



Descriptive statistics from the Extreme Poverty Graduation Program baseline in Cusco, Peru

**Plan Peru
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Innovations for Poverty Action (IPA) Peru**

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1 Introduction

The Extreme Poverty Graduation Program (MGEP is the program's acronym in Spanish) in Cusco, Peru combines a conditional cash transfer to meet immediate needs with investment in longer-term goals. Participants are provided with a productive asset, receive livelihoods, financial, health and social integration training for 24 months, and are given access to savings and credit products. The model replicates an intervention pioneered by BRAC in Bangladesh, and forms part of a global replication effort in collaboration with the World Bank's Consultative Group to Assist the Poor (CGAP) and the Ford Foundation. The project in Peru is being implemented by Plan Peru and Asociación Arariwa in 13 districts of the provinces of Canas and Acomayo, in the department of Cusco. Within these districts, the 86 poorest villages were identified by the project team, using a scorecard that measured accessibility and the availability of basic services. The project team conducted a participatory wealth ranking (PWR) in each village to identify the poorest households. In the PWR, an open village meeting was held, in which the villagers collectively rank the households according to their wealth. The PWR was complemented by a short verification survey.

The 86 villages were then randomly divided into treatment and control villages. In the control villages, half of the eligible households were randomly excluded from the study, leaving 792 control households. Within the treatment villages, households were randomly divided into treatment and control groups. The difference in outcomes between control households in control villages and control households in treatment villages will be used to measure spillover effects from the project within the village.

This report summarizes the findings of the baseline survey that Innovations for Poverty Action (IPA) administered to the 2420 households between July and October, 2010. The baseline study included household, individual surveys and village-level surveys. Table 1 summarizes the number of household surveys completed. The top three reasons for incompleteness of surveys were that households had migrated from the village (31%), were duplicates (26%) (for example, both the husband and wife had been included in the PWR) or did not want to participate in the survey (20%).

Table 1 Summary of sample and surveys completed

	Treatment households	Control households (in treatment villages)	Control households (in control villages)
Total sample	826	802	792
Surveys completed	734	683	716
% of surveys completed	89%	85%	90%

The remainder of the report is divided into four sections. Section 2 provides an overview of the project zone, its geographical and economic features and existing social programs. Section 3 describes the general characteristics of the 86 villages included in the study detailing the level of access to markets and basic health and education services. Section 4 describes the characteristics of the ultra-poor households identified by the PWR, including an analysis of poverty levels according to national and international poverty lines, economic activity, health and social integration indicators. Section 5 explains the design of the IPA study and the comparison between treatment and control groups.

2 Project zone characteristics

This section provides an extensive overview on the current conditions in the project zone, specifically geography and access, human development, economic activities and existing social programs.

