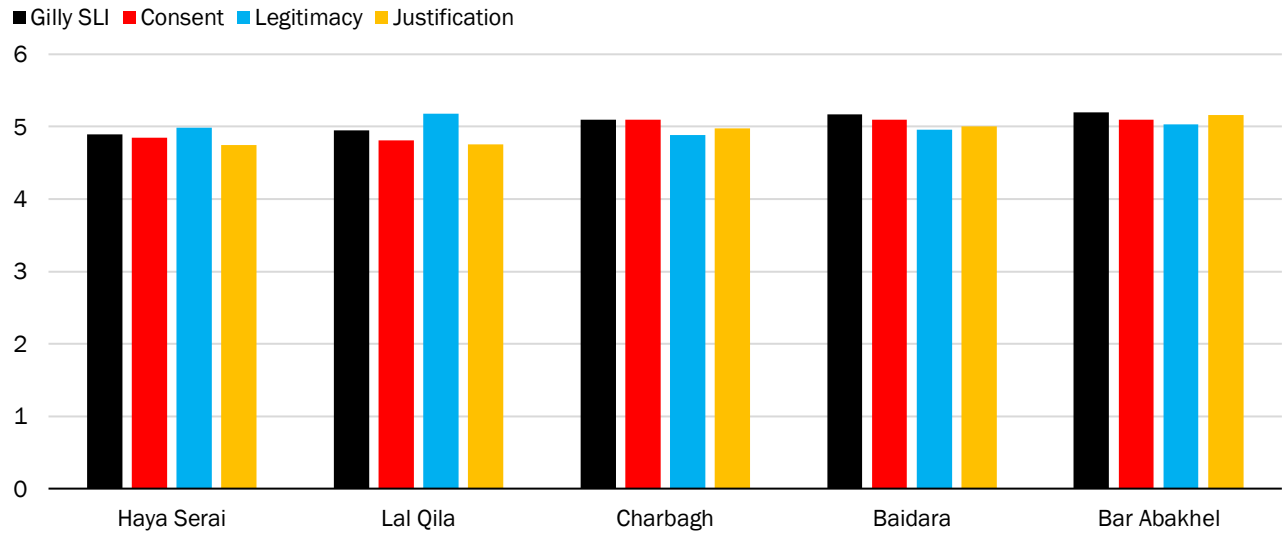


Figure 30: Level of state legitimacy per UC



What explains state legitimacy?

As the state legitimacy questions only belonged to the third wave questionnaire, the regressions were run with only one wave of data, with the SLI, consent-only, legality-only and justification-only indices as the outcome variables, in order to identify explanatory factors associated with state legitimacy. The results presented here are conditional correlations, meaning that all statistically significant effects apply when holding all other factors constant.

State legitimacy was positively correlated with overall satisfaction with health services. Households paying for water have on average, a lower view of state legitimacy. The more problems a respondent

experienced with services, the lower was its view of state legitimacy. Ceteris paribus, respondents from households using government-run health facilities have on average a higher SLI.

The presence of fighting in the area is significantly correlated with a lower state legitimacy. Similarly, households living in safer villages tended to have a higher state legitimacy index. However, this finding is mitigated by the fact that the perception of safety outside the village is significantly associated with a lower state legitimacy. Apart from perception of safety and occurrence of fighting, none of the shocks are associated with a significantly different state legitimacy.

Similar to perceptions of government, respondents from female-headed household have, on average, a lower level of state legitimacy. As seen in the descriptive statistics, respondents living in the Swat district had a significantly higher level of state legitimacy. Contradicting the findings on perception of governance, households from rural areas have a significantly lower state legitimacy score, ceteris paribus. Finally, households having been displaced due to a conflict is linked to a substantially lower state legitimacy index.

6.7 Summing up

In line with the improvement of satisfaction with services, perception of governance has continued to improve in the final wave of the survey. From a level of less than 10% in the first wave, a majority of respondents have stated that both local and central governments' decisions reflected their priorities. Likewise, more than 40% of respondents are now agreeing that the local and central governments care about their decisions, which is a major improvement compared to the very low levels observed in the first wave.

Respondents appear to perceive the central government more favourably than the local governments. Female respondents proved to be much more critical of the government than their male counterparts. Changes in satisfactions with health services observed between the three waves are not statistically correlated with changes in perception of governance. On the other hand, there was evidence that respondents being more satisfied with the quality of their water had a more favourable view of the central government. The results showing that water quality has an impact on government perception, when other services did not, is interesting in relation to the finding that the rate of complaint following water-related problems is much higher than for the other services.

Interestingly, changes in the different measures of wellbeing were not correlated with changes in government perception. Perception of safety and experience of crime and fighting showed stronger correlations with changes in governance perception. Indeed, the respondents living in areas being perceived as safer were much more likely to have a more favourable opinion of the government than when the areas were not as safe.

The results of the analysis on the government perception index, which aggregates all the questions related to perceptions for all levels of government, shows similar results. The government perception index substantially increased across all the different union councils. An improvement in water satisfaction was linked to a significant increase in the index. An increase in the number of problems with services also proved to be linked to a decrease of the government perception index. Switching from not being consulted about services in wave 2 to being consulted in wave 3 was linked to a significantly higher government perception. Experiencing an economic shock was correlated with a decline in the government perception index. Lastly, as for separate analyses of the different levels of government, feeling safer going outside the village was associated with a higher government perception and living in an area which saw fighting in the last three years is linked to a lower government perception index.

Finally, the state legitimacy questions which were asked in the last wave showed that the overwhelming majority of respondents trust the legality of the electoral process as well as the institutions of their

country. The regressions analysis of the state legitimacy index revealed that an improvement in satisfaction with health services was positively correlated with a rise in state legitimacy. The more problems with services a household faced, the lower the state legitimacy measured. Contrary to the analyses on government perceptions, the level of state legitimacy does not seem to be correlated with the occurrence of shocks. Lastly, fighting and a reduction of perceptions of safety inside the village were both associated with reduced state legitimacy.

7 Summary of findings and conclusion

The SLRC cross-country panel surveys aim at understanding how processes of livelihood recovery and state-building unfold over time. The survey intends to generate information on livelihoods, exposure to shocks and coping strategies. It also aims at collecting data on access to and experience of basic services, social protection and livelihood assistance. Finally, it tries to understand how those changes in wellbeing and experience of services shape people's perceptions of government and state legitimacy.

In Pakistan, the survey was conducted in two different districts with varied geography, conflict-affectedness and level of service provision: Lower Dir and Swat. In 2012, 2,114 respondents were initially surveyed, of whom 1,762 were found at follow-up in 2015, and 1,764 in 2018. Therefore, 83% of the original respondents remained in the panel until the third wave.

Our longitudinal analysis provided evidence of a worsening of household wellbeing alongside a general improvement in satisfaction with services and government perception. These changes are summarised below.

7.1 Changes in livelihoods

Regarding the changes in wellbeing, the analysis of the three waves of the survey revealed that remittances were supporting households less than they used to. Although the share of households receiving income from abroad has remained approximately constant, it seems that the quantity sent has on average decreased over time, or other income sources became more important. A drop in the proportion of households receiving their main income from farming activities was also observed. This drop happened while the proportion of households taking part in farming activities remained constant, suggesting a gradual fall in the revenues generated by farming activities. Next, the three wellbeing indicators looked at revealed a worsening of the general household welfare. The average Morris score index (MSI), measuring the level of assets owned, decreased, on average, in the last wave in four of the five union councils surveyed. The food consumption score, which increased slightly between the first and the second wave, fell substantially in the last wave, reaching levels lower than those in the original period in all of the districts surveyed. Of the households surveyed, 58% reported a decrease in food consumption. Lastly, the coping strategy index, a measure of food insecurity, increased sharply in the last wave, across all the union councils, indicating a general degradation of the food security situation.

7.2 Changes in services

Looking at services, we saw that a large a large proportion of households switched health facility in order to get better services, privileging quality over fees or distance. This resulted in a general increase in journey time to the last facility used. The proportion of households paying official fees for health services continued on a downward trend in the last wave. Despite the fact that the number of reported problems with health services surged in the last wave, the general satisfaction with health services continued increasing in the last wave. Next, for education, school attendance has dipped slightly in the last wave, while the average travel time to school for both boys and girls continued declining. Overall satisfaction with education services pursued its increase into the last wave, with more than 85% of respondents being at least fairly satisfied with the overall quality of the education services provided to both boys and girls in the last wave. The analysis of the accessibility of water showed mixed results. The average travel time to the water source increased substantially in Lower Dir while decreasing slightly in Swat. Satisfaction with the quality of the water continued its increase in the last period while the number of problems experienced with water sources increased greatly between waves 2 and 3. Finally, the share of households receiving social protection transfers increased greatly due to the health card –

a new intervention – and continued rise in coverage of the large-scale cash transfer programme BISP. The perception of the usefulness of the BISP transfer, the transfer with the highest coverage, somewhat deteriorated in the third wave.

7.3 Changes in government perceptions and state legitimacy

Finally, the survey revealed a general improvement in how people perceived the local and central government. In the first wave, less than 5% of respondents agreed that the local or the central government's decisions reflected their priorities; and this went up to more than 33% in the last wave. Similarly, in the first wave, 4% and 6% of respondents agreed that the central and local government cared about their opinion, respectively. Those percentages increased to more than 40% in the last wave. In relation to services, satisfaction with water quality proved to be the only variable correlated with government perception. Improvement in perception of water quality was significantly positively correlated with all the central-government perception questions. Perceptions of safety inside and outside the neighbourhood, and no longer experiencing fighting in the area, were the factors most strongly correlated with changes in government perceptions.

Appendix 1: Full sampling and weighting methods

Initial survey

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 Union Councils 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 Lower Dir and Swat districts.

Within districts, Union Councils 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 headquarters Union Councils or municipality. One implication of this is that location is likely to be a strongly significant factor in determining access to services. 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 to ensure the sample sizes in following waves are still statistically representative.

Tests were run to determine whether any observed characteristics from wave 1 could predict attrition in waves 2 and 3. To minimise attrition bias, non-response weighting adjustments are used in the waves 2 and 3 analysis. In any given dataset there is a design weight given to all units (in this case respondents) at baseline. In our case, the design weight is equal to 1 for all respondents at baseline. This is because, at the village level, all respondents had, in theory, an equal selection probability, and although our data can be aggregated at higher levels (e.g. region), we do not claim that conclusions made above the village level are representative. In finding that attrition from our sample at follow-up is non-random, it is necessary to adjust the design weight to restore the proportions of the original sample (Kish, 1990; Brick and Kalton, 1996). Using wave-1 data, a probit regression was run with the outcome variable 'response' (respondent in wave 2=1, non-respondent at wave 2=0) and including a list of covariates that proved at least partly to explain non-response in wave 2 (see discussion above). This technique, known as response propensity weight adjustment, replaces the unknown probability of response with an estimate, which is a function of observed or known characteristics about the respondent (Kalton and Flores-Cervantes, 2003; Särndal and Lundström, 2015; Brick, 2013). Following the probit regression, the probability of response is calculated for each individual, then the inverse of the probability is taken, which becomes the non-response adjustment. The final weight for each wave is calculated by multiplying the design weight and the non-response adjustment. Non-respondents in wave 2 end up with a weight of 0 and all those remaining in the sample have a weight greater than 1. Put differently, this means that those remaining in the sample take on greater emphasis, the more similar they are to those who have dropped out.

Appendix 2: Construction of the government perception indices

The government perception index (GPI) aims at summarising the different government perception questions. The four questions covered by the index are:

- To what extent do you feel that the decisions of those in power at the local government reflect your own priorities?
- Do you agree with the following statement: The local government cares about my opinions?
- To what extent do you feel that the decisions of the previous central government reflect your own priorities?
- Do you agree with the following statement: The previous central government cared about my opinions?

The index has been created using a principal component analysis (PCA). The government perception index is defined as the first component of the PCA of the four questions listed above. The first component of a PCA is the linear combination of the based variables that best summarises the information of the variables. Hence, the first component is the constructed variable that best reflects all the variation of the four original variables. The index computed can therefore be seen as the element common to all the government variables, or a latent variable capturing the general view about government as a whole.

An analysis of correlation of the four questions showed that they were all highly mutually correlated. As a consequence, the index created captures 80% of the variations of the four original government variables.

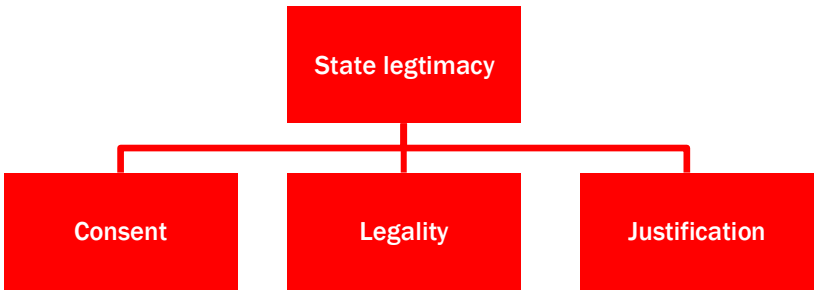
As government-related questions were added in the last wave of the panel, another index has been created. It has, therefore, been analysed as a specification check for the last wave of the panel only. This new version of the GPI included the following variables as well:

- To what extent do you feel that the decisions of the previous provincial government reflect your own priorities?
- Do you agree with the following statement: The previous provincial government cares about my opinions?

