

# **Nepal Health Insurance Impact Evaluation: Baseline Basic Report**

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## **Table of Contents**

I. Background.....	3
II. The baseline survey and results.....	4
Survey Design and Fieldwork Organization.....	4
Household demographics and health profile at baseline .....	5
Demographics, education, and employment .....	5
Housing, assets, and income .....	8
Health .....	12
III. Impact evaluation.....	22
Random assignment of encouragement mechanism to VDCs.....	22
Matching pseudo-control and treatment households .....	26
VI. Summary and next steps .....	29
Summary.....	30
Next Steps.....	31
Appendix A: List of drugs included in the benefit package.....	32

## **List of Tables**

Table 1. Baseline sample.....	4
Table 2. Demographics and education.....	6
Table 3. Household education expenditure.....	7
Table 4. Employment.....	8
Table 5. Dwelling characteristics and sanitation .....	10
Table 6. Assets .....	11
Table 7. Mean annual household income .....	12
Table 8. Health status, chronic and acute illness .....	14
Table 9. Health seeking behavior .....	16
Table 10. Quality of healthcare .....	17
Table 11. Outpatient expenditures for last 30 days, among those ill in last 30 days.....	18
Table 12. In-patient treatment and expenses.....	19
Table 13. Medication.....	20
Table 14. Health-related financial shocks, household level .....	21
Table 15. VDC assignment to randomized encouragement and control, by district.....	23
Table 16. Treatment at baseline: Intra-household demographics and asset ownership.....	24
Table 17. Treatment at baseline: Health status and health-seeking behavior.....	25
Table 18. Baseline sample, pre-matching.....	26
Table 19. Matched baseline sample, region of common support.....	27
Table 20. Variables included in PSM specification, before and after PSM .....	28
Table 21. Matched baseline sample: Health status and health seeking behavior .....	29

## I. Background

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While the country has seen significant improvements in health over the past 20 years, it still falls behind its neighbors on key indicators such as infant and maternal mortality, childhood malnutrition, and life expectancy. Furthermore, these indicators vary greatly between regions and income levels: life expectancy in the capital of Kathmandu is 74 years; in the mountains of Mugu district it is half that.<sup>1</sup> Several socioeconomic constraints need to be addressed to increase healthcare utilization. Nepal has an extensive network of public health facilities, but due to distance and cost only about 50% of the poorest Nepalese seek treatment for illness. The average treatment cost per illness episode is equivalent to 1.5 months of per capita consumption for the very poor.<sup>2</sup> The high cost of use must be lowered to increase utilization of health services by the poor and other marginalized groups.

In 2007, the Government of Nepal declared that EHCS would be delivered to all of its citizens free of cost in an effort to improve accessibility to basic health services for the poor. Under EHCS, the Government identified 20 key primary care service interventions to subsidize, including those relating to safe motherhood, family planning, outpatient care, and child health.<sup>3</sup> In principle, EHCS also covers many of the most common drugs; however, the demand for these drugs often outstrips supply at state-run health facilities, resulting in rationing and the need for patients to purchase additional drugs from private facilities. However, challenges surrounding healthcare utilization remain. First, public expenditure on health is currently low: only 7% of the budget or US\$10 per capita. Second, the high cost of healthcare relative to total consumption is prohibitive to the poorest households' use of health services: the utilization of public hospital services for the poorest quintile is half that of the second poorest quintile and less than a third that of the second wealthiest quintile.<sup>4</sup>

Signaling a desire to address these issues in Nepal and realize the country's vision of universal coverage, the Ministry of Health and Population (MoHP) has been working for the past year to develop a national health financing strategy. Furthermore, a parallel effort is ongoing to pilot a health insurance that aims to address the two most important challenges facing the sector: rising out-of-pocket expenditures and increasing inequities in access to and utilization of health care across income quintiles and geographical regions.

The pilot is being implemented as part of a randomized impact evaluation that will, in addition to measuring the health insurance's impact on out-of-pocket expenditure, unequal access to and utilization of healthcare, and health outcomes, assess the effect of an encouragement mechanism on improving health insurance uptake.<sup>5</sup> While a primary goal of the pilot is to inform the Government of Nepal's plans for the national scale-up of the health insurance pilot, this impact evaluation will also contribute to the

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<sup>1</sup> Nepal Health Sector Program Appraisal Document (PAD). World Bank. 2004.

<sup>2</sup> Country Assistance Strategy for Nepal. World Bank. 1998.

<sup>3</sup> Effectiveness of Essential Health Care Services Delivery in Nepal. Nepal Health Resource Council. 2008.

<sup>4</sup> BIA. Pages iii-13.

<sup>5</sup> More detailed information about the pilot program and the impact evaluation is presented in the project's concept note.

literature on the impact of health insurance schemes on health outcomes and the impact of encouragement mechanisms on take-up (with which many of the studies that make up the current literature struggle).

The evaluation process will consist of three components: (i) an impact evaluation of the health insurance’s effectiveness in improving health outcomes, (ii) a process evaluation of the program’s administrative, operational, and financial capacity, and (iii) an estimate of the program’s cost-effectiveness. The impact evaluation, which will serve as the primary focus of this report, will be primarily based on a randomized enrolment promotion/encouragement design targeted to increase take up rates of the new health insurance product. However, since the feasibility of this method in identifying the impact is highly dependent on the efficacy of the randomized encouragement on the take up of health insurance, a provision was also made to incorporate a quasi-experimental design which can be utilized in the unlikely event that the randomized encouragement design does not result in sufficient take up differential. Specifically, under such conditions, a matched difference-in-difference design will be used to evaluate impact. To provide input for the impact evaluation, a baseline survey was administered in pilot program and non-program areas. The team will implement an end line survey following completion of the pilot period.

This report is organized as follows. Section II provides a description of the baseline survey and results. Section III presents the impact evaluation design, explicitly outlining the methodology used. Finally, Section IV summarizes and discusses next steps.

## II. The baseline survey and results

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### *Survey Design and Fieldwork Organization*

Baseline data was collected from 153 Village Development Committees (VDCs) in three pilot districts, with 40 households sampled in each VDC. Additionally, the survey was given to 14 households in each of 100 VDCs from three districts *not* included in the health insurance pilot. Households from these three districts, Gorkha, Kapilvastu, and Udayapur, will serve as pseudo-controls in the event that the encouragement mechanism fails to produce large enough differences in health insurance uptake. The final baseline sample includes 7,521 households from six districts (see Table 1).

Table 1. Baseline sample

	Health insurance pilot	Non-program areas	<b>Total</b>
Number of districts	3	3	<b>6</b>
Number of VDCs	153	100	<b>253</b>
Number of households	6,121	1,400	<b>7,521</b>
Number of individuals	35,235	9,070	<b>44,305</b>

The household survey instrument collects information at the level of the household and the individual. After enumerators populate a household roster, all members are asked about their education and

employment in the last 12 months, as well as a comprehensive set of questions on health outcomes, including chronic and acute health status, health seeking behaviors, quality of healthcare, healthcare expenses, and nature of treatment plans. The extensive information on health will allow the team to compare multiple outcomes of interest from before and after the intervention's rollout. Household-level data, including dwelling characteristics, sanitation and hygiene practices, asset ownership, and income and expenditure, were also collected. In addition, community level information on infrastructure, markets, and prices of goods was collected from focus groups using the community questionnaire

The data collection work was contracted out to a survey firm in Nepal. The firm put in place a series of key quality control measures, including: (i) the contracting of a data quality specialist, (ii) re-surveying by the data collection firm for an explicit number of households, (iii) computer-assisted field data entry, and (iv) real-time monitoring of data collected in the field. The final data cleaning, coding, and verification processes were conducted by the impact evaluation team.

### ***Household demographics and health profile at baseline***

#### *Demographics, education, and employment*

Table 2 outlines the basic demographic and educational background of the sample. There are marginally more men than women in the sample. With the exception of Kapilvastu, all sample districts have comparable age distributions, with a large mass of individuals in the working age category of 15-64 years. Kapilvastu has a considerably higher proportion of children under 15 years old than, for example, Ilam (35.5 vs. 23.2 percent). Among sample individuals over 15 years old, approximately 50 percent are married, 46 percent are unmarried, and 4 percent are widowed; there are effectively no divorced individuals in the sample.

Eighty percent of the over-5 sample can read and write in at least one language, with this figure as high as 85.3 percent in Baglung and as low as 63.7 percent in Kapilvastu. Similar values and within-sample patterns emerge for those ever having attended school (see Table 2). School fees constitute half of household expenditures on education, with the average sample household allotting 4,279 Rs to this expense; 486 Rs go to tuition and boarding costs, 2,158 Rs are spent on textbooks, and 1,388 Rs are used to purchase uniforms and other materials (see Table 3).