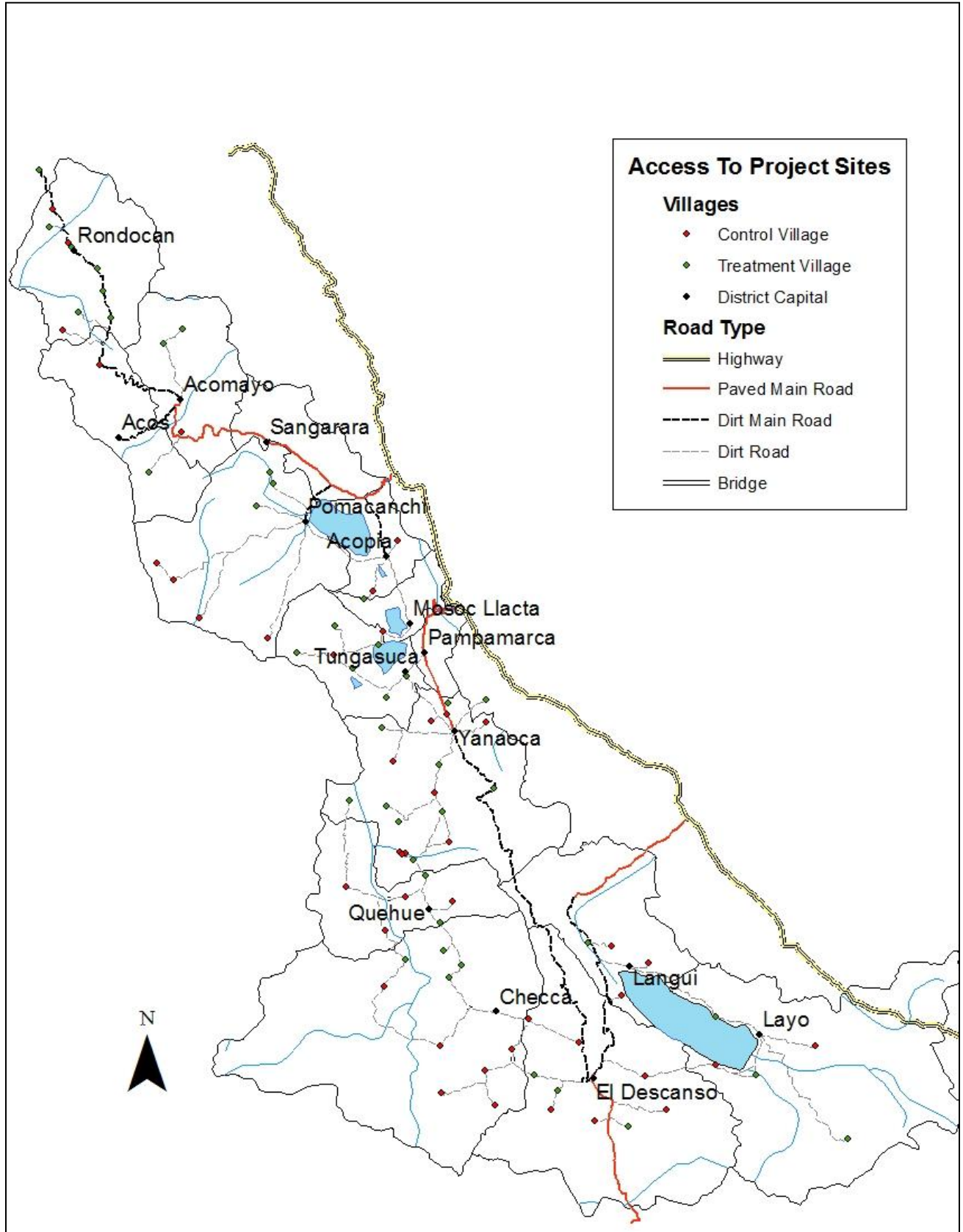
2.1 Geography and access

The project zone forms a part of what are known as the “high provinces” of the Cusco region, characterized by high altitude (most villages are between 3000m and 4200m above sea level), cold temperatures and exposure to extreme weather conditions such as frost and hail. Distances between villages are large and access is complicated by the mountainous terrain. On average, the province of Acomayo is at a lower altitude: the provincial capital of Acomayo is at 3,234m above sea level, while the provincial capital of Canas is at 3,925m.

Acomayo has three distinct geographical zones: the northern districts of the province (Rondocan, Acos and Acomayo) are characterized by steep valleys, a relatively warm climate and villages between 3000m and 3500m above sea level. In the south, the districts of Sangarará, the eastern part of Pomacanchi and Acopía lie on a high plain at an altitude of around 4000m. Finally, western Pomacanchi is dominated by the warmer but inaccessible valley of the Apurimac River.

Canas can also be divided into three areas: in the east, a high plain runs from Yanaoca in the north to Layo and Kunturkanki in the south, broken only by a low range of hills at the southern end of the Yanaoca district. The center of the province is dominated by a range of largely unpopulated mountains that reach an altitude of 4,700m. On the western flanks of this range lie the districts of Quehue and Checca, which further to the west also incorporate the steep canyon of the Apurimac River.