Appendix 3: Construction of the state legitimacy index

As discussed in Section 6.6 wave 3 of the survey included an additional module on legitimacy of the state. Questions were designed around Beetham's (1991) conceptualisation of state legitimacy as threefold, including views of consent, legality and justification of the state (Figure A1). In analysis, a state legitimacy index (SLI) was created based on the method by Gilley (2009), which takes into consideration Beetham's three aspects or 'sub-types' of state legitimacy.

Figure A1: Beetham's state legitimacy



According to Gilley, there are four steps in creating the SLI. Firstly, the variables are selected, according to the three sub-types (consent, legality, or justification). Not all variables from the state legitimacy module were included. Analysis of the descriptive statistics as well as theory instructed which variables should be included, and in sub-type justification, variables were included from the governance module. Secondly, the variables are transformed or standardised in order to be aggregated. Thirdly, variables from each sub-type are aggregated into three mean indices. Fourthly, the three sub-type indices are aggregated to create the single SLI, with each sub-type amounting to a third of the SLI each. The variables selected to create the index are shown in Table A1.

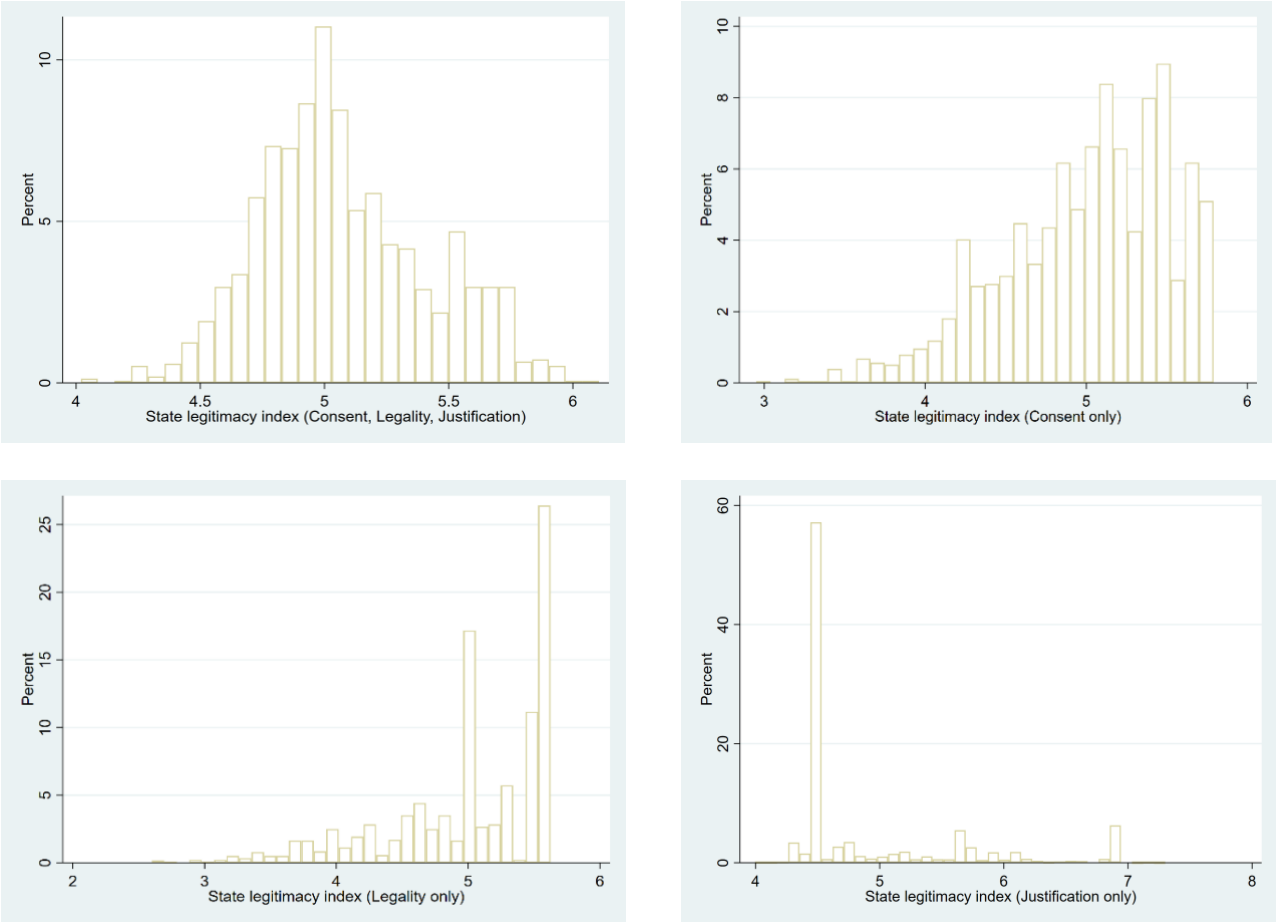
Table A1: Variables selected for the state legitimacy index

Legitimacy sub-type	Variable
Views of consent	Have you heard any of any peaceful protests against the government taking place in your area (in the last three years)?
	If there was a protest in your area, how likely is it that you would take part?
	Did you vote in the 2018 national elections?
Views of legality	To what extent do you trust the police
	To what extent do you trust the courts
	To what extent do you trust the District council
	To what extent do you agree with the tehsil council
	The news treats opposition candidates fairly
	How often during national elections are voters threatened with violence during election process during the campaign and/or on the day of the vote
	How often during national elections are voters offered money to vote for a candidate
	How often during national elections is the vote count done fairly
Views of justification	Businesses should be taxed in Swat and Lower Dir the same as in the rest of Pakistan
	The state of Pakistan treats the citizens of Swat justly
	The local government cares about my opinions
	Do you agree with the following statement: The previous provincial government cares about my opinions?
	Do you agree with the following statement: The previous central government cared about my opinions?

Gilley's constitutive approach is theory driven, rather than statistically driven and 'makes no assumptions about what makes states legitimate, but rather seek[s] to measure what legitimacy is' (2009: 2–3).

The final dataset includes the SLI, as well three additional indices: consent-only, legality-only and justification-only legitimacy indices (Figure A2).

Figure A2: Histograms of the state legitimacy index, and consent only, legality only and justification only legitimacy indices.



Separate regressions were run with all four legitimacy indices (the SLI, consent-only, legality-only and justification-only as the outcome variables), to identify explanatory factors associated with state legitimacy. There are some interesting differences among the indices. For instance, for consent-only, economic and shocks/safety-related variables are not important, while several service-related explanatory factors are. Table A2 gives an overview of statistically significant explanatory factors.

Table A2: State legitimacy indices: comparison of statistically significant results

	SLI	Consent-only	Legality-only	Justification-only
Services				
Satisfaction water	X		X	
Government provides water	X			
Satisfaction health centre	X	X		
Government-run health centre		X		
Official fees for health	X	X		
Distance to health centre			X	
Water source (tube or well; reference category tap)	X	X	X	X
Received social protection			X	X
Number of services consulted about	X		X	
Number of problems with services	X		X	X
Economic				
Receive remittances				
Type of livelihood				
Wealth (Morris)				
Shocks and crimes				
Number of crimes		X	X	X
Fighting in area				
Feel safe in village	X	X	X	X
Economic shock		X		X
Natural shock				
Individual and household characteristics				
Dependency ratio				
Household size			X	
Gender	X			X
Education				
Ethnicity		X		X
Age				
Location				
Urban			X	
Displaced in conflict				

Appendix 4: Regressions

Natural log of Morris Index	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Female headed household	-0.07	0.36	-0.23***	0.00
Household mode of the education level = 1, primary	0.10	0.16	0.06	0.28
Household mode of the education level = 2, secondary	0.05	0.32	0.06	0.15
Household mode of the education level = 3, higher/voc	0.14***	0.00	0.29***	0.00
Household mode of the education level = 4, Madrahssa	0.19	0.13	0.17	0.13
Household size	0.06***	0.00	0.08***	0.00
Household size squared	-0.00	0.35	-0.00**	0.02
Average age	0.02	0.13	0.05***	0.00
Average age squared	-0.00	0.13	-0.00***	0.00
Dependency ratio	-0.03	0.39	-0.01	0.75
Number of livelihood activities	0.09***	0.00	0.07***	0.00
Casual labour	-0.05	0.13	-0.00	0.95
Any HH Member Farming own land/livestock	0.03	0.36	0.18***	0.00
Any HH Member Vender: Selling goods	0.02	0.82	-0.07	0.39
Skilled, private sector or government labour	-0.04	0.38	0.02	0.64
Has any member of your household migrated to inside your country in the past three years?	-0.06	0.40	-0.11*	0.07
Has any member of your household migrated to outside your country in the past three years?	0.18***	0.01	0.12**	0.03
Did you receive remittances in the past three years?	-0.06	0.41	0.02	0.66
Household owes any money/credit	-0.17***	0.00	-0.22***	0.00
Any health-related shocks	0.00	0.99	-0.05*	0.06
Any natural shock?	0.12***	0.00	0.19***	0.00
Any conflict related shock?	-0.03	0.36	0.06*	0.06
Any economic related shocks?	0.01	0.74	0.01	0.72
Any imprisonment?	-0.49***	0.00	-0.27*	0.07
Number of crimes	0.13***	0.00	0.11***	0.00
Total number of shocks	0.01	0.11	0.01***	0.01
Feels safe in village	0.16***	0.00	0.14***	0.00
Feels safe going out of village	-0.16***	0.00	-0.13***	0.00
In the last 3 years has there been fighting in the area?	-0.09***	0.00	-0.15***	0.00
Received social protection in last year	0.07**	0.05	-0.02	0.53
Received livelihood assistance in last year	0.24***	0.00	0.27***	0.00
Coping strategies index	-0.01***	0.00	-0.02***	0.00
District in wave 1 = 2, Swat			-0.07**	0.05
Ethnicity wave 3 = 2, Gujar			0.26***	0.00
Ethnicity wave 3 = 3, Mian/Miagan			-0.11	0.17
Ethnicity wave 3 = 4, Mullah/Mullian			-0.01	0.89
Ethnicity wave 3 = 5, Paracha			-0.19***	0.01
Ethnicity wave 3 = 6, Sayyid			0.04	0.49
Ethnicity wave 3 = 7, Yousafzai			0.06	0.12
Relocated house or village between waves			-0.07	0.35
Was the household displaced due to conflict			0.09*	0.08
Urban/rural wave 2 = 2, rural			0.21***	0.00
Constant	-1.62	1.00	1.46***	0.00
Observations	4,493		4,493	
R-squared	0.63			
r2	0.633		.	
Number of _hhno			1,541	

Government Perceptions Index for wave 1, 2 and 3	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Respondent gender	0.02	0.86	-0.14***	0.00
Respondent age	0.02***	0.00	0.00	0.19
Education level = 1, primary	-0.00	0.98	0.02	0.39
Education level = 2, secondary	-0.14**	0.04	-0.02	0.44
Education level = 3, higher/voc	-0.12	0.20	0.01	0.70
Education level = 4, Madrahssa	-0.10	0.45	-0.10	0.26
Dependency ratio	-0.01	0.72	-0.01	0.64
Casual labour	0.04	0.23	0.01	0.57
Any HH Member Farming own land/livestock	0.08**	0.02	0.08***	0.00
Any HH Member Vender: Selling goods	-0.07	0.45	-0.04	0.52
Skilled, private sector or government labour	-0.00	0.91	0.00	0.88
Number of livelihood activities	-0.03	0.32	-0.04**	0.01
Has any member of your household migrated to inside your country in the past three years?	0.18***	0.00	0.07	0.13
Has any member of your household migrated to outside your country in the past three years?	0.12**	0.03	0.09**	0.04
Did you receive remittances in the past three years?	-0.13**	0.02	-0.09**	0.04
Household owes any money/credit	-0.03	0.38	-0.01	0.59
Any natural shock?	-0.02	0.60	-0.05*	0.07
Any health-related shocks	0.06	0.10	0.05**	0.02
Any economic related shocks	-0.09**	0.01	-0.07***	0.01
Number of different kind of shocks	-0.02	0.15	-0.02*	0.06
Earthquake: affected in last 3 years	0.07	0.18	0.03	0.39
Number of crimes	0.00	0.86	-0.01	0.60
In the last 3 years has there been fighting in the area?	-0.21***	0.00	-0.24***	0.00
Feels safe in village	-0.08	0.14	0.03	0.38
Feels safe going out of village	0.15***	0.00	0.10***	0.00
Female headed household	-0.10	0.20	-0.07*	0.07
Household size	0.01	0.40	0.00	0.93
Household size squared	-0.00*	0.08	-0.00	0.67
How far is to the nearest health clinic/the health facility you use?	-0.00***	0.00	-0.00***	0.01
Official fees for health service	-0.00	0.85	0.02	0.45
Informal fees for health service	-0.09*	0.07	-0.08**	0.02
Government runs health centre (ref = anyone else)	0.00	0.92	0.01	0.77
overall satisfaction with the most recently used clinic	-0.04	0.20	-0.00	0.93
How much time does it take to collect drinking water on a round trip?	0.00***	0.00	0.00***	0.00
Water source: Tube well or borehole	-0.05	0.29	-0.02	0.48
Water source: piped water inside house	-0.00	0.99	0.02	0.54
Does the household pay for the water	0.03	0.48	0.03	0.37
Is your drinking water clean and safe?	0.11***	0.01	0.07**	0.03
Government provides water (ref = anyone else)	-0.10**	0.01	-0.08***	0.00
Received social protection in last year	-0.01	0.63	0.01	0.68
Received livelihood assistance in last year	-0.04	0.32	-0.06*	0.05
Number of problems with services	-0.07***	0.00	-0.06***	0.00
Number of grievance mechanisms known about	0.05***	0.00	0.07***	0.00
Number of meetings known about	-0.04**	0.01	-0.02**	0.05
Number of services consulted about	0.09***	0.00	0.10***	0.00
Natural log of Morris Index	-0.00	0.86	0.02	0.13
Coping strategies index	0.00	0.87	0.00	0.92
District in wave 1 = 2, Swat			0.12***	0.00
Urban/rural wave 2 = 2, rural			0.08***	0.01
Ethnicity wave 3 = 2, Gujar			0.04	0.38
Ethnicity wave 3 = 3, Mian/Miagan			0.04	0.44
Ethnicity wave 3 = 4, Mullah/Mullian			-0.03	0.41
Ethnicity wave 3 = 5, Paracha			0.07	0.17
Ethnicity wave 3 = 6, Sayyid		.	-0.02	0.58
Ethnicity wave 3 = 7, Yousafzai		.	0.04	0.11
Was the household displaced due to conflict			-0.03	0.39
Relocated house or village between waves			0.06	0.21
Constant	-1.08	.	-0.81***	0.00
Observations	3,310		3,310	
R-squared	0.59			
r2	0.594		.	
Number of _hhno			1,468	