Table 2. Demographics and education

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Household size (mean)</i>	5.9	5.2	6.3	5.9	7.5	6.2	5.9
<i>Gender (%)</i>							
Male	50.3	50.9	50.6	51.3	52.0	52.1	<b>50.8</b>
Female	49.7	49.1	49.4	48.7	48.0	47.9	<b>49.2</b>
<i>Age groups (%)</i>							
Under 5	7.7	6.2	8.0	6.7	11.3	8.5	<b>7.7</b>
5-14 years	19.3	17.0	21.6	17.4	24.2	21.5	<b>19.7</b>
15-64 years	66.5	70.1	65.8	68.5	59.2	65.4	<b>66.7</b>
Over 65	6.5	6.7	4.6	7.4	5.2	4.6	<b>5.9</b>
<i>Marital Status, 15 years and older (%)</i>							
Single	45.0	45.2	47.5	44.5	48.2	50.1	<b>46.2</b>
Married	50.7	50.2	48.9	50.5	48.1	45.2	<b>49.6</b>
Divorced	0.1	0.1	0.1	0.3	0.2	0.2	<b>0.1</b>
Polygamously married	0.4	0.6	0.2	0.5	0.1	1.0	<b>0.4</b>
Widow	3.7	3.9	3.3	4.1	3.5	3.5	<b>3.6</b>
<i>Can read and write, 5 years and older (%)</i>	85.3	84.7	73.8	75.2	63.7	79.5	<b>79.7</b>
<i>Ever attended school, 5 years and older (%)</i>	86.0	86.1	75.2	75.0	64.9	80.4	<b>80.7</b>
<i>Highest level of education, among those ever attending school (%)</i>							
Grade 1	4.9	3.0	6.8	4.3	9.2	4.6	<b>5.0</b>
Grade 2	5.2	5.3	5.9	5.5	9.6	8.0	<b>5.8</b>
Grade 3	5.9	5.6	6.6	6.1	8.7	6.9	<b>6.2</b>
Grade 4	5.8	5.4	6.0	6.8	9.1	6.3	<b>6.0</b>
Grade 5	10.3	9.0	11.1	9.6	14.1	9.3	<b>10.3</b>
Grade 6	5.6	5.4	6.8	7.3	6.2	6.8	<b>6.1</b>
Grade 7	6.7	7.9	7.8	7.4	5.5	6.9	<b>7.2</b>
Grade 8	10.0	10.0	10.1	8.9	9.0	9.9	<b>9.9</b>
Grade 9	9.2	14.9	9.6	6.6	7.1	11.4	<b>10.5</b>
Grade 10 or SLC level	19.4	17.5	13.5	16.8	11.2	17.7	<b>16.8</b>
Higher secondary/certified	9.8	9.4	8.6	11.8	7.4	7.0	<b>9.3</b>
Graduate or diploma level	5.6	5.2	6.0	6.3	2.1	4.6	<b>5.4</b>
Master's degree level	1.5	1.4	1.0	2.3	0.7	0.6	<b>1.3</b>
Above master's	0.2	0.1	0.1	0.2	0.1	0.0	<b>0.1</b>

Table 3. Household education expenditure

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Mean annual cash expenditures+ (Rs)</i>							
School fees	3,395	4,593	6,452	2,336	3,640	1,904	<b>4,279</b>
Tuition and boarding costs	552	426	399	742	189	711	<b>485</b>
Textbooks	2,167	2,422	2,249	1,962	1,261	1,647	<b>2,158</b>
Uniform and other materials	1,498	1,467	1,321	1,151	959	1,449	<b>1,388</b>
Total	7,612	8,908	10,421	6,191	6,049	5,711	<b>8,310</b>
Sample size (households)	N=2,400	N=1,960	N=1,761	N=574	N=434	N=392	<b>N=7,521</b>

+ Mean taken after windsorizing at bottom and top 1% to minimize impact of outliers

Approximately 71 percent of individuals 13 years and older in the sample earn an income (see Table 4). The majority of income earners (63.5 percent) work on their own farm; only 3.9 percent of income earners farm on another household's land or work as an agricultural wage laborer. Migrant workers and owners of non-farm enterprises are the second and third most common occupations, with 14 and 7.4 percent of income earners participating in these activities, respectively. The data also reveal that only 1 percent of income earners receive health insurance through their primary occupation.

Table 4. Employment

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Employment status, 13 years and older (%)</i>							
Agriculture	22.1	28.6	23.2	21.1	29.1	35.6	<b>25.0</b>
Work in private organization	2.3	2.7	1.7	3.4	0.9	3.4	<b>2.3</b>
Daily wage employee	2.5	2.8	4.9	2.7	4.2	3.4	<b>3.3</b>
Public service employee	3	2.8	2.1	5.5	1.3	2.8	<b>2.8</b>
Own a business	4.2	4.3	5.2	4.7	2.2	3.1	<b>4.3</b>
Foreign employee	13.8	8.7	8.2	7.4	9.9	8.6	<b>10.2</b>
Member of a cooperative	0.1	0.2	0.2	0.4	0.1	0	<b>0.2</b>
Full-time student	22.6	18.1	21.4	23.9	15.4	19.4	<b>20.7</b>
Housewife	23.4	25.1	27	24.1	30.7	17.6	<b>24.9</b>
Old age/retired	3.9	3.9	3.8	4.4	3.6	3.1	<b>3.9</b>
Not working	1.3	2.1	1.5	1.8	1.4	1.9	<b>1.6</b>
Other	0.8	0.7	0.7	0.7	1.1	1.1	<b>0.8</b>
<i>Income earner, 13 years and older (%)</i>	74	72.5	65.4	69.1	62.9	81.0	<b>70.8</b>
<i>Primary occupation, among income earners (%)</i>							
Own farming	61.5	68.6	58.7	62	71.1	66.5	<b>63.5</b>
Farming on another's land	1.3	1.7	4.5	0.9	3.4	2.9	<b>2.3</b>
Agricultural wage labor	1.7	1.5	1.7	0.2	3.9	0.1	<b>1.6</b>
Non-agricultural wage labor	1.3	1.3	5.7	2.8	3.7	3.4	<b>2.7</b>
Salaried- government	4.3	3.6	3.2	7.7	2.1	3.5	<b>4.0</b>
Salaried- Private	3.2	3.5	3.2	5.0	2.6	4.8	<b>3.5</b>
Professional, artisan, carpenter	1.2	1.4	1.2	0.6	1.3	0.9	<b>1.2</b>
Own business	6.8	7.2	9.8	9.2	4.8	3.2	<b>7.4</b>
Migrant workers	17.8	10.4	11.5	10.6	6.9	11.4	<b>13.0</b>
Other	0.8	0.8	0.5	1.0	0.2	3.4	<b>0.9</b>
<i>Primary occupation has health insurance (%)</i>	1.5	0.9	1.3	0.5	0.4	0.4	<b>1.1</b>

### *Housing, assets, and income*

The baseline survey also collects information on households' dwelling characteristics and sanitation practices and these results are summarized in Table 6. Rental homes are not common in the sample, with 98.1 percent of households owning their own dwelling. More than 80 percent of dwellings in the sample have earth floors, 14.8 percent have cement floors, and 3.2 percent have wood floors. Electricity is the most common source of lighting (75.3 percent).

The most common type of toilet facility (73.8 percent of households' primary toilet) is a pan/slab toilet with a septic tank, which WHO considers to be an "improved" sanitation facility.<sup>6</sup> While only 9 percent of households in the sample as a whole do not use any toilet facility, the prevalence of open defecation varies widely between districts. For example, nearly 73 percent of households in Kapilvastu practice open defecation, compared to less than 1 percent of households in both Ilam and Gorkha. Similarly, though unsurprisingly, the data reveal similar between-district differences in primary water source. Water sources, particularly in rural areas, are often communal and so households in a given district are more likely to draw from the same water sources. The most common drinking water source in Baglung, Ilam, Gorkha, and Udayapur is a community tap (75.5, 48, 75.1, and 58.7 percent, respectively); the most common source in Kailali and Kapilvastu is a tubewell or hand pump (80.5 and 97.2 percent, respectively). Households in Udayapur are more likely than other households in the sample to drink from an open well (17.1 percent, compared to 2.1 percent in the whole sample), which WHO has deemed an "unimproved" drinking water source.