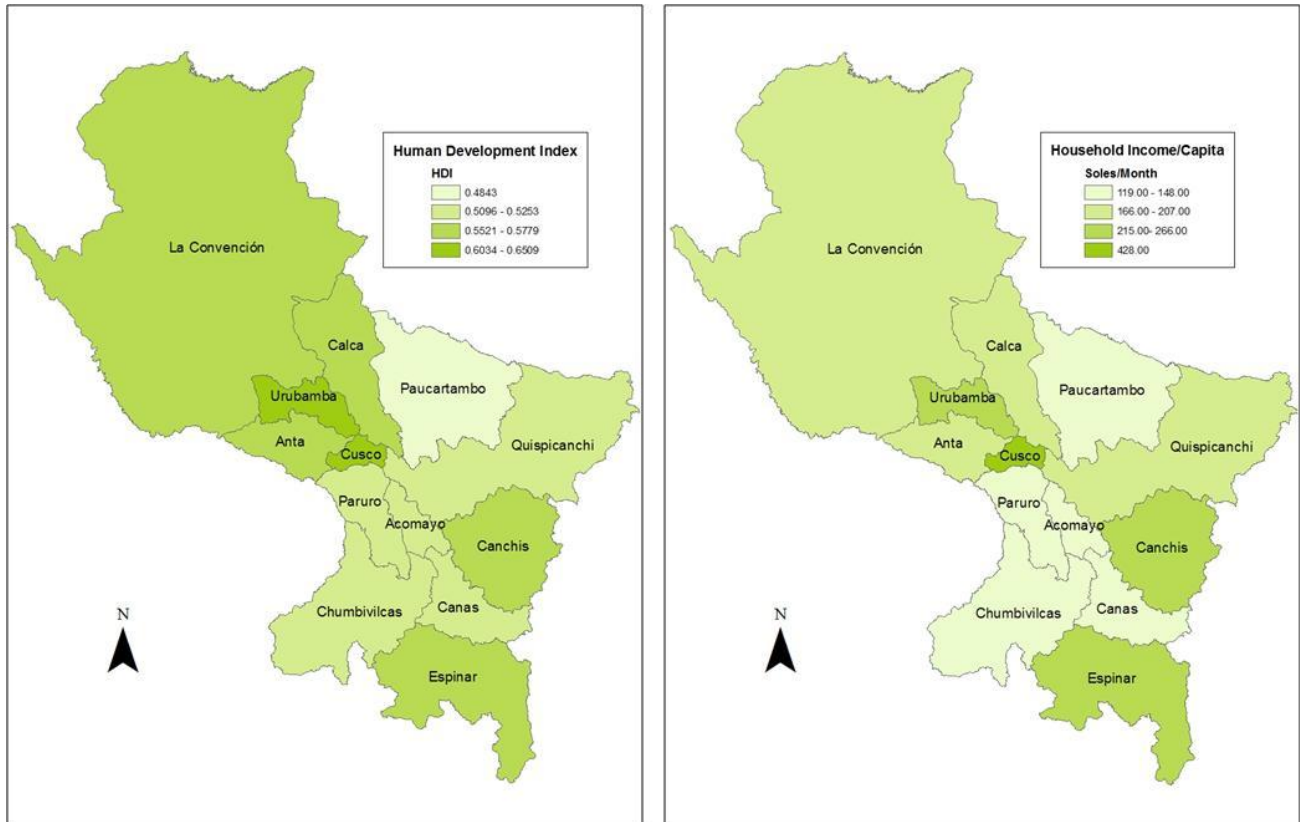
There are four main points of access to the project zone, as shown in Map 3. The first is in the north, a dirt road coming from the city of Cusco, which crosses a pass at 4,200m and the drops down into the valley of Rondocan. In the summer rainy months, this road can become inaccessible south of Rondocan due to mudslides on the steep hillsides. The second is in the east, a tarmac road that branches off from the main Cusco-Puno highway at Chuquicahuana, passes through the district of Sangarará and ends at the provincial capital of Acomayo. The third branches off the same highway further south, at Combapata, and leads to the district capital of Canas, Yanaoca. Combapata is also the most important market town of the zone, drawing sellers and buyers from as far as Pomacanchi in the north and Quehue in the south. The final access point links the districts of Langui and Layo to Sicuani, the provincial capital of Canchis and one of the largest towns of the Cusco-Puno corridor. The relatively good access to such an important market has contributed to the development of a dairy industry in the area surrounding Lake Langui-Layo.



2.2 Human development

Peru, despite high levels of economic growth in recent years, has struggled to reduce poverty levels, particularly in rural areas. The department of Cusco is among the poorest in Peru, ranking 20th out of 24 departments in the United Nations Development Program's 2007 Human Development Index (HDI) (PNUD 2009). Within the department of Cusco, there is a marked division between the largely urban province of Cusco and other provinces. Map 2 shows that Canas and Acomayo, located in the south of the department, are among the five poorest provinces in Cusco according to HDI score and income.

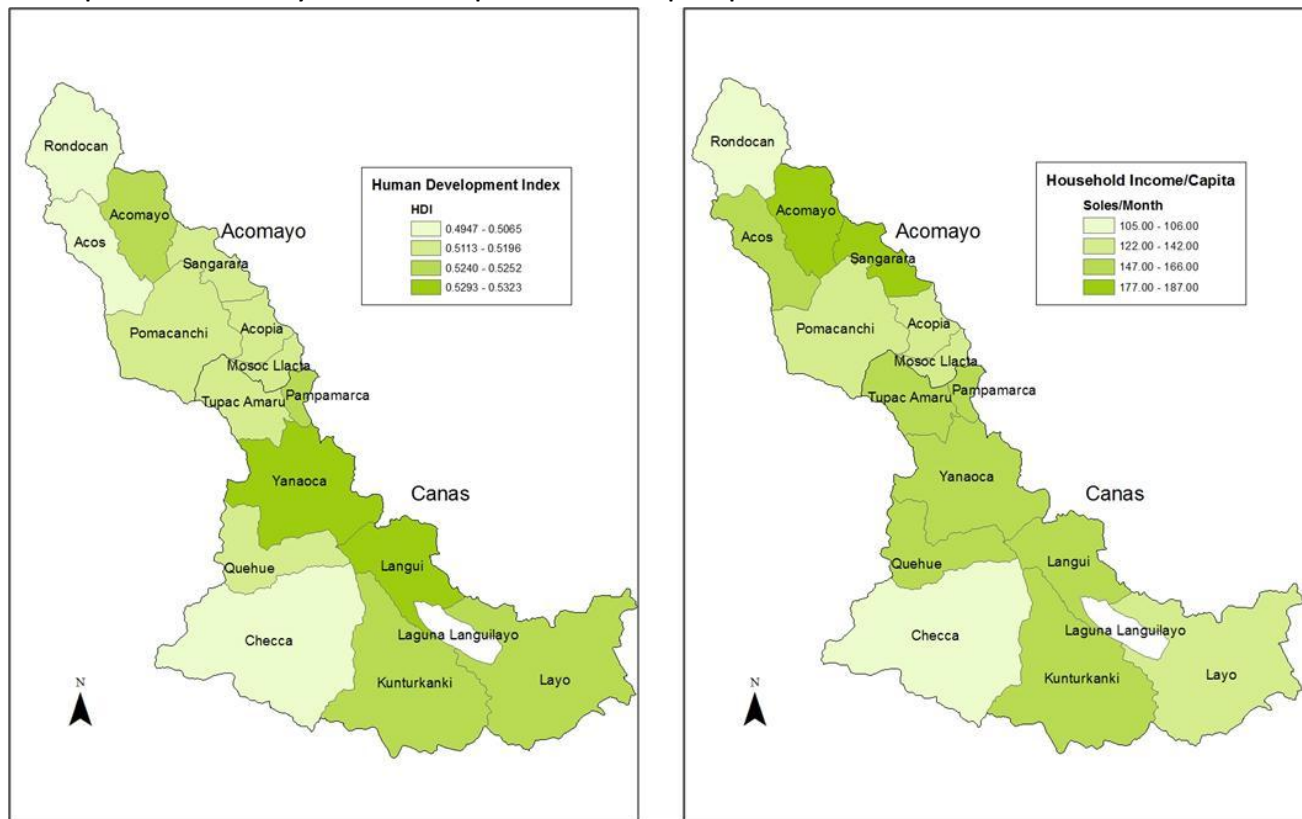
Map 2 Cusco: human development and income per capita.