Coping strategies index	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Female headed household	-1.79***	0.00	-0.91**	0.01
Household mode of the education level = 1, primary	-0.27	0.65	-0.20	0.66
Household mode of the education level = 2, secondary	-0.16	0.69	-0.55*	0.06
Household mode of the education level = 3, higher/voc	0.38	0.32	-0.37	0.17
Household mode of the education level = 4, Madrahssa	-0.56	0.55	-0.52	0.55
Household size	-0.11	0.52	-0.15*	0.09
Household size squared	0.01	0.25	0.00	0.16
Average age	0.01	0.96	0.01	0.86
Average age squared	0.00	0.30	0.00	0.99
Dependency ratio	0.33	0.26	0.40**	0.02
Number of livelihood activities	-0.98***	0.00	-0.87***	0.00
Casual labour	0.62**	0.04	1.01***	0.00
Any HH Member Farming own land/livestock	-0.10	0.72	-0.18	0.46
Any HH Member Vender: Selling goods	-0.88	0.28	-1.00	0.12
Skilled, private sector or government labour	-0.28	0.42	-0.21	0.45
Has any member of your household migrated to inside your country in the past three years?	-0.59	0.33	-0.22	0.63
Has any member of your household migrated to outside your country in the past three years?	-0.37	0.48	-0.39	0.38
Did you receive remittances in the past three years?	0.63	0.23	0.52	0.24
Household owes any money/credit	0.99***	0.00	1.48***	0.00
Any health-related shocks	1.01***	0.00	0.84***	0.00
Any natural shock?	1.11***	0.00	0.50**	0.02
Any conflict related shock?	2.57***	0.00	2.26***	0.00
Any economic related shocks	1.31***	0.00	0.90***	0.00
Any imprisonment	-0.29	0.85	-0.12	0.92
Number of crimes	0.24	0.25	0.27	0.12
Total number of shocks	0.19***	0.00	0.15***	0.00
Feels safe in village	-1.55***	0.00	-1.25***	0.00
Feels safe going out of village	0.25	0.46	-0.09	0.75
In the last 3 years has there been fighting in the area?	-3.11***	0.00	-3.24***	0.00
Received social protection in last year	0.50*	0.10	0.90***	0.00
was the household displaced due to conflict	-0.34	0.35	-0.46	0.13
Natural log of Morris Index	-0.61***	0.00	-1.18***	0.00
District in wave 1 = 2, Swat			1.32***	0.00
Ethnicity wave 3 = 2, Gujar			0.40	0.34
Ethnicity wave 3 = 3, Mian/Miagan			-0.42	0.46
Ethnicity wave 3 = 4, Mullah/Mullian			-0.01	0.99
Ethnicity wave 3 = 5, Paracha			0.83*	0.10
Ethnicity wave 3 = 6, Sayyid			-0.38	0.32
Ethnicity wave 3 = 7, Yousafzai			-0.90***	0.00
Relocated house or village between waves			0.38	0.46
Was the household displaced due to conflict			-0.28	0.42
Urban/rural wave 2 = 2, rural			0.06	0.85
Constant	-1.07	1.00	8.59***	0.00
Observations	4,493		4,493	
R-squared	0.53			
r2	0.526		.	
Number of _hhno			1,541	

Food consumption score	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Female headed household	2.59***	0.00	0.27	0.58
Household mode of the education level = 1, primary	-1.64**	0.04	-1.47**	0.01
Household mode of the education level = 2, secondary	0.90*	0.09	0.84**	0.03
Household mode of the education level = 3, higher/voc	-0.39	0.50	0.77**	0.03
Household mode of the education level = 4, Madrahssa	-3.91**	0.01	-2.33**	0.05
Household size	0.01	0.97	-0.00	0.98
Household size squared	0.00	0.63	0.00	0.49
Average age	-0.08	0.64	0.09	0.31
Average age squared	0.00	0.67	-0.00	0.48
Dependency ratio	0.55	0.17	0.55**	0.01
Number of livelihood activities	1.22***	0.00	1.10***	0.00
Casual labour	-1.46***	0.00	-1.44***	0.00
Any HH Member Farming own land/livestock	-1.13***	0.00	-0.35	0.28
Any HH Member Vender: Selling goods	-1.08	0.26	-0.16	0.85
Skilled, private sector or government labour	0.11	0.81	-0.04	0.92
Has any member of your household migrated to inside your country in the past three years?	-0.89	0.25	-1.06*	0.08
Has any member of your household migrated to outside your country in the past three years?	0.04	0.96	-0.15	0.80
Did you receive remittances in the past three years?	1.22*	0.08	1.18**	0.04
Household owes any money/credit	-0.61	0.10	-0.81***	0.00
Any health-related shocks	0.25	0.44	0.23	0.39
Any natural shock?	-0.11	0.76	-0.03	0.92
Any conflict related shock?	-0.68*	0.08	-0.17	0.61
Any economic related shocks	-0.19	0.57	-0.40	0.14
Any imprisonment	-2.69	0.23	-2.60*	0.09
Number of crimes	0.63**	0.02	0.66***	0.00
Total number of shocks	-0.15***	0.00	-0.14***	0.00
Feels safe in village	-1.13*	0.07	-0.79	0.12
Feels safe going out of village	0.02	0.96	0.39	0.28
In the last 3 years has there been fighting in the area?	-0.65*	0.05	-0.44	0.13
Received social protection in last year	-0.25	0.51	-0.51**	0.04
Received livelihood assistance in last year	0.76	0.13	0.82**	0.04
Natural log of Morris Index	1.14***	0.00	2.16***	0.00
Relocated house or village between waves			0.16	0.82
Was the household displaced due to conflict			-0.50	0.29
District in wave 1 = 2, Swat			-0.35	0.30
Urban/rural wave 2 = 2, rural			-1.24***	0.00
Ethnicity wave 3 = 2, Gujar			-0.38	0.50
Ethnicity wave 3 = 3, Mian/Miagan			1.51**	0.05
Ethnicity wave 3 = 4, Mullah/Mullian			1.13**	0.04
Ethnicity wave 3 = 5, Paracha			1.39**	0.04
Ethnicity wave 3 = 6, Sayyid			1.24**	0.02
Ethnicity wave 3 = 7, Yousafzai			1.23***	0.00
Constant	42.84***	0.00	37.40***	0.00
Observations	4,483		4,483	
R-squared	0.46			
r2	0.460		.	
Number of _hhno			1,541	

Coping strategies index	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Female headed household	-2.39***	0.00	-0.91**	0.01
Household mode of the education level = 1, primary	-0.30	0.63	-0.29	0.52
Household mode of the education level = 2, secondary	-0.03	0.94	-0.42	0.16
Household mode of the education level = 3, higher/voc	0.59	0.14	-0.19	0.48
Household mode of the education level = 4, Madrahssa	-0.90	0.35	-0.77	0.38
Household size	-0.06	0.26	-0.06**	0.04
Age of the oldest person in the household	0.04*	0.05	0.01	0.13
Dependency ratio	0.04	0.87	0.40***	0.00
Received in the past year: Zakat from government	0.61	0.78	-0.17	0.91
Received in the past year: BISP	0.27	0.47	0.54**	0.01
Received in the past year: Sadqa/Nazar	0.10	0.97	2.57	0.13
Received in the past year: Grant from Baitul Mall	6.09***	0.00	4.19	0.46
Received in the past year: Grant from RSPs or other NGOs	8.22*	0.07	5.98**	0.04
Received in the past year: Pension	0.09	0.89	-0.36	0.50
Received in the past year: Zakat from community	0.18	0.89	1.35	0.13
Received in the past year: compensation for rehabilitation	1.35	0.32	0.89	0.41
Received in the past year: Health Card	1.42***	0.00	1.22***	0.00
Number of livelihood activities	-1.30***	0.00	-1.27***	0.00
Casual labour	1.21***	0.00	1.94***	0.00
Any HH Member Farming own land/livestock	0.34	0.21	0.59**	0.01
Any HH Member Vender: Selling goods	-0.62	0.44	-0.57	0.38
Skilled, private sector or government labour	0.32	0.30	0.52**	0.02
Has any member of your household migrated to inside your country in the past three years?	-0.70	0.26	-0.48	0.30
Has any member of your household migrated to outside your country in the past three years?	0.01	0.99	-0.16	0.71
Did you receive remittances in the past three years?	0.48	0.37	0.68	0.12
Household owes any money/credit	1.00***	0.00	1.45***	0.00
Any health-related shocks	0.42	0.17	0.32	0.20
Any economic related shocks	1.01***	0.00	0.76***	0.00
Agricultural shock	-0.77**	0.03	-0.96***	0.00
Number of crimes	0.19	0.36	0.22	0.21
Number of different kind of shocks	0.95***	0.00	0.71***	0.00
Feels safe in village	-1.99***	0.00	-1.52***	0.00
Feels safe going out of village	0.29	0.40	-0.09	0.74
In the last 3 years has there been fighting in the area?	-3.19***	0.00	-3.22***	0.00
Received livelihood assistance in last year	-0.51	0.17	-0.57*	0.06
Natural log of Morris Index	-0.54***	0.00	-1.00***	0.00
District in wave 1 = 2, Swat			0.92***	0.00
Urban/rural wave 2 = 2, rural			0.03	0.93
Ethnicity wave 3 = 2, Gujar			0.51	0.23
Ethnicity wave 3 = 3, Mian/Miagan			-0.51	0.37
Ethnicity wave 3 = 4, Mullah/Mullian			-0.00	1.00
Ethnicity wave 3 = 5, Paracha			0.66	0.18
Ethnicity wave 3 = 6, Sayyid			-0.30	0.43
Ethnicity wave 3 = 7, Yousafzai			-0.71***	0.01
Relocated house or village between waves			0.14	0.78
Was the household displaced due to conflict			-0.39	0.27
Constant	360.46	1.00	7.85***	0.00
Observations	4,500		4,500	
R-squared	0.51			
r2	0.509		.	
Number of _hhno			1,541	

How far is to the nearest health clinic/the health facility you use?	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Female headed household	2.20	0.34	1.38	0.43
Household mode of the education level = 1, primary	1.81	0.49	2.09	0.31
Household mode of the education level = 2, secondary	0.38	0.85	-1.75	0.20
Household mode of the education level = 3, higher/voc	0.54	0.77	-1.27	0.31
Household mode of the education level = 4, Madrahssa	-1.46	0.73	2.87	0.46
Household size	1.57*	0.07	-0.11	0.80
Household size squared	-0.07**	0.03	-0.01	0.67
Average age	0.00	1.00	-0.21	0.50
Average age squared	0.00	0.66	0.00	0.70
Dependency ratio	3.27**	0.03	0.65	0.43
Number of livelihood activities	2.42**	0.01	2.61***	0.00
Casual labour	-2.41*	0.08	-0.99	0.36
Any HH Member Farming own land/livestock	-1.48	0.28	-1.47	0.17
Any HH Member Vender: Selling goods	-1.77	0.64	-2.09	0.49
Skilled, private sector or government labour	-1.03	0.50	-2.85**	0.03
Has any member of your household migrated to inside your country in the past three years?	0.66	0.81	1.32	0.53
Has any member of your household migrated to outside your country in the past three years?	0.45	0.87	0.21	0.91
Did you receive remittances in the past three years?	0.52	0.84	1.37	0.47
Household owes any money/credit	-1.66	0.28	-1.93*	0.05
Any health-related shocks	0.41	0.72	0.18	0.84
Any natural shock?	3.93***	0.00	3.58***	0.00
Any conflict related shock?	-2.21	0.14	-2.04*	0.09
Any economic related shocks	1.49	0.20	1.12	0.22
Any imprisonment	3.22	0.60	1.28	0.83
Number of crimes	-1.34	0.19	-0.61	0.47
Total number of shocks	0.13	0.35	0.10	0.33
Feels safe in village	-6.58***	0.01	-9.19***	0.00
Feels safe going out of village	3.17*	0.06	4.81***	0.00
In the last 3 years has there been fighting in the area?	0.20	0.90	-0.20	0.87
Ethnicity wave 3 = 7, Yousafzai	49.94	1.00	-1.63	0.20
Natural log of Morris Index	-2.16***	0.01	-0.37	0.51
Coping strategies index	-0.20**	0.03	-0.16**	0.01
How many times in the last year did you use services?	0.01*	0.09	0.01	0.51
Official fees for health service	4.75***	0.00	4.17***	0.00
Informal fees for health service	8.57***	0.00	9.22***	0.00
Government runs health centre (ref = anyone else)	-1.84	0.21	-3.77***	0.00
Problem with service in past year: Health	0.99	0.37	3.52***	0.00
Consulted about service: Health	1.93	0.44	1.87	0.32
Bicycle	0.71	0.83	-0.80	0.74
Car/jeep/van	-2.82	0.13	-0.83	0.52
Relocated house or village between waves			-4.74*	0.06
Was the household displaced due to conflict			1.47	0.40
District in wave 1 = 2, Swat			-11.96***	0.00
Urban/rural wave 2 = 2, rural			1.84	0.21
Ethnicity wave 3 = 2, Gujar			2.48	0.24
Ethnicity wave 3 = 3, Mian/Miagan			0.46	0.87
Ethnicity wave 3 = 4, Mullah/Mullian			-4.77**	0.02
Ethnicity wave 3 = 5, Paracha			-3.22	0.20
Ethnicity wave 3 = 6, Sayyid			-1.83	0.34
Constant	7.71	1.00	46.33***	0.00
Observations	3,337		3,337	
R-squared	0.63			
r2	0.628		.	
Number of _hhno			1,541	