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<sup>6</sup> Core Questions on Drinking-Water and Sanitation for Household Surveys. World Health Organization & UNICEF. 2006

Table 5. Dwelling characteristics and sanitation

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Tenure status (%)</i>	96.5	98.9	98.9	99.1	99.3	98.7	<b>98.1</b>
Own	2.5	0.4	0.9	0.3	0.5	0.5	<b>1.2</b>
Rent	0.0	0.5	0.2	0.0	0.0	0.3	<b>0.2</b>
Institutional	1.0	0.3	0.1	0.5	0.2	0.5	<b>0.5</b>
Other							
<i>Number of rooms in dwelling (mean)</i>	3.5	4.0	2.9	3.0	3.5	3.4	<b>3.4</b>
<i>Floor material (%)</i>							
Earth	88.0	72.2	80.9	84.1	72.1	89.8	<b>81.1</b>
Wood	0.5	9.2	0.5	4.7	0.7	2.0	<b>3.2</b>
Cement	10.7	18.3	16.2	11.0	26.7	8.2	<b>14.8</b>
Other	0.9	0.2	2.4	0.2	0.5	0.0	<b>1.0</b>
<i>Primary drinking water source (%)</i>							
Tap/piped	17.9	42.0	1.9	9.2	1.6	8.9	<b>18.3</b>
Community tap	75.5	48.0	6.7	75.1	0.2	58.7	<b>47.0</b>
Natural source water	4.1	5.0	7.6	11.8	0.0	0.5	<b>5.3</b>
Tubewell/hand pump	0.0	2.7	80.5	0.2	97.2	12.5	<b>25.8</b>
Closed/covered well	0.0	0.9	0.5	0.5	0.5	1.0	<b>0.5</b>
Open well	1.2	1.4	1.2	2.4	0.2	17.1	<b>2.1</b>
Other	1.2	0.1	1.6	0.7	0.2	1.3	<b>0.9</b>
<i>Type of toilet facility (%)</i>							
Flush toilet (public sewage)	0.5	0.1	0.0	0.2	0.0	0.3	<b>0.2</b>
Flush toilet (septic tank)	2.7	10.9	3.0	19.3	6.7	0.5	<b>6.3</b>
Pan/slab toilet with septic tank	92.0	83.8	49.2	73.0	19.8	82.7	<b>73.8</b>
Biogas connected improved toilet	0.1	1.5	14.9	4.9	0.0	0.0	<b>4.3</b>
Ordinary toilet in the compound	3.0	3.1	8.3	1.2	0.7	7.9	<b>4.3</b>
Public toilet	0.3	0.1	5.2	0.3	0.0	0.3	<b>1.4</b>
Open defecation	1.4	0.4	16.2	0.9	72.8	8.4	<b>9.0</b>
Other	0.0	0.1	3.2	0.2	0.0	0.0	<b>0.8</b>
<i>Primary source of lighting (%)</i>							
Kerosene	24.2	3.7	2.4	3.3	21.4	3.6	<b>10.9</b>
Electricity	73.0	83.9	72.3	93.7	73.5	34.7	<b>75.3</b>
Solar	2.5	11.5	22.3	2.8	0.2	56.1	<b>12.2</b>
Other	0.2	0.9	3.0	0.2	4.8	5.6	<b>1.6</b>
Sample size (# of households)	N=2,400	N=1,960	N=1,761	N=574	N=434	N=392	<b>N=7,521</b>

The survey asks about asset ownership at the household level, i.e. whether at least one person in the household owns a given item, and these results are summarized in Table 6. The most widely owned asset is a mobile phone (91.2 percent), followed by a television (49 percent), and a radio, CD, or cassette player (42.8 percent). The sample has limited access to means of personal transportation; while 23.5 percent of households have a bicycle, only 7 percent own a motorcycle and less than 1 percent of the sample owns a car or truck. More than 80 percent of households in each district own agricultural land, with a sample average of 92.1 percent. A little less than half the sample owns non-agricultural land (44.2 percent).

Table 6. Assets

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Household owns at least one (%)</i>							
Radio/CD/cassette player	48.0	60.1	21.6	43.2	23.7	39.3	<b>42.8</b>
Television	55.1	62.3	35.4	50.3	33.2	21.4	<b>49.0</b>
LPG stove	23.7	31.7	26.5	34.1	13.1	5.6	<b>25.7</b>
Landline phone	2.0	4.4	2.2	3.5	1.4	3.1	<b>2.8</b>
Mobile phone	92.8	95.1	86.9	88.7	87.6	89.3	<b>91.2</b>
Sofa set	2.2	5.8	3.6	2.8	8.3	1.5	<b>3.8</b>
Dining table set	3.2	20.4	1.7	1.7	1.2	0.8	<b>7.0</b>
Refrigerator	4.0	2.4	6.0	5.7	4.8	2.0	<b>4.1</b>
Microwave	0.0	0.1	0.0	0.0	0.0	0.0	<b>0.0</b>
Sewing machine	3.1	4.8	4.8	5.4	11.5	5.4	<b>4.7</b>
Motor/car	0.1	1.2	0.1	0.2	0.2	0.3	<b>0.4</b>
Bus/truck	0.0	0.0	0.2	0.2	0.0	0.0	<b>0.1</b>
Tractor/tiller	0.4	1.4	3.1	0.0	6.2	0.3	<b>1.6</b>
Rickshaw	0.0	0.0	0.0	0.0	0.7	0.0	<b>0.0</b>
Motorcycle	1.7	10.2	10.6	2.8	16.6	2.8	<b>7.0</b>
Bicycle	0.6	3.9	69.8	1.2	86.4	16.3	<b>23.5</b>
Plough	38.0	6.3	49.0	42.9	43.5	76.8	<b>35.0</b>
Animal drawn cart	0.0	0.1	22.4	0.0	5.1	1.5	<b>5.6</b>
Computer/laptop	5.0	7.0	3.2	2.8	2.1	0.8	<b>4.5</b>
<i>Household owns agricultural land (%)</i>	94.9	95.1	83.2	96.9	88.7	96.4	<b>92.1</b>
<i>Household owns non-agricultural land (%)</i>	39.9	36.9	51.7	39.7	50.5	73.5	<b>44.2</b>
Sample size (# of households)	N=2,400	N=1,960	N=1,761	N=574	N=434	N=392	<b>N=7,521</b>

Table 7 displays mean annual household incomes from various sources, for each district in the sample. The average household in the sample earned 198,954 Rs over the last 12 months. As we might expect, labor represents the largest income generator for households. On average, agricultural labor, business labor, and other types of labor, contribute 73,608 Rs, 21,175 Rs, and 45,865 Rs to household incomes, respectively. Remittances and gifts from outside Nepal also make up a substantial portion of household

income, accounting for an average of 48,754 Rs annually per household. Data show that renting out equipment, selling livestock, receiving assistance from a community organization, and receiving inheritance, are not income generators for households in the sample. Finally, while we do observe differences in income levels between districts, it is important to note that these figures have not been adjusted for geographical variation in cost of living and thus the variation does not necessarily reflect differences in well-being.

Table 7. Mean annual household income

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Income from agricultural labor + (Rs)</i>	45,851	135,407	64,027	33,715	67,941	42,286	<b>73,608</b>
<i>Income from business labor + (Rs)</i>	21,230	24,830	25,944	15,359	6,764	5,605	<b>21,175</b>
<i>Income from other labor + (Rs)</i>	48,517	41,201	52,950	39,340	35,503	42,151	<b>45,865</b>
<i>Other sources + (Rs)</i>							
Interest or investment income	2,341	1,855	913	734	49	809	<b>1,545</b>
Renting out a building and/or land	1,426	3,151	6,084	1,003	861	911	<b>2,874</b>
Renting out equipment/vehicles/machinery	0	0	0	0	0	0	<b>0</b>
Livestock earnings from others	0	0	0	0	0	0	<b>0</b>
Scholarships for study or training	231	105	284	161	317	191	<b>208</b>
Government transfer/senior citizen allowance/disabled citizen allowance	418	58	73	135	371	21	<b>199</b>
Assistance/allowance from community organizations	0	0	0	0	0	0	<b>0</b>
Gifts, grants, donations, etc.	420	551	539	339	1,559	976	<b>571</b>
Remittances/gifts from within country	4,293	3,166	3,582	8,929	1,101	7,222	<b>4,155</b>
Remittances/gifts from outside country	82,534	45,000	18,909	37,488	36,652	24,679	<b>48,754</b>
Inheritance	0	0	0	0	0	0	<b>0</b>
Other, not from work	0	0	0	0	0	0	<b>0</b>
<i>Total income + (Rs)</i>	207,261	255,325	173,304	137,202	151,117	124,849	198,954
Sample size (# of households)	N=2,400	N=1,960	N=1,761	N=574	N=434	N=392	<b>N=7,521</b>

+ Mean taken after winsorizing at bottom and top 1% to minimize impact of outliers

## Health

The baseline survey instrument includes an extensive health section, collecting data at both the individual and household level. Interviewers prompt respondents about their histories with chronic illness, their present health conditions, usual and recent actions taken to manage their health or seek out treatment, and their experiences with healthcare providers. Additionally, respondents share information on the elements of their treatment plans, including medications taken, as well as out-of-pocket expenses disaggregated by treatment type and category. This wide range of information on the sample's health status and experience with the healthcare system will allow for robust post-intervention comparisons and the opportunity to test the intervention's impact on many outcomes.