Source: (PNUD 2009)

Within the provinces of Canas and Acomayo, there are also differences in levels of human development, as shown in Map 3. The districts of Rondocan, Acos and Checca stand out as the poorest in terms of overall human development, and Rondocan and Checca in terms of income per capita. In general, the more developed districts form part of the eastern high plain that runs from Sangarará in the north to Layo in the south, where access to market is relatively straightforward. It is therefore not a coincidence that the PWR process on the whole identified a lower percentage of households of the villages in these districts as ultra poor. Consequently, the surveys of the selected ultra poor households do not reflect the overall district averages.

Map 3 Canas and Acomayo: human development and income per capita.



Source: (PNUD 2009)

2.3 Economic activities

The market study conducted by Soluciones Prácticas (2010) shows that economic activity of the project zone centers on subsistence farming, with some commercialization of animals and animal products. Most farmers grow a range of different crops at varying altitudes (and hence micro-climates), as well as, raise both small animals and livestock. The staple crops of the zone are potatoes, fava beans and cereals (wheat, barley, Andean grains and, in the valleys of Acomayo, corn), while the most common livestock are cows and sheep. This diversity is a well established risk management strategy for farmers in the high Andes. Bad weather often ruins one crop, but it is unlikely to affect crops in different ecosystems (Murra 1984). Seasonal migration – to work on large plantations in Arequipa or gold mining in Puerto Maldonado – is another strategy that families use to diversify and complement their income.

Access to productive land is a major challenge for farmers in the zone. Although there is no shortage of empty land, many hillsides no longer provide pasture due to a centuries-long process of deforestation and over-grazing. Arable land is in short supply, a problem accentuated by the subdivision of family plots among children. In the western part of Canas water is a scarce commodity, further limiting the extension agricultural land and pasture.

Two commercial farming activities stand out for their localized growth in recent years. The first is dairy farming in the districts of Langui and Layo, promoted in the 1990s by Instituto de Alternativas

Agrarias (IAA) and subsequently by the non-governmental organization (NGO) Solaris. The adoption of new technologies such as sprinklers and selective breeding of dairy cows, as well as the installation of milk processing plants and small-scale cheese and yoghurt workshops, helped to establish dairy farming as the primary source of income for many families.

The second activity is commercial guinea pig farming in the districts of Pomacanchi and Sangarará. The formation of producers' associations has attracted buyers to the zone who then sell the guinea pigs to restaurants in Cusco and Tipón.

2.4 Existing social programs

The most important active government program in the project zone is the conditional cash transfer program, JUNTOS. The program began in Peru in 2005 and is currently active in six of the 13 districts in the project zone. In total, JUNTOS is active in 51 of the 86 project villages and 1,131 of the 2,132 ultra poor households surveyed are beneficiaries. In order to be eligible for the program, the household must have at least one child of 14 years or younger and a national identity document (DNI). The registered beneficiary is typically the female head of the household, who receives 200 Soles every two months, with the condition that she attends prenatal health checkups and/or her children attend their programmed health controls and her children of 14 years or younger attend school. This money is deposited into a bank account in the beneficiary's name in the Banco de la Nación, thus also providing an introduction to formal financial services. For most beneficiaries, the bank branch is about a one-hour trip by truck.

In the past year JUNTOS has initiated two programs in the project zone which seek to further develop beneficiaries' access to financial services. In the district of Rondocan, JUNTOS is piloting an incentivized savings scheme, whereby those who have a positive balance in their accounts immediately prior to the deposit are entered into a lottery to win a food basket worth 180 Soles (Proyecto Capital 2010). In the districts of Yanaoca and Quehue, the microfinance institution Caja Nuestra Gente provides automatic credit to JUNTOS beneficiaries, although to date the scheme is not widespread.