How much time does it take to collect drinking water on a round trip?	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Female headed household	0.99	0.61	-1.28	0.19
Household mode of the education level = 1, primary	-1.71	0.21	-1.22	0.31
Household mode of the education level = 2, secondary	0.61	0.59	0.57	0.47
Household mode of the education level = 3, higher/voc	-1.30	0.23	-1.16	0.12
Household mode of the education level = 4, Madrahssa	1.14	0.70	1.53	0.47
Household size	0.54	0.24	0.45*	0.07
Household size squared	-0.01	0.59	-0.01	0.40
Average age	0.37	0.22	0.09	0.60
Average age squared	-0.00	0.41	-0.00	0.69
Dependency ratio	0.25	0.75	0.40	0.39
Number of livelihood activities	-2.21***	0.00	-1.67***	0.00
Casual labour	3.02***	0.00	3.04***	0.00
Any HH Member Farming own land/livestock	1.90**	0.03	1.89***	0.00
Any HH Member Vender: Selling goods	3.28*	0.09	2.22	0.17
Skilled, private sector or government labour	0.79	0.38	0.16	0.82
Has any member of your household migrated to inside your country in the past three years?	0.21	0.90	2.23*	0.05
Has any member of your household migrated to outside your country in the past three years?	0.93	0.48	1.02	0.35
Did you receive remittances in the past three years?	-0.65	0.63	-0.52	0.63
Household owes any money/credit	0.72	0.28	0.51	0.36
Any health-related shocks	0.55	0.39	0.64	0.21
Any natural shock?	-2.22***	0.00	-1.88***	0.00
Any conflict related shock?	6.01***	0.00	4.80***	0.00
Any economic related shocks	0.24	0.72	0.64	0.23
Any imprisonment	0.86	0.80	2.16	0.44
Number of crimes	1.02*	0.06	0.61	0.16
Total number of shocks	-0.14*	0.08	-0.18***	0.01
Feels safe in village	0.56	0.66	-1.15	0.23
Feels safe going out of village	-0.87	0.28	-0.24	0.72
In the last 3 years has there been fighting in the area?	-1.67***	0.01	-1.43***	0.01
District in wave 1 = 2, Swat	430.51	1.00	-7.19***	0.00
Natural log of Morris Index	-0.85**	0.04	-0.67**	0.04
Coping strategies index	-0.15***	0.00	-0.11***	0.01
I11==dug well	0.20	0.79	-1.72***	0.00
I11==piped water inside house	-0.96	0.29	-1.76**	0.04
How reliable is your drinking water source?	0.05	0.59	0.06	0.54
Does the household pay for the water	-0.22	0.85	-0.40	0.62
Do you have to queue for drinking water?	1.62***	0.00	2.21***	0.00
Government provides water (ref = anyone else)	0.29	0.76	1.10	0.12
Problem with service in past year: Water	2.10***	0.00	3.29***	0.00
Consulted about service: Water	0.36	0.83	1.48	0.13
Bicycle	1.83	0.32	1.57	0.24
Car/jeep/van	1.98	0.12	0.43	0.58
Relocated house or village between waves			0.77	0.61
Was the household displaced due to conflict			0.66	0.53
Urban/rural wave 2 = 2, rural			1.98**	0.02
Ethnicity wave 3 = 2, Gujar			1.09	0.39
Ethnicity wave 3 = 3, Mian/Miagan			0.38	0.83
Ethnicity wave 3 = 4, Mullah/Mullian			1.64	0.19
Ethnicity wave 3 = 5, Paracha			-1.66	0.27
Ethnicity wave 3 = 6, Sayyid			-1.91*	0.09
Ethnicity wave 3 = 7, Yousafzai			-0.55	0.47
Switched water source between waves			-0.06	0.98
Constant	-260.06	1.00	16.62***	0.00
Observations	3,700		3,700	
R-squared	0.62			
r2	0.619		.	
Number of _hhno			1,483	

Average journey time to school	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Female headed household	-80.60**	0.02	-47.97***	0.00
Household mode of the education level = 1, primary	75.02**	0.02	16.68	0.35
Household mode of the education level = 2, secondary	42.21	0.11	12.87	0.28
Household mode of the education level = 3, higher/voc	51.61**	0.05	21.25*	0.06
Household mode of the education level = 4, Madrahssa	49.64	0.49	91.07***	0.01
Household size	-6.89	0.55	-2.11	0.58
Household size squared	0.33	0.38	-0.00	0.98
Average age	9.46	0.44	1.23	0.80
Average age squared	0.13	0.59	0.06	0.52
Dependency ratio	-6.95	0.70	-26.22***	0.00
Number of livelihood activities	-52.07***	0.00	-41.45***	0.00
Casual labour	24.83	0.21	21.27**	0.03
Any HH Member Farming own land/livestock	40.23**	0.02	17.78*	0.07
Any HH Member Vender: Selling goods	-74.66	0.11	-41.23*	0.09
Skilled, private sector or government labour	-66.93***	0.00	-50.28***	0.00
Has any member of your household migrated to inside your country in the past three years?	12.97	0.69	-23.27	0.21
Has any member of your household migrated to outside your country in the past three years?	56.45*	0.05	23.83	0.14
Did you receive remittances in the past three years?	-36.23	0.19	-19.96	0.22
Household owes any money/credit	-13.07	0.47	-20.41**	0.02
Any health-related shocks	46.60***	0.00	47.93***	0.00
Any natural shock?	-4.10	0.81	4.86	0.58
Any conflict related shock?	84.31***	0.00	79.39***	0.00
Any economic related shocks	33.76**	0.03	21.38***	0.01
Any imprisonment	-90.42	0.36	-58.71	0.29
Number of crimes	22.59	0.12	27.21***	0.00
Total number of shocks	-3.97**	0.03	-3.59***	0.00
Feels safe in village	52.43*	0.07	39.97***	0.00
Feels safe going out of village	51.88***	0.01	23.07**	0.05
In the last 3 years has there been fighting in the area?	-22.04	0.23	-37.50***	0.00
Natural log of Morris Index	9.33	0.39	4.42	0.39
Coping strategies index	5.34***	0.00	4.60***	0.00
Official fees for health service	-17.49	0.24	-8.73	0.27
Informal fees for health service	-37.27	0.13	-32.79**	0.01
Government runs school (ref = anyone else)	11.56	0.60	-7.06	0.52
Problem with service in past year: Education	-0.52	0.97	-13.82	0.10
Consulted about service: Education	-4.83	0.86	-27.46*	0.08
Bicycle	-42.28	0.28	-46.79**	0.03
Car/jeep/van	10.09	0.68	1.00	0.93
Relocated house or village between waves			18.53	0.34
Was the household displaced due to conflict			5.47	0.70
District in wave 1 = 2, Swat			36.37***	0.00
Urban/rural wave 2 = 2, rural			8.75	0.47
Ethnicity wave 3 = 2, Gujar			2.97	0.86
Ethnicity wave 3 = 3, Mian/Miagan			-10.02	0.65
Ethnicity wave 3 = 4, Mullah/Mullian			19.06	0.25
Ethnicity wave 3 = 5, Paracha			15.72	0.48
Ethnicity wave 3 = 6, Sayyid			-28.94*	0.07
Ethnicity wave 3 = 7, Yousafzai			-1.10	0.92
Switched school between waves			12.52	0.54
Constant	-274.16	0.15	-0.61	0.99
Observations	2,251		2,251	
R-squared	0.65			
r2	0.648		.	
Number of _hhno			1,302	

How far is it to the primary school? (boys)	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Female headed household	5.39*	0.05	4.03***	0.01
Household mode of the education level = 1, primary	0.43	0.88	0.56	0.73
Household mode of the education level = 2, secondary	-0.36	0.85	0.34	0.75
Household mode of the education level = 3, higher/voc	-0.70	0.75	1.43	0.17
Household mode of the education level = 4, Madrahssa	13.94**	0.03	6.27*	0.06
Household size	0.31	0.71	0.37	0.29
Household size squared	-0.02	0.54	-0.02	0.18
Average age	-0.66	0.48	-0.04	0.94
Average age squared	0.01	0.50	-0.00	0.96
Dependency ratio	0.97	0.56	0.25	0.69
Number of livelihood activities	1.08	0.31	0.28	0.65
Casual labour	-1.98	0.18	0.14	0.87
Any HH Member Farming own land/livestock	-0.64	0.63	-0.05	0.95
Any HH Member Vender: Selling goods	-3.06	0.27	-0.76	0.72
Skilled, private sector or government labour	0.50	0.77	0.37	0.70
Has any member of your household migrated to inside your country in the past three years?	1.59	0.66	1.00	0.55
Has any member of your household migrated to outside your country in the past three years?	0.33	0.90	0.84	0.56
Did you receive remittances in the past three years?	-0.49	0.86	-0.77	0.59
Household owes any money/credit	0.50	0.76	0.00	1.00
Any health-related shocks	1.85	0.16	0.66	0.36
Any natural shock?	-2.28*	0.07	-1.43*	0.07
Any conflict related shock?	1.24	0.42	-0.47	0.63
Any economic related shocks	0.42	0.78	1.14	0.12
Any imprisonment	4.86	0.56	0.25	0.96
Number of crimes	-1.09	0.39	-1.08	0.15
Total number of shocks	0.06	0.68	0.10	0.25
Feels safe in village	-1.73	0.47	-2.03	0.10
Feels safe going out of village	-0.08	0.96	0.32	0.75
In the last 3 years has there been fighting in the area?	-2.82*	0.10	-2.17**	0.03
Natural log of Morris Index	-0.95	0.35	0.45	0.33
Coping strategies index	0.04	0.73	0.15***	0.01
How regularly do your children attend school? (boys)	-0.31	0.87	-0.58	0.32
Do you need to pay school fees? (boys)	-0.00	0.87	0.00	0.87
Government runs boys school (ref = anyone else)	-1.73	0.39	0.97	0.30
Problem with service in past year: Education	1.17	0.36	1.37*	0.07
Consulted about service: Education	1.87	0.53	1.32	0.35
Bicycle	-1.01	0.83	0.35	0.85
Car/jeep/van	0.76	0.72	-0.25	0.80
Relocated house or village between waves			1.79	0.35
Was the household displaced due to conflict			0.12	0.93
District in wave 1 = 2, Swat			1.40	0.18
Urban/rural wave 2 = 2, rural			2.72**	0.02
Ethnicity wave 3 = 2, Gujar			-2.83*	0.09
Ethnicity wave 3 = 3, Mian/Miagan			-5.11**	0.02
Ethnicity wave 3 = 4, Mullah/Mullian			-4.18**	0.01
Ethnicity wave 3 = 5, Paracha			-5.82***	0.01
Ethnicity wave 3 = 6, Sayyid			-2.35	0.15
Ethnicity wave 3 = 7, Yousafzai			-0.75	0.47
Switched boys school between waves			-1.96	0.39
Constant	16.91		16.59**	0.02
Observations	1,807		1,807	
R-squared	0.76			
r2	0.760		.	
Number of _hhno			1,141	