#### *Health status and health-seeking behavior*

Overall, 78 percent of the sample reports their health is “good” or “excellent”, with only 15.3 and 6.7 percent considering their health to be “fair” or “poor”, respectively (see Table 8). There is some variation in self-reported health status between districts (for example, 45.5 percent of the sample in Udayapur reports being in fair or poor health), but because this indicator is both self-reported and subjective, assigning significance to these differences should be done judiciously. Nearly 10 percent of the sample has a chronic illness or disability; the three most common afflictions in the sample as a whole and within each district are rheumatoid arthritis, heart disease, and asthma. Approximately 13 percent of individuals with a chronic illness or disability report their condition prohibits them from carrying out normal daily activities.

Table 8. Health status, chronic and acute illness

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Self-reported current health status (%)</i>							
Excellent	44	15.7	55.1	51.8	66.6	9.8	<b>40.9</b>
Good	27.6	58.3	35.6	28.9	19.3	44.7	<b>37.1</b>
Fair	19.9	20.7	4.7	12.7	4.7	37.5	<b>15.3</b>
Poor	8.6	5.3	4.6	6.6	9.4	8.0	<b>6.7</b>
<i>Chronic illness/disability (%)</i>	10.4	13.6	4.4	12	8.5	10.6	<b>9.5</b>
<i>Chronic illness/disability prevalence, among those with chronic illness/disability I (%)</i>							
Rheumatoid arthritis	22.8	23.9	11.9	8.4	19.8	17.2	<b>20.0</b>
Heart disease	13.8	21.7	11	13.8	2.1	12.8	<b>15.2</b>
Asthma	15.3	12.4	19.1	13.1	11.6	10.8	<b>14.1</b>
Physical disability	8.3	6.1	10.3	8.1	8.3	5.4	<b>7.7</b>
Diabetes	5.2	9.0	10.0	5.1	7.4	1.0	<b>6.9</b>
Mental disability	4.6	5.6	6.0	4.4	5.8	3.9	<b>5.1</b>
Deafness	5.4	4.0	6.0	3.7	1.2	4.4	<b>4.5</b>
Other chronic illness/disability	21.2	24.4	15.8	34.7	42.1	33.5	<b>25</b>
<i>Ability to perform daily activities, among those with chronic illness/disability (%)</i>							
Easily	6.6	11.3	16.5	14.1	20.2	5.9	<b>10.9</b>
With some difficulty	55.7	54.0	56.3	53.5	42.6	70.0	<b>55</b>
With much difficulty	25.2	21.7	14.8	17.2	26.0	14.3	<b>21.5</b>
Unable to do	12.5	12.9	12.4	15.2	11.2	9.9	<b>12.6</b>
<i>Sick in last 30 days (%)</i>	13.7	13.3	13.5	12.1	13.7	18.4	<b>13.7</b>
<i>Illness prevalence, among those sick in last 30 days I (%)</i>							
Fever	29.8	50.3	26.2	52.0	44.8	44.2	<b>37.0</b>
Pneumonia/chronic cough	15.9	21.9	8.1	11.7	13.3	13.6	<b>14.6</b>
Diarrhea/vomiting	11.0	6.9	4.9	16.1	17.6	28.3	<b>10.6</b>
Muscle problem	10.2	10.0	9.6	8.4	2.8	5.7	<b>9.0</b>
Skin disease	3.7	3.7	3.2	1.3	5.4	3.4	<b>3.6</b>
Stomach pain	3.2	4.7	2.9	3.0	2.8	2.5	<b>3.4</b>
Female reproductive problems	4.1	3.5	4.0	0.0	0.8	3.4	<b>3.4</b>
<i>Days confined to bed in past 30 days, among those sick in last 30 days (%)</i>							
0 days	65.4	42.6	75.9	41.3	81.6	36.8	<b>60.8</b>
1 day	14.0	7.7	6.6	26.5	7.7	14.2	<b>11.0</b>
2 days	11.6	14.4	6.1	18.5	6.1	24.1	<b>11.7</b>
3 days	3.7	12.1	3.7	5.0	2.3	11.0	<b>6.1</b>
4 days	1.3	6.1	2.0	1.3	1.3	4.8	<b>2.8</b>
5 or more days	3.9	17.1	5.7	7.4	1.0	9.1	<b>7.7</b>

I NOTE: Respondents may report more than one illness; most commonly reported illnesses include

Slightly less than 14 percent of the sample has been ill in the past 30 days. The three most common acute illnesses reported include fever, pneumonia or a chronic cough, and diarrhea or vomiting. We find elevated incidence of certain illnesses in some districts; the incidence rate of diarrhea or vomiting in Udayapur is almost three times higher than in the entire sample (28.3 vs. 10.6 percent) and half of those in Ilam who were ill in the past 30 days had a fever (compared to only 37 percent in the whole sample). Over 80 percent of those sick in the last 30 days were not confined to bed for more than two days.

Among those who faced an illness in the last 30 days, 84 percent sought treatment at a health facility (see Table 9). The three most commonly visited facilities include private pharmacies or clinics (42.6 percent), health posts or sub-health posts (24.2 percent), and private hospitals (14.2 percent). As might be expected, due to the location of different types of health facilities and their relative distance to each VDC, there are disparities between districts with respect to the most commonly visited health facilities. For example, while 68 percent of sick respondents in Kapilvastu seek treatment at a private pharmacy or clinic, this figure drops to 21.6 percent in Udayapur. Interestingly, less than one percent of the sample reports visiting a traditional or faith healer or self-medicating with drugs made at home.

While 60 percent of health facilities are located within one hour from respondents' homes, nearly 10 percent of facilities necessitate at least five hours of travel. Results show that residents of Kapilvastu have the most convenient access to healthcare, with 94 percent living less two hours from their most recently visited health facility and only 1 percent having to travel more than five hours to reach treatment. Among those in the entire sample who did not seek treatment for their illness, 45 and 46 percent cited not being sick enough and preferring self-medication as the reason for forgoing treatment, respectively.

Table 9. Health seeking behavior

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Sought healthcare for illness, among those ill in last 30 days (%)</i>	81.6	83.6	84.5	89.9	96.7	75.9	<b>84.1</b>
<i>Where people seek healthcare, among those seeking healthcare I (%)</i>							
Government hospital	9	6	15.1	6	5.6	6.7	<b>9.3</b>
Primary health service	4.6	4.4	0.6	6.7	3.2	1.1	<b>3.3</b>
Health post/sub-health post	20.4	23.7	21.7	38.1	14.3	53.4	<b>24.2</b>
Government teaching hospital	0.4	0.5	0.8	0.4	0.3	0	<b>0.5</b>
Private teaching hospital	6.4	1	3.9	1.9	1.1	0	<b>3.3</b>
Female community health worker	0.3	0	0.6	0.4	0	2.2	<b>0.4</b>
Private hospital	13.1	20.3	12.5	18.3	6.6	12.3	<b>14.2</b>
Private pharmacy or clinic	44.1	40	43.8	25.7	68	21.6	<b>42.6</b>
Ayurvedic/homeopathy hospital	0.9	3.4	0.1	0	0.5	0.4	<b>1.1</b>
Traditional healer	0.3	0.5	0.4	1.1	0.5	2.2	<b>0.6</b>
Faith healer's medicine	0.2	0	0	0.7	0	0	<b>0.1</b>
Homemade medicine	0	0	0.1	0.7	0	0	<b>0.1</b>
Other	0.4	0.5	0.6	0	0	0.4	<b>0.4</b>
<i>Time spent traveling to health facility during most recent visit (%)</i>							
Less than 1 hour	51.6	54.5	66	62.1	84.1	58.6	<b>60.1</b>
1-2 hours	14.6	16.8	14.2	16.4	9.8	18.7	<b>14.9</b>
2-3 hours	8.6	11.2	5.3	5.6	3.7	4.1	<b>7.4</b>
3-4 hours	6.2	6.9	3.9	3.7	1.3	4.9	<b>5.1</b>
4-5 hours	3.7	2.3	2.2	3	0	5.6	<b>2.7</b>
5 hours or more	15.3	8.3	8.4	9.3	1.1	8.2	<b>9.8</b>
<i>Reason for not seeking treatment, among those who were ill but did not seek treatment I (%)</i>							
Wasn't sick enough	46.5	46.1	31.3	53.3	76.9	62.4	<b>45.1</b>
Believe in self-medication	43.3	60	21.7	56.7	23.1	77.6	<b>45.6</b>
Too expensive	7.6	4.4	33.8	0	7.7	3.5	<b>12.8</b>
Too busy	12.4	8.3	8.1	0	38.5	12.9	<b>10.4</b>
Too far	5.8	4.4	2.5	0	7.7	4.7	<b>4.4</b>
Other	10.2	12.2	24.2	16.7	46.2	16.5	<b>15.7</b>

I NOTE: Respondents may report more than one response; totals may not sum to 100%

### Healthcare quality and cost

Nearly every individual who sought treatment at a health facility for an illness in the 30 days prior to the survey had a direct interaction with a health worker (99.4 percent). However, not all respondents in the sample interacted with the same healthcare provider; 42.2 percent saw an auxiliary nurse, 41.9 percent visited a medical doctor, 9.7 percent met with a pharmacist, and the remaining 6 percent interacted with some other health worker (see Table 10).