3 Village characteristics

The following tables summarize results of the village survey that was administered to members of villages' management committees. The tables include results from 85 villages: the village of Hatun Tucsa refused to participate in the baseline study. Percentages in the tables therefore refer to the percentage of villages, rather than the percentage of households.

The village survey results confirm that access to the project zone villages is limited with very few situated on a tarmac road and public transport infrequent (Table 2). Access to markets (to buy or sell produce) and to district capitals (for work or for administrative errands) is therefore complicated for the households in the project zone. Access to electricity is better in Acomayo than in Canas, although this will likely change over the course of 2011 due to a rural electrification program in southern Canas.

Table 2 Accessibility of project zone villages

	Acomayo	Canas	Total
<i>Cell phone coverage (% of villages)</i>			
No signal	37	26	29
Poor signal	15	28	24
Good signal	48	47	47
<i>Type of road access (% of villages)</i>			
No road	0	2	1
Rough dirt road	70	88	82
Smooth dirt road	26	9	14
Tarmac road	4	2	2
<i>Frecuency of public transport (% of villages)</i>			
No public transport	11	14	13
Sporadic	19	17	18
Weekly	37	38	38
Daily or every other day	33	31	32
<i>Distance to district capital (% of villages)</i>			
Less than 5km	33	34	34
Between 5km and 25km	48	52	51
More than 25km	19	14	15
<i>Percentage of households with electricity (% of villages)</i>			
Less than 10% of households	0	31	21
Between 10% and 50% of households	19	28	25
The majority of households (51-90%)	52	29	36
All households (90-100%)	30	12	18

Access to basic services in rural Peru has improved markedly in recent decades. Table 3 shows that over 80% of villages have their own primary school and the majority has access to a secondary school that is less than one hour away. Similarly, the nearest health center is less than one hour away in the majority of villages.

Table 3 Access to basic services

	Acomayo	Canas	Total
<i>Distance to primary school (% of villages)</i>			
In village	89	81	84
Less than 5km	11	17	15
Between 5km and 25km	0	2	1
<i>Distance to secondary school (% of villages)</i>			
In village	26	33	31
Less than 5km	30	41	38
Between 5km and 25km	41	24	29
More than 25km	4	2	2
<i>Distance to health post (% of villages)</i>			
In village	19	26	24
Less than 5km	33	41	39
Between 5km and 25km	37	31	33
More than 25km	11	2	5
<i>Distance to larger health center (% of villages)</i>			
In village	19	12	14
Less than 5km	30	34	33
Between 5km and 25km	41	50	47
More than 25km	11	3	6
<i>Distance to provincial health center or hospital (% of villages)</i>			
Less than 5km	15	28	24
Between 5km and 25km	22	40	34
More than 25km	63	33	42
<i>Distance to nearest market (% of villages)</i>			
In village	7	16	13
Less than 5km	15	34	28
Between 5km and 25km	41	45	44
More than 25km	37	5	15

4 Household characteristics

This section describes the results of the household and individual surveys that were administered to members of the eligible households. The section covers demographics, education, housing and assets, expenditure and poverty levels, sources of income, land and agriculture, livestock holdings, savings and loans, health and nutrition, and social inclusion.

4.1 Demographics

Table 4 summarizes the basic demographic characteristics of the households surveyed. Households have an average of three children and typically only include the nuclear family. There is a 2.4 year gap in educational levels between male and female adults, although this gap has narrowed steadily over the past three decades. Table 5 shows that school enrollment is high up to 16 years of age, although absenteeism – due to sickness, children having to work or help in the house, the distance of the school and bad weather – remains a problem.

Table 4 Household information

	Acomayo	Canas	Total
Household size	5.3	5.3	5.3
Number of children under 18 in household	3.0	2.8	2.8
Number of children under 5 in household	0.9	0.8	0.8
Number of children under 3 in household	0.5	0.5	0.5
Age of household head	40	40	40
% of households with head under 30 years	16	17	17
% of households with female head	11	13	12
% of households headed by widow(er)	9	8	8
% of households legally married	52	56	54
% of households that include members outside nuclear family	11	12	12

Table 5 Education

	Acomayo	Canas	Total
Years of education of male (head or husband)	5.3	6.6	6.1
Years of education of female (head or wife)	3.1	4.0	3.7
% of households in which child under 16 does not study	6	5	6
% of households in which child under 12 does not study	5	5	5
% of households in which member missed school in past 14 days	14	21	19
% of households in which member missed school because sick	6	7	7
% of households in which member missed school because had to work	2	3	3

4.2 Housing and assets

Houses in the project zone are almost universally built from *adobe* mud bricks with a plain earth floor and a roof of tiles, tin or thatch. Houses typically include a kitchen and one or two bedrooms (Table 6). Few households have more than three rooms in total. Nearly all families cook on a simple stove using collected firewood or, in the upland areas where firewood is scarce, dried animal dung. Although over a quarter of households own a gas cooker, the vast majority of these families continue to cook on the fire, only using gas if they are in a rush. Nearly all households own one or more radios with which they listen to news and music; it is common to take the radio to work in the field or look after animals. An increasing number of households own televisions and cell phones, further improving communications in the project zone.