How far is it to the primary school? (girls)	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Female headed household	0.64	0.88	1.07	0.47
Household mode of the education level = 1, primary	0.96	0.77	-0.48	0.76
Household mode of the education level = 2, secondary	0.91	0.69	-0.03	0.98
Household mode of the education level = 3, higher/voc	1.21	0.57	1.63	0.10
Household mode of the education level = 4, Madrahssa	3.27	0.60	5.29	0.13
Household size	1.34	0.22	0.37	0.32
Household size squared	-0.05	0.18	-0.02	0.17
Average age	0.13	0.91	0.03	0.95
Average age squared	-0.01	0.65	-0.00	0.76
Dependency ratio	1.05	0.54	0.75	0.24
Number of livelihood activities	-0.13	0.92	0.59	0.34
Casual labour	0.43	0.82	0.76	0.39
Any HH Member Farming own land/livestock	1.78	0.28	1.18	0.17
Any HH Member Vender: Selling goods	4.95	0.37	2.63	0.22
Skilled, private sector or government labour	1.59	0.43	0.39	0.69
Has any member of your household migrated to inside your country in the past three years?	-0.79	0.80	0.53	0.74
Has any member of your household migrated to outside your country in the past three years?	-2.26	0.42	0.40	0.77
Did you receive remittances in the past three years?	2.42	0.39	0.11	0.94
Household owes any money/credit	2.03	0.28	-0.19	0.81
Any health-related shocks	0.59	0.71	0.18	0.81
Any natural shock?	-0.83	0.59	0.05	0.95
Any conflict related shock?	2.08	0.25	0.83	0.41
Any economic related shocks	1.04	0.52	0.84	0.25
Any imprisonment	7.30	0.39	5.43	0.21
Number of crimes	-0.90	0.50	-1.67**	0.02
Total number of shocks	0.19	0.30	0.14	0.10
Feels safe in village	1.87	0.48	-0.20	0.87
Feels safe going out of village	-2.42	0.29	-1.55	0.14
In the last 3 years has there been fighting in the area?	0.54	0.77	-1.46	0.16
Ethnicity wave 3 = 7, Yousafzai	13.12	1.00	-1.34	0.18
Natural log of Morris Index	-1.33	0.27	-0.49	0.32
Coping strategies index	0.17	0.14	0.13**	0.01
How regularly do your children attend school? (girls)	-0.49	0.16	-0.08	0.86
Do you need to pay school fees? (girls)	0.00	0.74	0.00	0.36
Government runs girls school (ref = anyone else)	0.14	0.95	1.96**	0.05
Problem with service in past year: Education	-2.02	0.19	0.98	0.19
Consulted about service: Education	-0.15	0.96	-0.74	0.57
Bicycle	0.81	0.84	-0.33	0.86
Car/jeep/van	-2.45	0.33	-0.49	0.62
Relocated house or village between waves			3.19	0.11
Was the household displaced due to conflict			-1.41	0.30
District in wave 1 = 2, Swat			1.43	0.16
Urban/rural wave 2 = 2, rural			-0.01	0.99
Ethnicity wave 3 = 2, Gujar			-1.10	0.53
Ethnicity wave 3 = 3, Mian/Miagan			-0.91	0.67
Ethnicity wave 3 = 4, Mullah/Mullian			-1.82	0.25
Ethnicity wave 3 = 5, Paracha			-3.30	0.13
Ethnicity wave 3 = 6, Sayyid			-0.46	0.76
Switched girls school between waves			-1.51	0.40
Constant	7.70	1.00	17.39**	0.01
Observations	1,485		1,485	
R-squared	0.77			
r2	0.767		.	
Number of _hhno			1,000	

Received social protection in last year	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	OR	pval	OR	pval
Female headed household	0.95	0.89	0.70	0.17
Household mode of the education level = 1, primary	0.47**	0.03	0.69	0.17
Household mode of the education level = 2, secondary	1.00	1.00	0.72*	0.07
Household mode of the education level = 3, higher/voc	1.46	0.13	0.52***	0.00
Household mode of the education level = 4, Madrahssa	1.23	0.76	1.06	0.91
Household size	1.17*	0.10	1.22***	0.00
Household size squared	1.00	0.36	0.99**	0.01
Average age	1.18**	0.04	0.94	0.16
Average age squared	1.00	0.20	1.00	0.25
Dependency ratio	1.13	0.48	1.00	0.98
Number of livelihood activities	0.88	0.29	0.88	0.19
Casual labour	1.04	0.79	1.06	0.66
Any HH Member Farming own land/livestock	1.05	0.75	0.91	0.52
Any HH Member Vender: Selling goods	1.34	0.50	1.56	0.23
Skilled, private sector or government labour	0.68**	0.05	0.69**	0.02
Has any member of your household migrated to inside your country in the past three years?	0.83	0.55	1.15	0.60
Has any member of your household migrated to outside your country in the past three years?	0.54**	0.04	0.63*	0.07
Did you receive remittances in the past three years?	1.32	0.34	1.01	0.96
Household owes any money/credit	1.49**	0.02	1.49***	0.00
Any health-related shocks	1.43***	0.01	1.49***	0.00
Any natural shock?	1.02	0.91	0.94	0.63
Any conflict related shock?	2.63***	0.00	2.27***	0.00
Any economic related shocks	1.16	0.30	1.32**	0.02
Any imprisonment	1.20	0.84	0.90	0.88
Number of crimes	1.36***	0.01	1.23**	0.04
Total number of shocks	0.96**	0.02	0.98*	0.08
Feels safe in village	1.48*	0.10	1.06	0.77
Feels safe going out of village	1.15	0.46	1.16	0.36
In the last 3 years has there been fighting in the area?	0.35***	0.00	0.33***	0.00
Relocated house or village between waves			1.57	0.27
Was the household displaced due to conflict			1.45	0.19
District in wave 1 = 2, Swat			4.01***	0.00
Urban/rural wave 2 = 2, rural			0.65*	0.07
Ethnicity wave 3 = 2, Gujar			1.04	0.91
Ethnicity wave 3 = 3, Mian/Miagan			0.35**	0.02
Ethnicity wave 3 = 4, Mullah/Mullian			0.40***	0.01
Ethnicity wave 3 = 5, Paracha			0.63	0.25
Ethnicity wave 3 = 6, Sayyid			0.23***	0.00
Ethnicity wave 3 = 7, Yousafzai			0.40***	0.00
Natural log of Morris Index	1.27***	0.01	1.00	0.99
Coping strategies index	1.02**	0.05	1.03***	0.00
Received livelihood assistance in last year	1.58**	0.03	1.74***	0.00
Knew of meeting in last 12 months: Social protection	1.26	0.44	1.30	0.29
Constant			0.18**	0.04
Observations	1,813		4,428	
Number of _hhno	617		1,541	
r2	.		.	

Received livelihood assistance in last year	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	OR	pval	OR	pval
Female headed household	0.71	0.56	1.56**	0.04
Household mode of the education level = 1, primary	0.50	0.16	0.89	0.70
Household mode of the education level = 2, secondary	0.88	0.75	0.79	0.24
Household mode of the education level = 3, higher/voc	1.05	0.90	0.91	0.59
Household mode of the education level = 4, Madrahssa	2.06	0.47	1.77	0.26
Household size	1.03	0.86	0.98	0.67
Household size squared	1.00	0.85	1.00	0.80
Average age	1.26	0.14	1.03	0.61
Average age squared	0.99**	0.05	1.00	0.51
Dependency ratio	0.80	0.42	0.92	0.50
Number of livelihood activities	0.97	0.90	1.00	0.99
Casual labour	1.57	0.10	1.43**	0.02
Any HH Member Farming own land/livestock	1.68*	0.06	1.45**	0.02
Any HH Member Vender: Selling goods	4.67**	0.02	1.45	0.32
Skilled, private sector or government labour	1.70	0.11	1.36*	0.07
Has any member of your household migrated to inside your country in the past three years?	2.28	0.17	1.11	0.72
Has any member of your household migrated to outside your country in the past three years?	1.77	0.22	1.29	0.39
Did you receive remittances in the past three years?	0.47	0.12	0.73	0.28
Household owes any money/credit	1.10	0.69	1.06	0.66
Any health-related shocks	0.75	0.18	0.94	0.64
Any natural shock?	1.15	0.56	1.39**	0.02
Any conflict related shock?	0.39***	0.00	0.45***	0.00
Any economic related shocks	1.40	0.15	1.41**	0.02
Any imprisonment	1.91	0.73	0.25*	0.08
Number of crimes	1.88***	0.00	1.35***	0.00
Total number of shocks	1.01	0.59	1.01	0.53
Feels safe in village	2.69**	0.02	1.32	0.35
Feels safe going out of village	0.43***	0.00	0.65***	0.00
In the last 3 years has there been fighting in the area?	5.66***	0.00	6.19***	0.00
Natural log of Morris Index	1.51***	0.01	1.71***	0.00
Coping strategies index	0.98	0.18	0.97***	0.01
Received social protection in last year	1.51	0.11	1.43***	0.00
Knew of meeting in last 12 months: Social protection	0.81	0.64	1.15	0.63
Relocated house or village between waves			1.17	0.62
Was the household displaced due to conflict			0.83	0.38
District in wave 1 = 2, Swat			3.29***	0.00
Urban/rural wave 2 = 2, rural			0.73	0.11
Ethnicity wave 3 = 2, Gujar			0.81	0.40
Ethnicity wave 3 = 3, Mian/Miagan			0.52	0.11
Ethnicity wave 3 = 4, Mullah/Mullian			0.49***	0.01
Ethnicity wave 3 = 5, Paracha			0.86	0.62
Ethnicity wave 3 = 6, Sayyid			1.13	0.62
Ethnicity wave 3 = 7, Yousafzai			0.85	0.31
Constant			0.00***	0.00
Observations	1,296		4,428	
Number of _hhno	440		1,541	
r2	.		.	

Overall satisfaction with the most recently used clinic	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	OR	pval	OR	pval
Respondent gender	0.15	0.14	0.70**	0.01
Respondent age	0.99	0.72	1.01	0.21
Education level = 1, primary	0.87	0.78	1.07	0.70
Education level = 2, secondary	0.86	0.79	1.02	0.92
Education level = 3, higher/voc	0.68	0.60	1.26	0.22
Education level = 4, Madrahssa	1.85	0.67	0.66	0.44
Dependency ratio	1.01	0.95	0.96	0.65
Casual labour	1.01	0.97	0.95	0.71
Any HH Member Farming own land/livestock	0.82	0.45	0.97	0.84
Any HH Member Vender: Selling goods	0.82	0.80	1.26	0.64
Skilled, private sector or government labour	1.09	0.77	0.90	0.56
Number of livelihood activities	0.60***	0.01	0.83*	0.07
Has any member of your household migrated to inside your country in the past three years?	1.17	0.75	0.75	0.28
Has any member of your household migrated to outside your country in the past three years?	0.50	0.12	0.95	0.84
Did you receive remittances in the past three years?	2.36*	0.05	1.22	0.45
Household owes any money/credit	0.87	0.60	0.98	0.86
Any natural shock?	1.29	0.38	0.96	0.81
Any health-related shocks	2.37***	0.00	1.83***	0.00
Any economic related shocks	1.34	0.28	1.52***	0.01
Number of different kind of shocks	0.76***	0.01	0.79***	0.00
Earthquake: affected in last 3 years	0.90	0.77	1.00	0.99
Number of crimes	1.31	0.17	1.16	0.20
In the last 3 years has there been fighting in the area?	0.59*	0.07	0.57***	0.00
Feels safe in village	1.28	0.53	1.75***	0.01
Feels safe going out of village	1.73*	0.06	1.50**	0.02
How far is to the nearest health clinic/the health facility you use?	1.01**	0.03	1.00**	0.04
How many times in the last year did you use services?	1.00	0.77	1.00	0.64
Official fees for health service	0.47***	0.00	0.69***	0.00
Informal fees for health service	0.43***	0.01	0.51***	0.00
Government runs health centre (ref = anyone else)	0.85	0.52	0.67***	0.01
Satisfied with number of qualified personnel	9.95***	0.00	9.92***	0.00
Satisfied with availability of medicine	5.10***	0.00	4.69***	0.00
Satisfied with waiting times	4.29***	0.00	3.27***	0.00
Problem with service in past year: Health	0.63**	0.04	0.49***	0.00
Knew of meeting in last 12 months: Health	0.79	0.45	0.83	0.27
Consulted about service: Health	1.22	0.70	1.07	0.82
District in wave 1 = 2, Swat			1.73***	0.00
Urban/rural wave 2 = 2, rural			1.00	0.98
Ethnicity wave 3 = 2, Gujar			1.16	0.57
Ethnicity wave 3 = 3, Mian/Miagan			1.74	0.16
Ethnicity wave 3 = 4, Mullah/Mullian			1.01	0.98
Ethnicity wave 3 = 5, Paracha			1.55	0.19
Ethnicity wave 3 = 6, Sayyid			1.03	0.90
Ethnicity wave 3 = 7, Yousafzai			1.36*	0.05
Was the household displaced due to conflict			0.97	0.91
Relocated house or village between waves			0.95	0.88
Switched health centre between waves			1.25*	0.09
Constant			0.04***	0.00
Observations	1,460		3,214	
Number of _hhno	615		1,535	
r2	.		.	