According to respondents, it is common for healthcare providers to ask about patient symptoms, perform physical exams, and prescribe medication (in 99.4, 90.1, and 96.4 percent of visits, respectively). Providers rarely administer rapid diagnostic tests (in only 4.1 percent of cases), though whether this is due to a lack of on-site equipment, a dearth of knowledge among providers, or simply a function of the type of illnesses patients present with, cannot be determined without complementary facility data. Interestingly, only 47 percent of respondents in Gorkha received a physical exam at their most recent healthcare visit of the past 30 days, though 100 percent of these same individuals were prescribed medication.

Table 10. Quality of healthcare

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Direct interaction with health worker at most recent visit to health facility (%)</i>	99.6	99.0	99.7	99.3	100.0	98.1	<b>99.4</b>
<i>Healthcare provider at most recent visit to a health facility (%)</i>							
Medical doctor	45.8	37.9	48.9	46.2	28.8	23.1	<b>41.9</b>
Nurse	0.2	0.4	1.8	7.5	0.5	0.8	<b>1.2</b>
Auxiliary nurse	35.0	43.6	39.4	36.5	59.3	63.3	<b>42.2</b>
Community health worker	0.9	1.2	1.3	0.0	0.0	0.0	<b>0.9</b>
Lab technician	0.0	0.1	0.1	0.0	0.3	0.0	<b>0.1</b>
Assistant Medical Person	0.5	1.4	1.2	4.5	1.3	4.9	<b>1.5</b>
Pharmacist	15.1	10.6	6.6	3.0	7.4	4.2	<b>9.7</b>
Ayurvedic Doctor	0.7	2.4	0.4	0.4	0.3	0.4	<b>0.9</b>
Spiritual healer	0.2	0.9	0.2	1.9	0.5	0.4	<b>0.5</b>
Others	1.6	1.3	0.2	0.0	1.6	3.0	<b>1.2</b>
<i>Healthcare provider's actions at most recent visit</i>							
Asked about respondent's symptoms (%)	99.5	98.7	99.4	99.6	99.7	100.0	<b>99.4</b>
Performed physical exam at most recent visit (%)	96.1	94.1	90.4	47.0	94.4	85.2	<b>90.1</b>
Administered any rapid test at most recent visit (%)	1.3	2.3	7.3	6.0	4.8	7.2	<b>4.1</b>
Ordered any X-rays or lab tests (%)	25.4	24.2	29.5	11.3	12.7	17.0	<b>23.6</b>
Prescribed medication (%)	99.4	96.4	93.4	100.0	91.7	100.0	<b>96.4</b>

Table 11 showcases mean out-of-pocket expenditures on outpatient treatment in the last 30 days. As we might expect, given that basic outpatient services are covered under EHCS, we find that out-of-pocket costs for provider fees, laboratory and X-ray fees, and other provider payments are all relatively low. These three expenses combined represent less than 3 percent of the average monthly income for a household in the sample, or approximately 17,000 Rs. In fact, among all categories associated with outpatient healthcare expenditure, transportation to and from the health facility is the most costly.

We are able to disaggregate outpatient expenses by type of health facility, highlighting particularly costly facilities for receiving treatment<sup>7</sup>. Unsurprisingly, hospitals charge more per visit than other health facilities such as health posts, clinics, and traditional healers, among others. On average, individuals spent 8,657 Rs at government teaching hospitals, 7,411 Rs at private teaching hospitals, 3,369 at private hospitals, and 2,271 at government hospitals during their most recent visit in the last 30 days.

Table 11. Outpatient expenditures for last 30 days, among those ill in last 30 days

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Mean out-of-pocket out-patient healthcare expenses+ (Rs)</i>							
Official provider fees	119	129	94	150	53	63	<b>107</b>
Laboratory and X-ray fees	375	465	313	254	86	196	<b>333</b>
Other payments to provider	388	157	399	272	24	21	<b>275</b>
Transportation	622	506	360	199	32	189	<b>418</b>
<i>Total healthcare expenditure, by facility/provider type (Rs)</i>							
Government hospital	2,988	2,139	1,774	5,472	421	2,112	<b>2,271</b>
Primary health service	114	57	29	67	43	153	<b>81</b>
Health post/sub-health post	15	9	43	144	4	17	<b>33</b>
Government teaching hospital	6,740	5,835	12,752	1,750	6,490	---	<b>8,657</b>
Private teaching hospital	8,508	3,783	6,063	13,260	1,029	---	<b>7,411</b>
Female community health worker	3	---	58	0	---	0	<b>21</b>
Private hospital	3,623	4,255	3,469	1,054	825	2,124	<b>3,369</b>
Private pharmacy or clinic	384	437	234	161	128	206	<b>303</b>
Ayurvedic/Homeopathy hospital	518	684	250	---	0	800	<b>608</b>
Traditional healer	25	261	200	0	80	30	<b>127</b>
Faith healer's medicine	0	---	---	0	---	---	<b>0</b>
Homemade medicine	0	0	0	0	---	0	<b>0</b>
Other	1,026	316	3,264	---	---	500	<b>1,684</b>
<i>Payment method (%)</i>							
Employer	0.0	0.0	1.0	0.0	0.0	0.0	<b>0.3</b>
Insurance company	0.0	0.1	1.8	0.0	0.3	0.0	<b>0.5</b>
Self	68.0	72.3	69.3	86.5	42.2	43.2	<b>66.5</b>
Received free of cost	31.4	27.5	14.8	12.8	57.0	56.8	<b>29.0</b>
Other	0.7	0.1	13.1	0.8	0.5	0.0	<b>3.8</b>

+ Mean taken after winsorizing at bottom and top 1% to minimize impact of outliers

Note: Blank cells represent no observations, i.e., no individuals in the district visited particular facility

<sup>7</sup> Cell sizes at this level of disaggregation are small and thus mean values should be interpreted with caution.

In-patient treatments are not currently covered under the umbrella of EHCS and consequently represent a substantial portion of households' out-of-pocket healthcare expenditures. The baseline data help cultivate a clearer understanding of individuals' experiences with in-patient treatment and facilities, potentially highlighting areas where the health insurance product can have the most impact. Table 12 shows that 6.7 percent of the sample has received in-patient treatment for some illness in the last 30 days, and this figure reaches as high as 10.4 percent in Baglung and as low as 2.4 percent in Kapilvastu. Furthermore, these visits often last several nights. More than 32 percent of those receiving in-patient treatment remained at the health facility for at least five nights.

Multiple-night stays at a hospital can quickly become costly; excluding all fees associated with outpatient health services or medications, the average amount spent on in-patient treatment alone in the past 30 days is 7,057 Rs. This means that, on average, a household with a member needing in-patient health services will have to spend over 40% of its monthly income on the treatment.

Table 12. In-patient treatment and expenses

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Received in-patient treatment for illness in last 30 days (%)</i>	10.4	4.3	6.5	4.5	2.4	6.4	<b>6.7</b>
<i>Number of nights spent at health facility~ (%)</i>							
1 night	26	15	27.1	8.3	33.3	23.5	<b>24</b>
2 nights	14.2	32.5	20	8.3	33.3	11.8	<b>18.5</b>
3 nights	13.4	17.5	14.3	0	11.1	17.6	<b>13.8</b>
4 nights	11.8	12.5	7.1	33.3	11.1	5.9	<b>11.3</b>
5 nights or more	34.6	22.50	31.4	50	11.1	41.20	<b>32.4</b>
<i>Additional out-of-pocket expenses associated with overnight stay + (Rs)</i>	8,026	5,340	7,276	8,108	1,822	4,985	<b>7,057</b>

+ Mean taken after windsorizing at bottom and top 1% to minimize impact of outliers

~Conditional on receiving in-patient treatment in the last 30 days

Although EHCS was designed to cover the costs of common drugs, in practice, demand often surpasses supply at state-run health facilities, forcing patients to seek medicine elsewhere. As a result, patients end up spending considerable amounts on drugs that should be free. This scenario may partially account for some of the results featured in Table 13; while 96.4 percent of respondents seeking health services were prescribed medication (as noted in Table 10), only 83.8 percent followed through with this treatment plan. However, for respondents who are able to access drugs, the average number of medications taken is approximately 3, the most common of which are antibiotics, Citamol, and Bruphen.