Table 6 Housing

	Acomayo	Canas	Total
% of households with more than 3 rooms	8	7	7
% of households that own their house	89	92	91
% of households that have electricity	83	52	63
% of households with a cement floor	1	0	1
% of households that normally cook with electricity or gas	0	1	1
% of households that have walls of bricks or cement	0	0	0
% of households that have latrine with water or septic tank	47	11	24

Table 7 Assets

	Acomayo	Canas	Total
% of households that have a radio	96	96	96
% of households that have a television	37	23	28
% of households that have a bicycle	40	58	52
% of households that have a motorcycle	1	2	2
% of households that have a refrigerator	0	0	0
% of households that have a blender	17	8	11
% of households that have a gas cooker	21	31	28
% of households that have an iron	2	3	2
% of households that have a cell phone	33	46	41

4.3 Expenditure and poverty levels

Table 8 shows the average level of weekly expenditure and its destination for the households surveyed. The results include food produced and consumed by the household, valued at market prices. Unsurprisingly, most household expenditure is destined for food consumption, of which approximately half is purchased and half is the household's own produce. The "other expenditure" category includes clothes, household supplies and water and electricity bills.

Table 8 Expenditure levels and breakdown

	Acomayo	Canas	Total
Total weekly consumption per capita (S/.)	33.78	29.68	31.08
Weekly produced food consumption per capita (S/.)	15.14	11.19	12.54
Weekly purchased food expenditure per capita (S/.)	10.73	11.02	10.92
Weekly education expenditure per capita (S/.)	1.50	1.65	1.60
Weekly health expenditure per capita (S/.)	1.61	1.38	1.46
Weekly other expenditure per capita (S/.)	4.76	4.59	4.65

Table 9 Poverty levels

	Acomayo	Canas	Total
<i>According to reported consumption</i>			
% of households below national poverty line	92	94	94
% of households below national extreme poverty line	60	70	67
% of households below international (\$1.25 a day) poverty line	13	21	18
<i>According to Progress out of Poverty Index</i>			
% of households below national poverty line	83	82	83
% of households below national extreme poverty line	45	44	44
% of households below international (\$1.25 a day) poverty line	5	5	5

In order to contextualize the consumption results shown in Table 8, the percentage of households below national and international poverty lines are shown in Table 9. The national poverty lines are based on the National Household Survey (ENAH) conducted annually by the National Statistics and Information Institute (INEI). The national poverty line represents the expenditure necessary to purchase a basic basket of food and non-food items and is equivalent to a monthly value of 257 Soles (or \$95 US at the nominal exchange rate) per capita. The national extreme poverty line represents the expenditure necessary to purchase a basic basket of food items only and is equivalent to a monthly value of 144 Soles (\$53 US) per capita (INEI 2010).

The international poverty line of \$1.25 US per day per capita was determined by the World Bank in 2008 after analysis of the International Comparison Program's (IPC) 2005 data collection round (Ravallion, Chen, and Sangraula 2008). The \$1.25 US value is converted into Soles at the purchasing

power parity (PPP) rate rather than at the nominal exchange rate, to reflect the fact that \$1 in Peru can buy more than \$1 in the United States.¹ Given that the latest PPP figures from the IPC are from 2005, the poverty line is subsequently adjusted for inflation, giving a monthly value of 74 Soles per capita.

Although nearly all households fall below the national poverty and most below the national extreme poverty line, only 18% of the households are considered extremely poor on the international scale. In absolute terms, the extremely poor in Peru are better off than the extremely poor in Sub-Saharan Africa or South Asia: nearly all have shelter, land, animals and enough food for most of the year (at least in terms of overall quantity). However, in relative terms the households surveyed are poor in the Peruvian context, because people's perceptions of basic needs are influenced by what those around them have.

In addition to expenditure self-reported by survey respondents, Table 6 includes a proxy for consumption based on the Progress out of Poverty Index (PPI). This poverty assessment tool uses 10 indicators to estimate the likelihood that a household is above or below the poverty line (Schreiner, 2009). Indicators in the latest version of the PPI at the time of the baseline survey (2009 version) are derived from the 2007 ENAHO. The tool was used as the final stage in the selection of households eligible for the program. However, the results of the baseline survey indicate that the PPI tool underestimates the likelihood of being poor: it is plausible that the correlations observed in the national level data do not hold true within this subpopulation.

4.4 Sources of income

Reported income is on average only 46% of reported expenditure. For the purposes of measuring poverty levels, reported expenditure is a more accurate guide due to the difficulty of measuring income directly through surveys. Respondents often calculate their income inaccurately because – in the case of household businesses – they do not record sales or – in the case of wage labor – they are not aware of the earnings of other household members (Deaton 1997). Moreover, there is often a perceived incentive among respondents to under-report income with the belief that this will increase chances of participating in a social development program. This bias typically affects income reporting more than expenditure reporting.