Satisfied overall with school(s) (binary)	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	OR	pval	OR	pval
Respondent gender	1.91	0.86	0.93	0.64
Respondent age	1.04	0.32	1.01	0.24
Education level = 1, primary	1.77	0.27	1.24	0.33
Education level = 2, secondary	2.22	0.21	1.02	0.90
Education level = 3, higher/voc	2.22	0.37	1.04	0.86
Education level = 4, Madrahssa	0.18	0.22	0.50	0.23
Dependency ratio	1.61*	0.05	1.44***	0.00
Casual labour	1.29	0.42	1.09	0.62
Any HH Member Farming own land/livestock	1.10	0.74	0.97	0.85
Any HH Member Vender: Selling goods	2.95	0.27	4.76*	0.07
Skilled, private sector or government labour	2.87**	0.01	1.84***	0.01
Number of livelihood activities	1.03	0.90	1.08	0.55
Has any member of your household migrated to inside your country in the past three years?	1.88	0.23	1.48	0.23
Has any member of your household migrated to outside your country in the past three years?	3.28**	0.03	1.87*	0.05
Did you receive remittances in the past three years?	0.42*	0.09	0.71	0.28
Household owes any money/credit	0.93	0.82	1.15	0.39
Any natural shock?	1.30	0.39	1.05	0.80
Any health-related shocks	0.99	0.97	0.97	0.86
Any economic related shocks	1.63	0.13	1.13	0.51
Number of different kind of shocks	0.69***	0.01	0.82***	0.01
Earthquake: affected in last 3 years	2.35*	0.05	1.55*	0.08
Number of crimes	1.18	0.38	0.95	0.71
In the last 3 years has there been fighting in the area?	0.46***	0.01	0.83	0.26
Feels safe in village	1.03	0.95	1.17	0.61
Feels safe going out of village	0.80	0.50	1.14	0.53
Is your drinking water clean and safe?	1.24	0.54	1.06	0.80
Pay formal fees for school for either boys and girls	2.46**	0.02	3.40***	0.00
Satisfied with the number of teachers, boys and girls	1.45	0.37	1.74**	0.01
Satisfied with quality of teaching, boys and girls	3.91***	0.00	2.96***	0.00
Satisfied with teacher attendance, boys and girls	3.19**	0.01	2.44***	0.00
Satisfied with class sizes, boys and girls	3.19***	0.00	2.52***	0.00
Satisfied with quality of school infrastructure, boys and girls	9.58***	0.00	6.48***	0.00
District in wave 1 = 2, Swat			1.51**	0.03
Urban/rural wave 2 = 2, rural			0.78	0.25
Ethnicity wave 3 = 2, Gujar			1.22	0.54
Ethnicity wave 3 = 3, Mian/Miagan			1.46	0.38
Ethnicity wave 3 = 4, Mullah/Mullian			1.10	0.76
Ethnicity wave 3 = 5, Paracha			1.08	0.85
Ethnicity wave 3 = 6, Sayyid			0.85	0.56
Ethnicity wave 3 = 7, Yousafzai			1.30	0.16
Was the household displaced due to conflict			1.30	0.36
Relocated house or village between waves			1.43	0.37
Switched school between waves			1.62**	0.03
Constant			0.01***	0.00
Observations	1,907		3,769	
Number of _hhno	701		1,539	
r2	.		.	

Satisfied overall with girls school (binary)	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Respondent gender			0.47***	0.00
Respondent age	0.99	0.83	1.00	0.92
Education level = 1, primary	2.66	0.35	1.08	0.79
Education level = 2, secondary	9.37	0.16	1.03	0.92
Education level = 3, higher/voc	6.33	0.49	0.95	0.88
Education level = 4, Madrahssa	0.45	0.81	1.38	0.73
Dependency ratio	1.13	0.79	1.13	0.38
Casual labour	0.25*	0.07	0.57**	0.02
Any HH Member Farming own land/livestock	0.68	0.54	0.73	0.19
Any HH Member Vender: Selling goods	0.36	0.64	3.07	0.24
Skilled, private sector or government labour	1.63	0.45	0.83	0.41
Number of livelihood activities	2.18*	0.06	1.30	0.11
Has any member of your household migrated to inside your country in the past three years?	2.08	0.53	1.36	0.46
Has any member of your household migrated to outside your country in the past three years?	2.12	0.46	1.37	0.44
Did you receive remittances in the past three years?	0.57	0.56	0.67	0.34
Household owes any money/credit	0.54	0.26	1.07	0.76
Any health-related shocks	0.58	0.45	0.72	0.20
Any economic related shocks	2.08	0.23	0.92	0.73
Agricultural shock	0.45	0.24	0.56**	0.03
Number of different kind of shocks	0.95	0.86	1.00	0.99
Earthquake: affected in last 3 years	1.02	0.98	2.27**	0.02
Number of crimes	1.41	0.37	1.15	0.39
In the last 3 years has there been fighting in the area?	0.13***	0.00	0.44***	0.00
Feels safe in village	2.37	0.26	1.89	0.10
Feels safe going out of village	0.52	0.28	0.61*	0.09
Is your drinking water clean and safe?	1.21	0.78	0.79	0.45
Do you need to pay school fees? (girls)	1.29	0.56	2.23***	0.01
How far is it to the primary school? (girls)	1.02	0.45	1.01	0.33
Satisfaction with number of teachers (girls)	1.47	0.33	1.44**	0.01
Satisfaction with quality of teaching staff (girls)	2.98***	0.00	2.36***	0.00
Satisfaction with teacher attendance (girls)	1.85	0.11	1.65***	0.00
Satisfaction with class size (girls)	1.58	0.20	1.31*	0.06
Satisfaction with quality of school infrastructure (girls)	4.29***	0.00	3.28***	0.00
District in wave 1 = 2, Swat			2.02***	0.00
Urban/rural wave 2 = 2, rural			0.91	0.76
Ethnicity wave 3 = 2, Gujar			0.84	0.69
Ethnicity wave 3 = 3, Mian/Miagan			3.23*	0.07
Ethnicity wave 3 = 4, Mullah/Mullian			0.92	0.85
Ethnicity wave 3 = 5, Paracha			0.66	0.45
Ethnicity wave 3 = 6, Sayyid			0.98	0.96
Ethnicity wave 3 = 7, Yousafzai			1.24	0.40
Was the household displaced due to conflict			1.22	0.59
Relocated house or village between waves			1.22	0.71
Switched girls school between waves			1.13	0.69
Constant			0.06***	0.00
Observations	470		1,887	
Number of _hhno	190		1,071	
r2	.		.	

Satisfied overall with boys school (binary)	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	coef	pval	coef	pval
Respondent gender	0.70	0.88	0.72	0.15
Respondent age	1.03	0.66	1.01	0.36
Education level = 1, primary	2.23	0.46	1.26	0.44
Education level = 2, secondary	4.72	0.18	1.15	0.59
Education level = 3, higher/voc	8.96	0.19	1.11	0.74
Education level = 4, Madrahssa	0.50	0.77	0.21**	0.03
Dependency ratio	1.59	0.32	1.35**	0.04
Casual labour	0.77	0.73	0.82	0.44
Any HH Member Farming own land/livestock	0.75	0.62	0.77	0.28
Any HH Member Vender: Selling goods	1.33	0.87	1.69	0.49
Skilled, private sector or government labour	0.99	0.99	0.98	0.92
Number of livelihood activities	2.95**	0.01	1.22	0.24
Has any member of your household migrated to inside your country in the past three years?	1.73	0.51	1.97	0.11
Has any member of your household migrated to outside your country in the past three years?	3.41	0.26	1.75	0.16
Did you receive remittances in the past three years?	0.33	0.24	0.55	0.12
Household owes any money/credit	0.74	0.63	0.97	0.90
Any health-related shocks	0.71	0.61	0.66	0.11
Any economic related shocks	0.61	0.43	0.96	0.86
Agricultural shock	0.84	0.81	1.14	0.62
Number of different kind of shocks	0.77	0.35	0.86	0.17
Earthquake: affected in last 3 years	4.59*	0.06	1.69	0.19
Number of crimes	2.76***	0.01	1.45**	0.02
In the last 3 years has there been fighting in the area?	0.35**	0.04	0.40***	0.00
Feels safe in village	1.97	0.52	1.67	0.24
Feels safe going out of village	1.69	0.46	1.34	0.28
District in wave 1 = 2, Swat			1.37	0.24
Urban/rural wave 2 = 2, rural			0.71	0.30
Ethnicity wave 3 = 2, Gujar			0.81	0.59
Ethnicity wave 3 = 3, Mian/Miagan			1.89	0.23
Ethnicity wave 3 = 4, Mullah/Mullian			2.45*	0.05
Ethnicity wave 3 = 5, Paracha			0.83	0.73
Ethnicity wave 3 = 6, Sayyid			1.34	0.44
Ethnicity wave 3 = 7, Yousafzai			2.06***	0.01
Was the household displaced due to conflict			1.49	0.35
Relocated house or village between waves			1.23	0.68
Is your drinking water clean and safe?	0.67	0.64	0.73	0.31
Do you need to pay school fees? (boys)	0.48	0.35	0.99	0.96
How far is it to the primary school? (boys)	0.97	0.17	0.99	0.30
Satisfaction with number of teachers (boys)	2.80**	0.03	1.43**	0.02
Satisfaction with quality of teaching staff (boys)	1.60	0.31	1.42**	0.05
Satisfaction with teacher attendance (boys)	1.24	0.62	1.73***	0.00
Satisfaction with class size (boys)	3.82***	0.00	2.34***	0.00
Satisfaction with quality of school infrastructure (boys)	3.13***	0.00	3.48***	0.00
Switched boys school between waves			0.57	0.12
Constant			0.09**	0.01
Observations	483		2,356	
Number of _hhno	194		1,207	
r2	.		.	

Is your drinking water clean and safe?	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	OR	pval	OR	pval
Respondent gender	1.93	0.60	0.97	0.88
Respondent age	1.02	0.66	0.98***	0.00
Education level = 1, primary	0.54	0.15	0.73	0.15
Education level = 2, secondary	0.41*	0.09	0.74	0.12
Education level = 3, higher/voc	0.23**	0.04	0.42***	0.00
Education level = 4, Madrahssa	0.23	0.27	0.67	0.48
Dependency ratio	0.84	0.40	0.82**	0.03
Casual labour	0.87	0.59	0.75	0.11
Any HH Member Farming own land/livestock	0.94	0.80	0.91	0.62
Any HH Member Vender: Selling goods	0.40	0.20	0.42**	0.02
Skilled, private sector or government labour	0.82	0.50	0.79	0.23
Number of livelihood activities	1.02	0.90	1.07	0.62
Has any member of your household migrated to inside your country in the past three years?	0.73	0.49	0.75	0.32
Has any member of your household migrated to outside your country in the past three years?	0.48	0.11	0.63	0.13
Did you receive remittances in the past three years?	1.84	0.17	1.15	0.64
Household owes any money/credit	0.67	0.12	0.92	0.61
Any natural shock?	1.39	0.22	1.06	0.74
Any health-related shocks	0.91	0.67	0.93	0.65
Any economic related shocks	0.91	0.70	0.81	0.24
Number of different kind of shocks	0.84*	0.09	0.97	0.60
Earthquake: affected in last 3 years	0.92	0.81	0.97	0.89
Number of crimes	0.93	0.69	0.93	0.53
In the last 3 years has there been fighting in the area?	1.56*	0.06	1.13	0.45
Feels safe in village	0.59	0.11	1.09	0.71
Feels safe going out of village	1.95***	0.01	1.54**	0.01
How much time does it take to collect drinking water on a round trip?	0.98***	0.00	0.99***	0.00
Water source: Tube well or borehole	0.48**	0.04	0.57**	0.02
Water source: piped water inside house	0.71	0.33	0.67	0.14
Do you have to queue for drinking water (binary)	0.56**	0.01	0.47***	0.00
Does the household pay for the water	0.59*	0.09	0.59**	0.02
Government provides water (ref = anyone else)	0.85	0.56	0.90	0.59
Problem with service in past year: Water	0.97	0.87	0.72**	0.02
Knew of meeting in last 12 months: Water	0.81	0.48	1.11	0.60
Consulted about service: Water	0.58	0.21	0.54**	0.01
Bicycle	0.82	0.91	0.74	0.78
Bicycle quantity	1.17	0.92	1.03	0.98
District in wave 1 = 2, Swat			1.21	0.34
Urban/rural wave 2 = 2, rural			1.32	0.19
Ethnicity wave 3 = 2, Gujar			0.56**	0.05
Ethnicity wave 3 = 3, Mian/Miagan			0.52*	0.10
Ethnicity wave 3 = 4, Mullah/Mullian			0.70	0.24
Ethnicity wave 3 = 5, Paracha			0.67	0.29
Ethnicity wave 3 = 6, Sayyid			1.16	0.61
Ethnicity wave 3 = 7, Yousafzai			0.83	0.33
Was the household displaced due to conflict			1.11	0.69
Relocated house or village between waves			1.07	0.85
Switched water source between waves			1.11	0.86
Constant			435.67***	0.00
Observations	739		3,662	
Number of _hhno	275		1,493	
r2	.		.	