The average supply of medication for treating an illness acquired in the past 30 days costs just under 1,580 Rs. In comparison, the average cost for outpatient treatment at a health facility in the last 30 days is only 1,133 Rs. Furthermore, over 80 percent of respondents taking medication report they paid for these drugs out-of-pocket.

Table 13. Medication

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Took medication for illness of past 30 days (%)</i>	80.7	83.7	84.8	90.3	96.2	74.5	<b>83.8</b>
<i>Mean number of medications taken, among those who took medication</i>	2.9	2.9	2.9	2.2	3	2.6	<b>2.9</b>
<i>Medications taken, among those who took medicine I (%)</i>							
Citamol	40.7	43.2	25.4	65.4	36.4	43.0	<b>38.6</b>
Bruphen	20.3	11.3	11.4	4.1	12.2	8.7	<b>13.4</b>
Aspirin	5.9	2.5	2.1	5.2	4.5	0.8	<b>3.6</b>
Antibiotics	46.2	40.6	25.5	45.0	59.6	55.5	<b>41.2</b>
Anti-hypertensive	2.2	1.6	0.9	0.4	0.8	0.0	<b>1.3</b>
Anti-asthma	0.2	0.5	1.5	0.0	1.3	0.4	<b>0.7</b>
Anti-diabetic	0.3	0.1	1.3	0.0	0.0	0.0	<b>0.5</b>
Anti-TB	0.1	0.0	1.4	0.0	0.0	0.0	<b>0.4</b>
ORS	7.0	2.2	4.1	11.2	12.5	24.3	<b>7.0</b>
Zinc tablets	1.7	1.6	0.8	1.9	4.0	4.9	<b>1.9</b>
Iron tablets	0.8	0.8	1.7	1.1	3.5	1.1	<b>1.3</b>
Other	80.4	76.0	83.4	69.1	74.5	60.1	<b>77.6</b>
<i>All medications taken were prescribed by doctor (%)</i>	99.6	98.4	95.1	98.1	99.7	99.2	<b>98.0</b>
<i>Out-of-pocket expenditure on medication in last 30 days + (Rs)</i>	2,039	1,459	1,755	1,121	658	922	<b>1,578</b>
<i>Payment method for medications (%)</i>							
Employer	0.3	0.1	0.5	0.0	0.0	0.0	<b>0.2</b>
Insurance company	2.1	1.5	1.1	0.0	1.1	1.5	<b>1.4</b>
Self	84.1	85.7	91.5	68.4	83.8	58.2	<b>83.7</b>
Received free of cost	13.4	12.2	6.5	31.6	15.2	40.3	<b>14.4</b>
Other	0.1	0.4	0.4	0.0	0.0	0.0	<b>0.2</b>
<i>Reason for not taking medication, for those who did not take medication (%)</i>							
Too expensive	2.1	3.9	23.2	0.0	6.7	2.2	<b>7.7</b>
Too far	3.1	2.8	2.1	0.0	0.0	0.0	<b>2.3</b>
Too busy	2.8	1.7	5.7	0.0	0.0	2.2	<b>3.0</b>
Wasn't sick enough	8.3	10.6	7.7	3.4	6.7	1.1	<b>7.7</b>
Don't believe in medicine	31.9	31.7	24.2	69.0	6.7	51.1	<b>33.0</b>
Believe only in traditional medicine	47.2	45.6	25.3	13.8	40.0	43.3	<b>39.7</b>
Other	4.5	3.9	11.9	13.8	40.0	0.0	<b>6.7</b>

I NOTE: Respondents may report more than one response; totals may not sum to 100%  
+ Mean taken after winsorizing at bottom and top 1% to minimize impact of outliers

Approximately half of the sample reports that at least one household member used a financial coping mechanism of some sort in the last 12 months in order to cover healthcare costs (see Table 14). Among households who experienced this type of health-related financial shock, 66.5 percent used a portion of their savings and 46.1 percent borrowed money to pay for healthcare. Less than 1 percent of households using any coping mechanism sold land, ornaments, buildings, industrial machinery, stored grains, or other assets in order to cope with their health-related financial shocks.

Table 14. Health-related financial shocks, household level

	Baglung	Ilam	Kailali	Gorkha	Kapilvastu	Udayapur	Whole Sample
<i>Anyone in household used at least one of the following mechanisms to pay for healthcare in the last 12 months (%)</i>	37.8	59.7	64.8	29.6	30.6	66.3	<b>50.3</b>
<i>Coping mechanism used (conditional on using any mechanism in last 12 months) (%)</i>							
Savings used	53.8	77.5	69.5	55.3	49.6	63.5	<b>66.5</b>
Borrowed money	52.3	40.2	43.4	60.0	57.1	48.5	<b>46.1</b>
Land sold	0.2	0.3	1.3	1.2	2.3	0.8	<b>0.7</b>
Ornaments sold	0.7	0.8	0.0	1.2	3.0	1.2	<b>0.6</b>
Buildings sold	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>
Industrial machinery sold	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>
Livestock sold	1.2	6.3	2.5	6.5	0.8	5.0	<b>3.6</b>
Stored grains sold	0.1	0.1	1.3	0.0	1.5	0.0	<b>0.5</b>
Other assets sold	0.0	0.0	0.0	0.6	0.0	0.0	<b>0.0</b>
<i>Amount generated from coping mechanism (conditional on using each mechanism in last 12 months) Rs</i>							
Savings used	36,147	26,960	13,118	32,210	18,597	11,183	<b>23,308</b>
Borrowed money	66,433	55,697	41,436	53,902	33,796	43,795	<b>52,640</b>
Land sold	125,000	167,500	337,933	52,500	120,000	170,000	<b>242,643</b>
Ornaments sold	49,833	44,889		60,000	32,500	25,667	<b>42,917</b>
Buildings sold	---	---	---	---	---	---	---
Industrial machinery sold	---	---	---	---	---	---	---
Livestock sold	6,355	23,773	18,317	28,091	40,000	18,446	<b>21,237</b>
Stored grains sold	1,500	16,000	11,600	---	4,000	---	<b>10,500</b>
Other assets sold	---	---	---	20,000	2	---	<b>10,001</b>

### III. Impact evaluation

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The impact evaluation will consider both randomized and quasi-experimental designs. The primary focus of the impact evaluation will be a randomized promotion/encouragement design targeted at increasing take up rates of the new health insurance product. However, since the feasibility of this method in identifying the impact is highly dependent on the efficacy of the randomized encouragement on the take up of health insurance, a provision also is made to incorporate a quasi-experimental design which could be utilized for assessing the impact in case the randomized encouragement design does not result in sufficient take up differential. Specifically, under such conditions, a matched difference-in-difference design will be used for impact evaluation. Thus, the evaluation will combine both experimental as well as quasi-experimental designs, where the experimental design will be given priority over the quasi-experimental design.

#### ***Random assignment of encouragement mechanism to VDCs***

Given the voluntary nature of health insurance enrolment in the treatment districts (only a certain percentage of the treatment sample will enroll in health insurance, and at the same time, some percentage of the control sample will also enroll in health insurance), we will use an encouragement design to affect the take up of health insurance. If this difference is sufficiently large – that is, if VDCs receiving the promotion are significantly more likely to take-up the insurance program than those that did not receive the promotion – the team will be able to use the randomized-promotion design to estimate the impact of the program on the relevant outcomes by utilizing the encouragement assignment as instrument of participation.

Preliminary estimates of the trade-off between standardized effect size and sample size (for standard power needs) indicate that the encouragement design needs to generate a take up differential in the range of 25-35% between the treatment and control groups in order to be able to detect a reasonable effect size of health insurance on utilization of access to health care facility. Achieving this utilization rate differential, combined with the ex-ante randomized assignment to the encouragement scheme as outlined below, will allow us to make inferences about the health insurance's impact on outcomes of interest.

The health insurance will be piloted in 153 VDCs in 3 districts. In order to minimize the impact of spillover, the encouragement component will be assigned randomly at the level of the VDC; all households in a given VDC will receive this additional encouragement program. Implementing this randomization thoughtfully guarantees that any significant difference in outcomes between encouraged and non-encouraged households we detect after the pilot is complete can be attributed to the health insurance product.