The principal economic activity of the ultra poor households surveyed is farming. On average, the majority of produce is consumed by the household rather than sold and is therefore a source of food income rather than cash income: crop and animal products income in Table 10 incorporates auto-consumption valued at market prices. Only 15% of households had sold a part of their crop in the previous 12 months, although the percentage is higher in Acomayo (where it's possible to grow corn and wheat) than in Canas (see Table 11). Overall, 23% sold animal produce in the previous 12 months, although in the dairy farming districts of Langui and Layo, this figure rises to 36% (see Table 12).

Although farming generates the *majority* of income for 53% of households surveyed, 84% of households receive some kind of non-farming income. Wage labor (Table 13) represents the primary income source for 20% of households and a secondary income source for 32%. Wage labor is done both inside and outside of the community during the agricultural low season from July to October, between

¹ The 2005 PPP exchange rate is 1.49 Soles to \$1. See http://siteresources.worldbank.org/ICPEXT/Resources/ICP_2011.html.

harvesting and sowing. The most common destinations for those that migrate are other parts of Cusco, for work in the informal economy and agricultural labor; the neighboring department of Arequipa, for agricultural labor and mining; and the rainforest town of Puerto Maldonado, for gold mining. Household businesses (Table 14) are less common and, according to the information given by survey respondents, 16% of such businesses are not profitable in a normal month. In this context, household businesses include small shops, animal trading, food sales, handicrafts and workshops. The third source of non-farming income comprises transfers from JUNTOS, the governmental conditional cash transfer program. For the 51% households that received such transfers, they represent on average 72% of non-farming income and 40% of total income.² Finally, 14% of households receive remittances from relatives or friends living outside the community. For these households, remittances represent on average 8% of their income.

Table 10 Income levels and breakdown

	Acomayo	Canas	Total
Total weekly income per capita (S/.)	14.57	12.37	13.12
Weekly livestock income per capita (S/.)	5.64	4.45	4.86
Weekly crops income per capita (S/.)	3.33	1.93	2.41
Weekly wage labor income per capita (S/.)	2.62	3.14	2.96
Weekly business income per capita (S/.)	0.28	0.67	0.54
Weekly transfers income per capita (S/.)	2.77	2.29	2.46
Weekly remittances income per capita (S/.)	0.11	0.10	0.10
Weekly assets income per capita (S/.)	0.00	0.00	0.00

Table 11 Crop sales³

	Acomayo	Canas	Total
% of households that sold a part of crop in the past 12 months	19.19	13.59	15.51
Weekly auto-consumption of crop products (S/.)	16.94	10.67	12.82
Weekly income from crop sales (S/.)	0.48	0.14	0.26
Weekly cost of buying seed (S/.)	-0.36	-0.21	-0.26
Weekly cost of fertilizer (S/.)	-0.19	-0.17	-0.18
Weekly cost of insecticide (S/.)	-0.21	-0.32	-0.29
Weekly cost of farmhands (S/.)	-0.30	-0.26	-0.27
Weekly rent paid for land (S/.)	-0.19	-0.05	-0.10
Weekly crop income (net) (S/.)	16.03	9.77	11.92

² Given that JUNTOS income is likely to be less underreported than other income (as it's a fixed quantity every 2 months), in practice the share of JUNTOS transfers in total income may be substantially lower.

³ In this and subsequent tables in this section, weekly net income is adjusted to correct outlying values.

Table 12 Animal and animal produce sales

	Acomayo	Canas	Total
% of households that sold an animal in the past 12 months	57	63	61
% of households that sold animal produce in the past 12 months	13	28	23
Weekly auto-consumption of animal products (S/.)	28.97	20.09	23.13
Weekly income from animal product sales (S/.)	0.47	1.92	1.42
Weekly income from animal sales (S/.)	8.53	9.79	9.36
Weekly income from renting out animals (S/.)	0.04	0.01	0.02
Weekly costs of buying animals (S/.)	-6.74	-5.85	-6.15
Weekly costs of vaccinating animals (S/.)	-1.14	-1.82	-1.59
Weekly costs of vitamins for animals (S/.)	-0.48	-0.64	-0.59
Weekly livestock income (net) (S/.)	29.06	22.38	24.67

Table 13 Wage labor

	Acomayo	Canas	Total
% of households in which member worked for someone else in the past 12 months	63	61	62
Weekly wage labor income of those that worked (S/.)	24.80	30.44	28.50
% of households in which member migrated from the province to work in the past 12 months	30	33	32
Weekly wage labor income of those that migrated to work (S/.)	34.96	35.00	34.99
<i>Of those that worked, type of work (%)</i>			
Farm labor	18	25	22
Casual work for municipality	34	22	26
Construction	22	27	25
Mining	8	10	9
Work in shop or restaurant	4	6	5
Domestic worker	3	3	3
Other work	11	9	10