Extent to which local government decisions reflect priorities	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	OR	pval	OR	pval
Respondent gender	0.00	0.99	0.34***	0.00
Respondent age	1.19***	0.00	1.01*	0.05
Education level = 1, primary	0.79	0.68	1.25	0.30
Education level = 2, secondary	0.99	0.98	1.14	0.51
Education level = 3, higher/voc	3.31	0.18	1.19	0.47
Education level = 4, Madrahssa	0.12	0.18	0.59	0.49
Dependency ratio	0.76	0.30	0.92	0.46
Casual labour	1.23	0.52	1.09	0.67
Any HH Member Farming own land/livestock	0.97	0.92	1.43*	0.06
Any HH Member Vender: Selling goods	0.42	0.32	0.61	0.44
Skilled, private sector or government labour	1.12	0.77	1.26	0.31
Number of livelihood activities	1.23	0.40	0.90	0.46
Has any member of your household migrated to inside your country in the past three years?	2.84	0.17	1.70	0.15
Has any member of your household migrated to outside your country in the past three years?	1.29	0.66	1.23	0.57
Did you receive remittances in the past three years?	0.38*	0.07	0.63	0.21
Household owes any money/credit	1.04	0.90	0.98	0.93
Any natural shock?	0.97	0.94	0.67*	0.06
Any health-related shocks	1.52	0.19	1.82***	0.00
Any economic related shocks	1.40	0.30	1.56**	0.03
Number of different kind of shocks	0.93	0.62	0.81**	0.02
Earthquake: affected in last 3 years	0.91	0.84	0.99	0.96
Number of crimes	1.49	0.15	0.98	0.88
In the last 3 years has there been fighting in the area?	0.38***	0.00	0.44***	0.00
Feels safe in village	1.01	0.98	0.96	0.88
Feels safe going out of village	2.72**	0.02	1.83**	0.03
Female headed household	1.39	0.68	0.69	0.45
Household size	1.28	0.19	0.96	0.55
Household size squared	0.99	0.14	1.00	0.85
How far is to the nearest health clinic/the health facility you use?	1.01	0.40	1.00	0.59
Official fees for health service	1.75**	0.04	1.74***	0.00
Informal fees for health service	0.85	0.72	0.86	0.54
Government runs health centre (ref = anyone else)	0.88	0.68	0.77	0.14
overall satisfaction with the most recently used clinic	0.64	0.12	0.79	0.17
How much time does it take to collect drinking water on a round trip?	1.02**	0.04	1.01*	0.09
Water source: Tube well or borehole	0.87	0.75	1.14	0.58
Water source: piped water inside house	0.70	0.48	0.91	0.71
Does the household pay for the water	1.30	0.57	0.93	0.79
Is your drinking water clean and safe?	1.98	0.10	1.31	0.31
Government provides water (ref = anyone else)	0.61	0.17	0.85	0.45
Received social protection in last year	0.74	0.37	1.41**	0.02
Received livelihood assistance in last year	0.87	0.71	1.21	0.46
Number of problems with services	0.63***	0.00	0.66***	0.00
Number of grievance mechanisms known about	1.21**	0.02	1.34***	0.00
Number of meetings known about	1.00	0.99	1.02	0.84
Number of services consulted about	1.48*	0.08	1.35**	0.01
Natural log of Morris Index	1.15	0.46	1.37***	0.00
Coping strategies index	1.02	0.48	1.03***	0.01
District in wave 1 = 2, Swat			0.85	0.47
Urban/rural wave 2 = 2, rural			1.76**	0.04
Ethnicity wave 3 = 2, Gujar			1.39	0.29
Ethnicity wave 3 = 3, Mian/Miagan			3.34***	0.00
Ethnicity wave 3 = 4, Mullah/Mullian			0.93	0.83
Ethnicity wave 3 = 5, Paracha			1.61	0.19
Ethnicity wave 3 = 6, Sayyid			0.87	0.69
Ethnicity wave 3 = 7, Yousafzai			1.56**	0.04
Was the household displaced due to conflict			0.80	0.44
Relocated house or village between waves			1.38	0.33
Constant			0.01***	0.00
Observations	641		3,584	
Number of _hhno	232		1,481	
r2	.		.	

Local government cares about my opinions	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	OR	pval	OR	pval
Respondent gender	0.00	0.99	0.63***	0.00
Respondent age	1.11***	0.00	1.00	0.41
Education level = 1, primary	1.12	0.72	1.15	0.34
Education level = 2, secondary	0.77	0.47	0.98	0.87
Education level = 3, higher/voc	0.70	0.46	0.91	0.57
Education level = 4, Madrahssa	0.57	0.47	1.02	0.96
Dependency ratio	0.91	0.60	0.98	0.75
Casual labour	1.01	0.97	1.05	0.73
Any HH Member Farming own land/livestock	1.22	0.30	1.17	0.22
Any HH Member Vender: Selling goods	0.87	0.78	0.85	0.63
Skilled, private sector or government labour	0.90	0.67	1.06	0.67
Number of livelihood activities	1.30*	0.07	0.93	0.46
Has any member of your household migrated to inside your country in the past three years?	1.92	0.21	1.48	0.13
Has any member of your household migrated to outside your country in the past three years?	1.95	0.10	1.93***	0.01
Did you receive remittances in the past three years?	0.55	0.13	0.53***	0.01
Household owes any money/credit	0.77	0.16	0.93	0.50
Any natural shock?	0.87	0.54	0.91	0.49
Any health-related shocks	1.42*	0.07	1.23	0.10
Any economic related shocks	0.52***	0.00	0.67***	0.00
Number of different kind of shocks	1.04	0.66	0.99	0.87
Earthquake: affected in last 3 years	1.35	0.31	1.07	0.72
Number of crimes	0.94	0.70	0.98	0.83
In the last 3 years has there been fighting in the area?	0.41***	0.00	0.29***	0.00
Feels safe in village	0.88	0.68	1.31	0.16
Feels safe going out of village	1.49*	0.09	1.43**	0.03
Female headed household	0.52	0.18	0.51**	0.01
Household size	1.10	0.42	0.98	0.65
Household size squared	0.99	0.20	1.00	0.90
How far is to the nearest health clinic/the health facility you use?	0.99	0.13	0.99**	0.02
Official fees for health service	0.85	0.35	0.91	0.37
Informal fees for health service	0.94	0.84	0.75	0.11
Government runs health centre (ref = anyone else)	1.52**	0.02	1.32**	0.02
overall satisfaction with the most recently used clinic	1.00	0.98	1.09	0.48
How much time does it take to collect drinking water on a round trip?	1.00	0.58	1.00	0.17
Water source: Tube well or borehole	0.92	0.73	1.11	0.50
Water source: piped water inside house	1.26	0.48	1.45*	0.06
Does the household pay for the water	1.10	0.73	1.09	0.62
Is your drinking water clean and safe?	1.26	0.38	1.18	0.34
Government provides water (ref = anyone else)	0.69*	0.08	0.77*	0.07
Received social protection in last year	0.99	0.95	1.03	0.74
Received livelihood assistance in last year	0.52**	0.02	0.68**	0.04
Number of problems with services	0.78***	0.00	0.76***	0.00
Number of grievance mechanisms known about	1.17***	0.00	1.21***	0.00
Number of meetings known about	0.92	0.35	0.96	0.49
Number of services consulted about	1.31**	0.04	1.58***	0.00
Natural log of Morris Index	1.04	0.71	1.09	0.16
Coping strategies index	1.00	0.87	0.99	0.37
District in wave 1 = 2, Swat			1.89***	0.00
Urban/rural wave 2 = 2, rural			1.80***	0.00
Ethnicity wave 3 = 2, Gujar			1.04	0.85
Ethnicity wave 3 = 3, Mian/Miagan			0.86	0.64
Ethnicity wave 3 = 4, Mullah/Mullian			1.01	0.95
Ethnicity wave 3 = 5, Paracha			1.41	0.17
Ethnicity wave 3 = 6, Sayyid			1.24	0.29
Ethnicity wave 3 = 7, Yousafzai			1.31*	0.05
Was the household displaced due to conflict			0.94	0.71
Relocated house or village between waves			1.54*	0.07
Constant			0.03***	0.00
Observations	1,561		3,496	
Number of _hhno	586		1,475	
r2	.		.	

Extent to which previous central government decisions reflect priorities	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	OR	pval	OR	pval
Respondent gender	0.00	0.98	0.21***	0.00
Respondent age	1.14***	0.00	1.00	0.72
Education level = 1, primary	0.97	0.95	1.20	0.41
Education level = 2, secondary	0.39	0.14	0.83	0.37
Education level = 3, higher/voc	0.74	0.77	1.24	0.36
Education level = 4, Madrahssa	0.26	0.58	0.74	0.71
Dependency ratio	0.77	0.40	1.04	0.74
Casual labour	1.15	0.71	1.27	0.23
Any HH Member Farming own land/livestock	1.85	0.11	1.91***	0.00
Any HH Member Vender: Selling goods	1.80	0.51	0.84	0.79
Skilled, private sector or government labour	1.28	0.60	1.10	0.70
Number of livelihood activities	0.90	0.70	0.71**	0.03
Has any member of your household migrated to inside your country in the past three years?	11.24**	0.01	1.39	0.42
Has any member of your household migrated to outside your country in the past three years?	1.21	0.80	1.21	0.64
Did you receive remittances in the past three years?	0.67	0.57	0.86	0.72
Household owes any money/credit	1.43	0.35	1.01	0.96
Any natural shock?	0.71	0.38	0.81	0.34
Any health-related shocks	1.15	0.68	1.67**	0.01
Any economic related shocks	0.88	0.76	1.34	0.17
Number of different kind of shocks	0.72*	0.08	0.69***	0.00
Earthquake: affected in last 3 years	2.25	0.12	1.65**	0.05
Number of crimes	0.95	0.86	1.12	0.50
In the last 3 years has there been fighting in the area?	0.33***	0.00	0.45***	0.00
Feels safe in village	0.66	0.53	1.87	0.11
Feels safe going out of village	4.37**	0.01	2.64***	0.00
Female headed household	0.65	0.75	0.17*	0.09
Household size	1.25	0.33	1.00	0.98
Household size squared	0.99	0.20	1.00	0.67
How far is to the nearest health clinic/the health facility you use?	1.01	0.39	0.99**	0.03
Official fees for health service	1.04	0.91	1.37*	0.05
Informal fees for health service	0.48	0.16	0.80	0.41
Government runs health centre (ref = anyone else)	0.66	0.22	0.67**	0.02
overall satisfaction with the most recently used clinic	0.70	0.28	0.77	0.12
How much time does it take to collect drinking water on a round trip?	1.02*	0.06	1.01**	0.02
Water source: Tube well or borehole	1.41	0.52	1.09	0.70
Water source: piped water inside house	0.47	0.24	1.13	0.66
Does the household pay for the water	2.39	0.13	0.90	0.68
Is your drinking water clean and safe?	5.19***	0.00	2.05**	0.02
Government provides water (ref = anyone else)	1.11	0.81	1.22	0.33
Received social protection in last year	0.74	0.45	1.12	0.46
Received livelihood assistance in last year	0.81	0.70	0.86	0.63
Number of problems with services	0.66***	0.00	0.71***	0.00
Number of grievance mechanisms known about	1.33***	0.00	1.37***	0.00
Number of meetings known about	0.84	0.32	0.85*	0.10
Number of services consulted about	1.32	0.24	1.24	0.11
Natural log of Morris Index	1.07	0.77	1.22**	0.04
Coping strategies index	1.07**	0.01	1.04***	0.00
District in wave 1 = 2, Swat			0.67*	0.08
Urban/rural wave 2 = 2, rural			1.09	0.72
Ethnicity wave 3 = 2, Gujar			1.58	0.14
Ethnicity wave 3 = 3, Mian/Miagan			2.24**	0.05
Ethnicity wave 3 = 4, Mullah/Mullian			1.05	0.89
Ethnicity wave 3 = 5, Paracha			1.55	0.25
Ethnicity wave 3 = 6, Sayyid			0.64	0.21
Ethnicity wave 3 = 7, Yousafzai			1.55**	0.04
Was the household displaced due to conflict			0.66	0.19
Relocated house or village between waves			1.04	0.91
Constant			0.01***	0.00
Observations	661		3,506	
Number of _hhno	240		1,477	
r2	.		.	

Do you agree with the following statement: The previous central government cared	(1)	(2)	(3)	(4)
	Fixed effects		Random effects	
VARIABLES	OR	pval	OR	pval
Respondent gender	2.43	0.41	0.58***	0.00
Respondent age	1.08***	0.01	1.01	0.12
Education level = 1, primary	0.99	0.99	1.17	0.36
Education level = 2, secondary	0.39**	0.04	0.84	0.26
Education level = 3, higher/voc	0.46	0.18	1.20	0.31
Education level = 4, Madrahssa	0.93	0.95	1.01	0.99
Dependency ratio	0.99	0.96	1.01	0.91
Casual labour	1.22	0.40	1.04	0.79
Any HH Member Farming own land/livestock	1.61**	0.05	1.57***	0.00
Any HH Member Vender: Selling goods	0.30*	0.10	0.79	0.53
Skilled, private sector or government labour	1.18	0.60	1.07	0.70
Number of livelihood activities	0.76	0.13	0.76***	0.01
Has any member of your household migrated to inside your country in the past three years?	0.96	0.94	1.37	0.31
Has any member of your household migrated to outside your country in the past three years?	1.60	0.32	1.71**	0.05
Did you receive remittances in the past three years?	0.54	0.19	0.58**	0.05
Household owes any money/credit	0.90	0.64	0.93	0.56
Any natural shock?	0.88	0.64	0.75*	0.07
Any health-related shocks	1.02	0.92	1.15	0.34
Any economic related shocks	0.41***	0.00	0.72**	0.03
Number of different kind of shocks	0.94	0.56	0.88*	0.09
Earthquake: affected in last 3 years	1.57	0.19	1.30	0.20
Number of crimes	0.98	0.92	1.03	0.81
In the last 3 years has there been fighting in the area?	0.28***	0.00	0.23***	0.00
Feels safe in village	0.44**	0.04	1.33	0.19
Feels safe going out of village	2.24***	0.01	1.61**	0.01
Female headed household	0.14**	0.02	0.34***	0.00
Household size	1.48**	0.01	1.09	0.16
Household size squared	0.98**	0.01	1.00	0.13
How far is to the nearest health clinic/the health facility you use?	0.99*	0.07	0.99***	0.01
Official fees for health service	0.66**	0.04	0.89	0.34
Informal fees for health service	0.40**	0.01	0.58***	0.01
Government runs health centre (ref = anyone else)	0.79	0.32	0.94	0.63
overall satisfaction with the most recently used clinic	0.84	0.42	1.00	0.99
How much time does it take to collect drinking water on a round trip?	1.01*	0.10	1.01***	0.00
Water source: Tube well or borehole	0.97	0.92	1.00	0.98
Water source: piped water inside house	2.06*	0.08	1.87***	0.01
Does the household pay for the water	1.57	0.17	1.27	0.19
Is your drinking water clean and safe?	2.61***	0.01	1.74***	0.01
Government provides water (ref = anyone else)	0.72	0.20	0.84	0.27
Received social protection in last year	1.47	0.14	1.14	0.23
Received livelihood assistance in last year	0.67	0.24	0.63**	0.04
Number of problems with services	0.69***	0.00	0.76***	0.00
Number of grievance mechanisms known about	1.26***	0.00	1.30***	0.00
Number of meetings known about	1.06	0.62	0.93	0.27
Number of services consulted about	1.08	0.63	1.45***	0.00
Natural log of Morris Index	0.83	0.16	1.10	0.21
Coping strategies index	1.00	0.95	0.99	0.54
District in wave 1 = 2, Swat			2.51***	0.00
Urban/rural wave 2 = 2, rural			1.28	0.19
Ethnicity wave 3 = 2, Gujar			1.35	0.22
Ethnicity wave 3 = 3, Mian/Miagan			0.85	0.64
Ethnicity wave 3 = 4, Mullah/Mullian			0.88	0.62
Ethnicity wave 3 = 5, Paracha			1.52	0.14
Ethnicity wave 3 = 6, Sayyid			0.99	0.96
Ethnicity wave 3 = 7, Yousafzai			1.36*	0.05
Was the household displaced due to conflict			0.86	0.46
Relocated house or village between waves			1.07	0.80
Constant			0.01***	0.00
Observations	1,378		3,423	
Number of _hhno	515		1,476	
r2	.		.	