We used a random lottery generator to assign each household a random value in [0,1). This was done separately for all household in each of the three treatment districts, allowing us to stratify by district. These random values were then averaged at the level of the VDC and ranked from smallest to largest

within each district. In order to ensure a balanced sample of treatment and control (see Table 15), we assigned the first 25 VDCs in Ilam, the first 30 VDCs in Baglung, and the first 22 VDCs in Kailali, to the encouragement intervention. Conversely, the last 24 ranked VDCs in Ilam, the last 30 VDCs in Baglung, and the last 22 VDCs in Kailali, will not receive any additional encouragement.

Table 15. VDC assignment to randomized encouragement and control, by district

<b>District</b>	# of VDCs			Total
	Ilam	Baglung	Kailali	
Encouragement (Treatment)	25	30	22	77
No Encouragement (Control)	24	30	22	76

Tables 16 and 17 compare baseline results between the two randomly assigned groups, highlighting their similarities prior to implementation of the pilot. Mean values between the two groups are statistically similar for almost all variables presented, including intra-household demographics, household asset ownership, and various health outcomes. For example, both individuals that will and will not receive the encouragement intervention are equally likely to have a chronic illness or disability and to have been ill in the 30 days. With the exception of heart disease, all common chronic and acute illnesses present with the same prevalence between the two groups. Furthermore, and perhaps more importantly with respect to the intervention, individuals in both groups seek healthcare from various health facilities at approximately the same proportions (i.e., the distribution of health facility visits is statistically the same between the two groups).

Table 16. Treatment at baseline: Intra-household demographics and asset ownership

	Encouragement	No encouragement	Total
<i>Household size (#)</i>	5.7	5.8	5.8
<i>Gender (#)</i>			
Males	2.9	2.9	2.9
Females	2.8	2.9	2.8
<i>Age groups (#)</i>			
Under 5	0.4	0.4	0.4
5-14 years	1.1	1.1	1.1
15-64 years	3.9	3.9	3.9
Over 65	0.3	0.3	0.3
<i>Household owns at least one (%)</i>			
Radio/CD/cassette player	44.4	44.1	44.3
Television	52.5	51.0	51.7
LPG stove	28.9	25.2	27.0
Landline phone	2.9	2.7	2.8
Mobile phone	92.5	91.2	91.8
Sofa set	3.7	3.7	3.7
Dining table set	8.2	8.3	8.3
Refrigerator	4.0	4.1	4.0
Microwave	0.0	0.1	0.0
Sewing machine	4.1	4.2	4.1
Motor/car	0.5	0.5	0.5
Bus/truck	0.1	0.1	0.1
Tractor/tiller	1.2	1.7	1.5
Rickshaw	0.0	0.0	0.0
Motorcycle	6.6	7.4	7.0
Bicycle	21.5	21.7	21.6
Plough	31.7	30.2	31.0
Animal drawn cart	6.5	6.4	6.5
Computer/laptop	5.2	5.0	5.1
<i>Household owns agricultural land (%)</i>	91.5	91.7	91.6
<i>Household owns non-agricultural land (%)</i>	46.8**	37.8**	42.3

\*p&lt;0.1; \*\* p&lt;0.05; \*\*\* p&lt;0.01

Table 17. Treatment at baseline: Health status and health-seeking behavior

	Encouragement	No encouragement	Total
<i>Chronic illness/disability (%)</i>	9.6	9.1	9.4
<i>Chronic illness/disability prevalence, among those with chronic illness/disability I (%)</i>			
Rheumatoid arthritis	21.8	21.3	21.6
Heart disease	14.3**	19.1**	16.7
Asthma	14.2	15.2	14.7
Physical disability	8.2	7.3	7.7
Diabetes	7.0	8.1	7.5
Mental disability	5.7	4.7	5.2
Deafness	4.6	5.3	4.9
Other chronic illness/disability	23	20.3	21.7
<i>Sick in last 30 days (%)</i>	13.8	13.2	13.5
<i>Illness prevalence, among those sick in last 30 days I (%)</i>			
Fever	35.5	33.3	34.4
Pneumonia/chronic cough	15.1	14.9	15.0
Diarrhea/vomiting	7.3	8.4	7.8
Muscle problem	10.1	9.7	9.9
Skin disease	4.1	3.0	3.6
Stomach pain	3.1	4.0	3.5
Female reproductive problems	3.7	4.1	3.9
<i>Sought healthcare for illness, among those ill in last 30 days (%)</i>	82.2	84.1	83.1
<i>Where people seek healthcare, among those seeking healthcare I (%)</i>			
Government hospital	8.7	11.8	10.2
Primary health service	3.1	3.3	3.2
Health post/sub-health post	21.1	22.5	21.8
Government teaching hospital	0.6	0.6	0.6
Private teaching hospital	3.5	4.5	4.0
Female community health worker	0.6**	0.1**	0.3
Private hospital	15	14.9	14.9
Private pharmacy or clinic	45.4	40.2	42.8
Ayurvedic/Homeopathy hospital	1.4	1.3	1.3
Traditional healer	0.6	0.3	0.4
Faith healer's medicine	0	0.1	0.1
Homemade medicine	0.1	0	0
Other	0.4	0.7	0.5

\*p<0.1; \*\* p<0.05; \*\*\* p<0.01

‡ NOTE: Respondents may report more than one illness; most commonly reported illnesses included

### **Matching pseudo-control and treatment households**

In the unlikely event that the encouragement design fails to generate a take up differential of at least 25% or more, a provision has been made to utilize a quasi-experimental design. Under this approach, a difference-in-difference estimation will be undertaken, comparing VDCs that will receive the intervention with VDCs that won't. Of course, as we were not able to randomly select the VDCs serving as pseudo-controls, we cannot simply look at the difference-in-differences between those individuals who will and will not receive the intervention. Instead, we utilize propensity score matching (PSM) to select households from the pseudo-control districts that “look like” treatment households; this method allows us to create a pseudo-counterfactual for the treatment group. Essentially, the process identifies individuals from a large number of nonparticipants that are similar to program participants *before* implementation of the program<sup>8</sup>.

Using additional data sources, three districts, similar in some dimensions to the three treatment districts, were selected to serve as the pseudo-control. Fourteen households were selected from each of 100 VDCs spread across three districts, for a total of 1,400 pseudo-control households from which to select matches (see Table 18). Baseline data was collected for all 1,400 households, as well as all 6,121 treatment households, and serves as the foundation for propensity score matching.

Table 18. Baseline sample, pre-matching

	# of VDCs	# of households	# of individuals
<i>Districts receiving the intervention</i>			
Baglung	60	2,400	14,073
Ilam	49	1,960	10,144
Kailali	44	1,761	11,018
Sub-total	153	6,121	35,235
<i>Pseudo-Control Districts</i>			
Gorkha	41	574	3,383
Kapilvastu	31	434	3,256
Udayapur	28	392	2,431
Sub-total	100	1,400	9,070
<b>Grand Total</b>	<b>253</b>	<b>7,521</b>	<b>44,305</b>

We use a logit model to estimate a household's propensity for receiving the intervention. Beginning with a parsimonious specification that includes household size and the proportion of women, children, and elderly in a household as potential covariates, we run the specification repeatedly, adding in new variables each time. Covariates that affect treatment status with a significance level of 0.05 or less are kept in the specification; those that are not significant at  $p < .05$  are dropped<sup>9</sup>. Once the variables for inclusion have

<sup>8</sup> Blundell et al. 2004. *Evaluating the Impact of Education on Earnings in the UK: Models, Methods, and Results from the NCDS*

<sup>9</sup> Caliendo & Kopeinig. *Some Practical Guidance for the Implementation of Propensity Score Matching*. 2008

been identified, we use a nearest-neighbor approach for matching pseudo-control households to treatment households. This technique establishes a region of common support, which includes pseudo-control households that are similar (in the dimensions selected) to the treatment households (see Table 19 for the region of common support).

Table 19. Matched baseline sample, region of common support

	# of VDCs	# of households	# of individuals
<i>Districts receiving the intervention</i>			
Baglung	60	2,299	13,870
Ilam	49	1,935	10,097
Kailali	44	1,719	10,898
Sub-total	153	5,953	34,865
<i>Pseudo-Control Districts</i>			
Gorkha	41	473	2,820
Kapilvastu	31	238	1,799
Udayapur	28	314	1,920
Sub-total	100	1,025	6,539
<b>Grand Total</b>	<b>253</b>	<b>6,978</b>	<b>41,404</b>

Once the region of common support is established, we evaluate the matching quality using a two-sample t-test to ensure there is no difference in covariate means between the treatment and pseudo-control households. Table 20 presents the differences between the treatment and pseudo-control households, both before and after restricting the sample to the region of common support, for variables included in the PSM specification. Again, the matched sub-sample will only be analyzed in the absence of a take up differential of 25% or more between those treatment VDCs receiving the encouragement mechanisms and those VDCs not receiving the mechanism.