State legitimacy index (Consent, Legality, Justification)	(1)	(2)
VARIABLES	coef	pval
Respondent gender	-0.00	0.91
Respondent age	0.00	0.12
Education level = 1, primary	0.02	0.45
Education level = 2, secondary	0.01	0.65
Education level = 3, higher/voc	0.04	0.25
Education level = 4, Madrahssa	-0.01	0.96
Dependency ratio	0.00	0.84
Casual labour	0.02	0.49
Any HH Member Farming own land/livestock	0.04	0.17
Skilled, private sector or government labour	0.02	0.72
Number of livelihood activities	0.00	0.83
Has any member of your household migrated to inside your country in the past three years?	0.04	0.60
Has any member of your household migrated to outside your country in the past three years?	-0.11	0.64
Did you receive remittances in the past three years?	0.13	0.59
Household owes any money/credit	-0.01	0.74
Any natural shock?	0.02	0.62
Any health-related shocks	0.01	0.69
Any economic related shocks	0.05	0.12
Number of different kind of shocks	-0.00	0.79
Earthquake: affected in last 3 years	-0.04	0.27
Number of crimes	0.02	0.38
In the last 3 years has there been fighting in the area?	-0.06	0.12
Feels safe in village	0.05	0.46
Feels safe going out of village	-0.07	0.28
District in wave 1 = 2, Swat	0.15***	0.00
Urban/rural wave 2 = 2, rural	-0.07*	0.07
Ethnicity wave 3 = 2, Gujar	-0.08	0.12
Ethnicity wave 3 = 3, Mian/Miagan	0.03	0.64
Ethnicity wave 3 = 4, Mullah/Mullian	-0.10**	0.03
Ethnicity wave 3 = 5, Paracha	0.00	0.97
Ethnicity wave 3 = 6, Sayyid	-0.09**	0.05
Ethnicity wave 3 = 7, Yousafzai	-0.01	0.64
Was the household displaced due to conflict	-0.01	0.88
Relocated house or village between waves	0.08	0.18
Female headed household	-0.25**	0.02
Household size	-0.02*	0.08
Household size squared	0.00	0.14
How far is to the nearest health clinic/the health facility you use?	-0.00	0.89
Official fees for health service	0.05*	0.05
Informal fees for health service	-0.05	0.46
Government runs health centre (ref = anyone else)	0.06**	0.03
overall satisfaction with the most recently used clinic	0.07***	0.00
How much time does it take to collect drinking water on a round trip?	0.00	0.67
Water source: Tube well or borehole	0.09***	0.00
Water source: piped water inside house	0.04	0.27
Does the household pay for the water	-0.06*	0.09
Is your drinking water clean and safe?	0.09*	0.06
Government provides water (ref = anyone else)	0.06*	0.07
Received social protection in last year	0.02	0.34
Received livelihood assistance in last year	0.05	0.48
Number of problems with services	-0.05***	0.00
Number of grievance mechanisms known about	0.02***	0.00
Number of meetings known about	0.01	0.28
Number of services consulted about	0.04**	0.03
Natural log of Morris Index	0.01	0.69
Coping strategies index	0.00**	0.03
Constant	4.56***	0.00
Observations	851	
R-squared	0.21	
r2	0.212	

State legitimacy index (Consent only)	(1)	(2)
VARIABLES	coef	pval
Respondent gender	-0.16***	0.00
Respondent age	0.00	0.71
Education level = 1, primary	0.07	0.16
Education level = 2, secondary	0.03	0.52
Education level = 3, higher/voc	0.06	0.27
Education level = 4, Madrahssa	-0.15	0.53
Dependency ratio	0.01	0.68
Casual labour	0.02	0.65
Any HH Member Farming own land/livestock	-0.02	0.70
Any HH Member Vender: Selling goods	-0.78***	0.00
Skilled, private sector or government labour	-0.07	0.35
Number of livelihood activities	0.06*	0.09
Has any member of your household migrated to inside your country in the past three years?	-0.20	0.26
Has any member of your household migrated to outside your country in the past three years?	0.25	0.63
Did you receive remittances in the past three years?	-0.23	0.66
Household owes any money/credit	0.02	0.66
Any natural shock?	0.04	0.45
Any health-related shocks	0.04	0.34
Any economic related shocks	0.08*	0.07
Number of different kind of shocks	-0.01	0.48
Earthquake: affected in last 3 years	-0.04	0.47
Number of crimes	0.08**	0.01
In the last 3 years has there been fighting in the area?	-0.22***	0.00
Feels safe in village	0.16*	0.09
Feels safe going out of village	-0.05	0.64
District in wave 1 = 2	0.16***	0.00
Urban/rural wave 2 = 2, rural	-0.00	0.96
Ethnicity wave 3 = 2, Gujar	0.02	0.83
Ethnicity wave 3 = 3, Mian/Miagan	0.06	0.50
Ethnicity wave 3 = 4, Mullah/Mullian	-0.11	0.18
Ethnicity wave 3 = 5, Paracha	0.13*	0.07
Ethnicity wave 3 = 6, Sayyid	-0.06	0.31
Ethnicity wave 3 = 7, Yousafzai	0.03	0.53
Displaced during conflict 1996-2006	0.05	0.43
Relocated house or village between waves = o,	-	-
Female headed household	-0.23	0.31
Household size	-0.02	0.29
Household size squared	0.00	0.40
How far is to the nearest health clinic/the health facility you use?	-0.00	0.15
Official fees for health service	0.02	0.47
Informal fees for health service	-0.04	0.64
Government runs health centre (ref = anyone else)	0.07*	0.09
overall satisfaction with the most recently used clinic	0.14***	0.00
How much time does it take to collect drinking water on a round trip?	0.00	0.43
Water source: Tube well or borehole	-0.11***	0.00
Water source: piped water inside house	-0.12**	0.03
Is your drinking water clean and safe?	0.01	0.84
Does the household pay for the water	-0.12**	0.01
Government provides water (ref = anyone else)	0.07	0.13
Received social protection in last year	-0.02	0.60
Received livelihood assistance in last year	0.13	0.19
Number of problems with services	-0.00	0.94
Number of grievance mechanisms known about	0.02**	0.03
Number of meetings known about	0.04**	0.02
Number of services consulted about	-0.02	0.51
Constant	4.90***	0.00
Observations	1,007	
R-squared	0.19	
r2	0.188	

State legitimacy index (Legality only)	(1)	(2)
VARIABLES	coef	pval
Respondent gender	-0.08*	0.07
Respondent age	0.00	0.33
Education level = 1, primary	0.02	0.64
Education level = 2, secondary	0.00	1.00
Education level = 3, higher/voc	0.04	0.43
Education level = 4, Madrahssa	0.13	0.56
Dependency ratio	-0.02	0.44
Casual labour	-0.01	0.83
Any HH Member Farming own land/livestock	0.02	0.72
Any HH Member Vender: Selling goods	-0.76***	0.00
Skilled, private sector or government labour	-0.02	0.86
Number of livelihood activities	-0.04	0.32
Has any member of your household migrated to inside your country in the past three years?	0.10	0.37
Has any member of your household migrated to outside your country in the past three years?	-0.30	0.16
Did you receive remittances in the past three years?	0.29	0.17
Household owes any money/credit	0.01	0.88
Any natural shock?	0.01	0.92
Any healthrelated shocks	0.01	0.87
Any economic related shocks	0.16***	0.00
Number of different kind of shocks	-0.01	0.56
Earthquake : affected in last 3 years	-0.05	0.41
Number of crimes	-0.08**	0.02
In the last 3 years has there been fighting in the area?	0.04	0.57
Feels safe in village	-0.15	0.20
Feels safe going out of village	-0.17	0.21
District in wave 1 = 2	-0.07	0.16
Urban/rural wave 2 = 2, rural	-0.16***	0.00
Ethnicity wave 3 = 2, Gujar	-0.10	0.23
Ethnicity wave 3 = 3, Mian/Miagan	0.05	0.64
Ethnicity wave 3 = 4, Mullah/Mullian	-0.17*	0.09
Ethnicity wave 3 = 5, Paracha	-0.23**	0.03
Ethnicity wave 3 = 6, Sayyid	-0.28***	0.00
Ethnicity wave 3 = 7, Yousafzai	-0.13**	0.02
Displaced during conflict 1996-2006	-0.09	0.14
Relocated house or village between waves = o,	-	-
Female headed household	0.11	0.37
Household size	-0.03	0.12
Household size squared	0.00	0.12
How far is to the nearest health clinic/the health facility you use?	0.00***	0.00
Official fees for health service	0.12***	0.00
Informal fees for health service	0.01	0.89
Government runs health centre (ref = anyone else)	-0.00	1.00
overall satisfcation with the most recently used clinic	-0.06	0.18
How much time does it take to collect drinking water on a round trip?	0.00	0.85
Water source: Tube well or borehole	0.15***	0.00
Water source: piped water inside house	0.00	0.96
Is your drinking water clean and safe?	0.23***	0.00
Does the household pay for the water	0.01	0.80
Government provides water (ref = anyone else)	-0.04	0.35
Received social protection in last year	0.04	0.20
Received livelihood assistance in last year	0.01	0.92
Number of problems with services	-0.04***	0.01
Number of grievance mechanisms known about	0.05***	0.00
Number of meetings known about	-0.10***	0.00
Number of services consulted about	0.12***	0.00
Constant	5.15***	0.00
Observations	1,007	
R-squared	0.23	
r2	0.229	

State legitimacy index (Justification only)	(1)	(2)
VARIABLES	coef	pval
Respondent gender	0.08	0.11
Respondent age	0.00*	0.08
Education level = 1, primary	-0.03	0.59
Education level = 2, secondary	0.01	0.89
Education level = 3, higher/voc	0.01	0.87
Education level = 4, Madrahssa	-0.13	0.55
Dependency ratio	0.01	0.64
Casual labour	-0.01	0.81
Any HH Member Farming own land/livestock	0.09*	0.08
Any HH Member Vender: Selling goods	-0.40**	0.03
Skilled, private sector or government labour	0.12	0.34
Number of livelihood activities	0.00	0.98
Has any member of your household migrated to inside your country in the past three years?	0.19	0.17
Has any member of your household migrated to outside your country in the past three years?	-0.25	0.11
Did you receive remittances in the past three years?	0.27*	0.08
Household owes any money/credit	-0.02	0.63
Any natural shock?	-0.06	0.32
Any healthrelated shocks	-0.00	0.94
Any economic related shocks	-0.07	0.21
Number of different kind of shocks	0.01	0.80
Earthquake : affected in last 3 years	0.03	0.62
Number of crimes	0.07**	0.03
In the last 3 years has there been fighting in the area?	0.06	0.34
Feels safe in village	0.11	0.28
Feels safe going out of village	-0.02	0.89
District in wave 1 = 2	0.27***	0.00
Urban/rural wave 2 = 2, rural	-0.03	0.59
Ethnicity wave 3 = 2, Gujar	-0.18*	0.05
Ethnicity wave 3 = 3, Mian/Miagan	-0.00	0.98
Ethnicity wave 3 = 4, Mullah/Mullian	0.04	0.68
Ethnicity wave 3 = 5, Paracha	0.12	0.34
Ethnicity wave 3 = 6, Sayyid	0.03	0.71
Ethnicity wave 3 = 7, Yousafzai	0.01	0.81
Displaced during conflict 1996-2006	-0.09	0.27
Relocated house or village between waves = o,	-	-
Female headed household	-0.38***	0.00
Household size	-0.01	0.82
Household size squared	0.00	0.98
How far is to the nearest health clinic/the health facility you use?	-0.00*	0.06
Official fees for health service	0.03	0.49
Informal fees for health service	-0.13	0.30
Government runs health centre (ref = anyone else)	0.02	0.69
overall satisfaction with the most recently used clinic	0.09**	0.04
How much time does it take to collect drinking water on a round trip?	-0.00	0.53
Water source: Tube well or borehole	0.13**	0.03
Water source: piped water inside house	0.22***	0.00
Is your drinking water clean and safe?	0.09	0.19
Does the household pay for the water	0.01	0.88
Government provides water (ref = anyone else)	0.06	0.28
Received social protection in last year	0.06*	0.10
Received livelihood assistance in last year	0.04	0.77
Number of problems with services	-0.08***	0.00
Number of grievance mechanisms known about	-0.00	0.69
Number of meetings known about	0.09***	0.00
Number of services consulted about	-0.00	0.92
Constant	4.18***	0.00
Observations	1,007	
R-squared	0.21	
r2	0.205	