Table 20. Variables included in PSM specification, before and after PSM

	Before PSM, entire sample		After PSM, region of common support	
	Treatment	Pseudo-control	Treatment	Pseudo-Control
<i>Household size (#)</i>	5.8***	6.5***	5.9*	6.3*
<i>Proportion of household members that are:</i>				
Children under-5	0.07***	0.08***	0.07	0.08
Female	0.49**	0.48**	0.49	0.50
Elderly over-65	0.07	0.06	0.06	0.05
<i>At least one household member:</i>				
Has a chronic illness/is disabled (%)	34.5***	40.1***	34.3	34.6
Self-reported “fair” or “poor” health (%)	23.2***	31.3***	23.2	24.6
Ill in last 30 days (%)	48.5	48.6	48.8	50.4
<i>Highest level of education within household (years)</i>	9.6***	9.0***	9.6**	10.0**
<i>Household owns a television (%)</i>	51.7***	36.9***	52.8	55.4
<i>Household owns a cell phone (%)</i>	91.8**	88.5**	92.9	94.0
<i>Household has a toilet (%)</i>	93.7***	74.6***	93.9	91.9
<i>Household income from non-agricultural labor (Rs)</i>	27,452***	10,820***	28,070	25,822
Sample size (number of households)	N=6,121	N=1,400	N=5,953	N=1,025

Differences between treatment and pseudo-control households are significant at: \*p<0.1; \*\* p<0.05; \*\*\* p<0.01

Table 21 presents information on health status and health seeking behavior for the matched sub-sample only. There is no statistically significant difference between those in the matched sub-sample who will and will not receive the health insurance intervention for prevalence of a chronic illness or disability, nor for incidence of acute illness. Additionally, individuals who will receive the intervention are just as likely as their non-program counterparts to seek healthcare in the event of illness.

Table 21. Matched baseline sample: Health status and health seeking behavior

	Treatment	Pseudo-Control	Total
<i>Chronic illness/disability (%)</i>	9.2	9.8	9.3
<i>Chronic illness/disability prevalence, among those with chronic illness/disability I (%)</i>			
Rheumatoid arthritis	21.4***	13.6***	20.1
Heart disease	16.7**	12.5**	16.1
Asthma	14.4*	11.3*	13.9
Physical disability	7.8	6.9	7.7
Diabetes	7.6**	5.1**	7.2
Mental disability	5.3	4.3	5.2
Deafness	4.9**	2.8**	4.5
Other chronic illness/disability	21.9***	37.7***	24.4
<i>Sick in last 30 days (%)</i>	13.4	14.4	13.6
<i>Illness prevalence, among those sick in last 30 days I (%)</i>			
Fever	34.6***	47.4***	36.7
Pneumonia/chronic cough	15.1	12.0	14.6
Diarrhea/vomiting	7.7***	20.0***	9.7
Muscle problem	9.8***	5.1***	9.0
Skin disease	3.6	4.3	3.7
Stomach pain	3.5	2.4	3.3
Female reproductive problems	3.8***	1.9***	3.5
<i>Sought healthcare for illness, among those ill in last 30 days (%)</i>	83.3	87.7	84.0
<i>Where people seek healthcare, among those seeking healthcare I (%)</i>			
Government hospital	10.3**	5.8***	9.5
Primary health service	3.2	3.7	3.3
Health post/sub-health post	21.4***	35.7***	23.9
Government teaching hospital	0.6**	0.2**	0.5
Private teaching hospital	4.0***	1.1***	3.5
Female community health worker	0.3	1.1	0.4
Private hospital	15.1	13.2	14.8
Private pharmacy or clinic	42.9	38.2	42.1
Ayurvedic/Homeopathy hospital	1.4***	0.3***	1.2
Traditional healer	0.4	0.5	0.4
Faith healer's medicine	0.1	0	0.1
Homemade medicine	0	0.3	0.1
Other	0.5*	0.2*	0.5

Differences between treatment and pseudo-control households are significant at: \*p<0.1; \*\* p<0.05; \*\*\* p<0.01

‡ NOTE: Respondents may report more than one illness; most commonly reported illnesses included

## VI. Summary and next steps

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### *Summary*

The Government of Nepal has recently committed to developing the country's health sector and making healthcare more affordable and accessible for all, but particularly for the poorest citizens. As part of these efforts, the Government is collaborating with the World Bank to pilot a health insurance program and evaluate the program's implementation process and impact on various health-related outcomes. Additionally, the evaluation will assess the effectiveness of coupling the health insurance intervention with a promotion mechanism intended to increase program take-up.

The impact evaluation was conceived in 2013 with a concept note that outlined the objectives, interventions, and data collection and analysis activities. The impact evaluation aims to measure the program's ability to (i) increase access to and utilization of health services, (ii) reduce out-of-pocket expenditures, and (iii) improve drug availability. A baseline survey was administered to 6,121 households in three program districts and 1,400 household in three non-program districts. The survey instrument collected information at the individual, household, and community levels on a range of characteristics, including demographics, education, health, housing, income, and consumption.

Baseline results indicate that various demographics, education, employment and health variables are comparable with the results of other recent surveys in Nepal.<sup>10</sup> Average household size is 5.9. Almost 80 percent of the over-5 sample can read and write and just over 70 percent of those 13 years and older earn an income, the primary income source coming from one's own farming activities. Unsurprisingly, 92 percent of households in the sample own agricultural land.

The baseline survey also reveals 9.5 percent of the sample has a chronic illness or disability and 13.7 percent of individuals have been ill in the last 30 days. Among those with an acute illness, 84 percent sought healthcare at a health facility, the most common of which were private pharmacies or clinics, health posts or sub-health posts, and private hospitals. Out-of-pocket expenditure for outpatient provider fees and laboratory and X-ray fees are relatively low. In fact, transportation to and from a health facility represents the biggest expense associated with out-patient treatment. In-patient treatment is more costly; on average, a household with a member needing in-patient treatment will spend over 40% of one month's income on these services.

In addition to summarizing the baseline sample, the baseline data are used to refine and validate the impact evaluation designs. As explained in Section III, the encouragement design assesses a difference in health insurance uptake between those VDCs receiving the health insurance program and the encouragement mechanism (treatment) and those VDCs receiving health insurance only (control). After randomly assigning program VDCs to the promotion mechanism, we were able to use the baseline survey

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<sup>10</sup> However, the survey was implemented in few districts for the purpose of evaluating the community based health insurance scheme in Nepal. Thus the data are not fully comparable with other national statistics.

data to ensure equality between the two groups for a wide range of characteristics. Similarly, the baseline data were used to match households in program areas (treatment) with households not receiving the health insurance intervention (pseudo-controls). This process, in which we use propensity score matching, provides a secondary means of evaluating the program's impact should the experimental design fail to produce significantly large differences in program take up.

### ***Next Steps***

Baseline results and evaluation designs will be presented to the Government of Nepal and other relevant stakeholders. The impact evaluation team will collect feedback on the results, the design, and next steps. Based on these inputs, the team will draft the content of the encouragement package and determine the timeline for encouragement rollout, process evaluation, implementation of the end line survey, and final analysis and reporting.

## Appendix A: List of drugs included in the benefit package

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- 1 Albendazole Tab.
- 2 Aluminium hydroxide + Magnesium hydroxide Tab.
- 3 Amoxiciline Tab., Cap.
- 4 Calamine lotion
- 5 Chloramphenicol Applicaps
- 6 Chlorpheniramine Tab.
- 7 Ciprofloxacin Drops
- 8 Ciprofloxacin Ointment
- 9 Clove oil
- 10 Compound solution of Sodium lactate (Ringers' Lactate) Inj.
- 11 Ferrous salt + Folic acid Tab.
- 12 Gamma benzene hexachloride Cream.
- 13 Gentamycin Inj.
- 14 Hyoscinebutylbromide Tab.
- 15 Lignocaine Inj.
- 16 Magnesium Sulphate Inj.
- 17 Metoclorpropamide Inj.
- 18 Metronidazole Tab., Sus.
- 19 Oral Rehydration Solution (ORS) Powder
- 20 Oxytocin Inj.
- 21 Paracetamol Tab., Inj., Syp.
- 22 Pheniramine Inj.
- 23 Povidinelodine Solution
- 24 Sulfamethoxazole + Trimethoprim Tab., Sus.
- 25 Vitamin B complex Tab.
- 26 Chloramphenicol Cap., Powder, Sus.
- 27 Dextrose Solution Inj.
- 28 Phenobarbitone Tab.