Table 14 Household businesses

	Acomayo	Canas	Total
% of households that have a household business	15	17	17
Weekly business sales (S/.)	65.01	88.87	81.35
Weekly business expenses (S/.)	-46.44	-63.24	-57.95
Weekly business premises rent (S/.)	-0.05	-0.28	-0.20
Weekly business income (net) (S/.)	11.97	20.67	17.93
<i>Of those that have a business, type of business (%)</i>			
Trading animals	33	30	31
Village shop	39	22	28
Selling prepared food and drink	3	19	14
Trading agricultural produce	12	9	10
Other activity	13	20	18

4.5 Land and agriculture

As a result of land reforms that took place in Peru in the 1960s, the majority of villagers in the project zone are landholders. Typically the legal title of the land is held at the communal level rather than the individual level, but within the village, individual ownership rights are recognized. However, communal authorities generally restrict the sale of land to those outside of the village in order to preserve existing social structures. Included in land owned by the household is land in *layme* that was cultivated in the past 12 months. *Layme* is land that is only cultivated approximately every seven years and for the remainder lies fallow (the cycle may be longer or shorter, depending on the availability of land); typically the *layme* plots of all villagers are situated together in rugged highland terrain. The table does not include communal land, which is land owned and managed by the village as a whole. This land is normally ploughed, sowed and harvested by all able-bodied villagers in a *faena* (communal work), and the produce is either divided among villagers or sold to contribute to a village fund.

Reciprocal labor, or *ayni*, is a longstanding characteristic of Andean societies (Murra 1984). It is common for both men and women to help work the land of neighbors and family and in return receive assistance from them when the time comes to work their own land. During the sowing and harvest seasons, it is common to see large groups working on a single plot.

Andean farming practices are characterized by diversification and on average the ultra poor households surveyed cultivated four different types of crop. This serves as a risk management strategy and also takes advantage of the varied climatic zones often found within a single village. In the villages of Rondocan, Acomayo and the Apurimac valley, which have access to land at the broadest range of altitudes, corn is typically grown at the lowest altitudes, wheat, beans and barley at middle altitudes and potato and other tubers at higher altitudes. The highest land and steepest mountainsides are used for grazing sheep, llama and alpaca. Pastureland is not considered in the table below.

Table 15 Landholdings and agriculture

	Acomayo	Canas	Total
Total cultivated land (hectares)	1.14	0.51	0.73
% of households that sold a part of their crop in the past 12 months	19	14	16
% of households that worked in <i>ayni</i> in someone else's fields in the past 12 months	92	68	76
% of households that had a bad harvest (less than half a normal harvest) in the past 12 months	25	22	23
% of households that planted potatoes in the past 12 months	95	99	98
% of households that planted corn in the past 12 months	64	17	33
% of households that planted beans in the past 12 months	82	68	72
% of households that planted barley in the past 12 months	71	86	81
% of households that planted wheat in the past 12 months	55	28	37
% of households that planted peas in the past 12 months	18	7	11
% of households that planted quinoa in the past 12 months	11	11	11
% of households that planted oats in the past 12 months	4	8	7

4.6 Livestock holdings

For the ultra poor households surveyed, livestock serve both as a source of income and as a form of non-monetary saving. Nearly all households surveyed own some form of livestock, and most own more than one kind, reflecting the tendency towards diversification that characterizes Andean farming. This diversification stands in contrast to other sites of the graduation program where very few households own livestock, and raises additional opportunities and challenges for the program team in Peru. Though households already have experience raising a variety of animals, they may be less interested and commitment in the program activities, like livelihood training.

The responsibility of looking after livestock is generally divided among household members, with the mother and father taking the animals to graze during the week and the children looking after the animals over weekends. In families in which the grandparents form part of the household, they typically look after the animals throughout the week.

Table 16 Livestock holdings

	Acomayo	Canas	Total
% of households that have cattle	74	87	83
Number of cattle	2.5	3.0	2.8
% of households that have a stable for animals	16	63	47
% of households that sold milk in the past 12 months	2	4	3
% of households that sold cheese in the past 12 months	0	11	7
% of households that sold yoghurt in the past 12 months	0	1	0
% of households that sold leather in the past 12 months	1	4	3
% of households that have sheep or goats	67	81	76
Number of sheep and goats	12.1	12.8	12.5
% of households that sold meat in the past 12 months	6	4	5
% of households that sold wool in the past 12 months	3	13	10
% of households that have camelids (llama, alpaca)	14	26	22
Number of camelids	1.7	2.2	2.0
% of households that have a horse or donkey	68	58	61
Number of horses and donkeys	1.5	1.6	1.5
% of households that have guinea pigs	90	53	65
Number of guinea pigs	13.9	5.6	8.5
% of households that have a guinea pig pen	33	18	23
% of households that have birds	87	77	80
Number of birds	5.0	3.7	4.2
% of households that have a chicken coop	20	18	19
% of households that sold eggs in the past 12 months	3	1	2

4.7 Savings and loans

Table 17 shows that around one third of households surveyed report having some form of monetary savings, although it is likely that this variable was under-reported given the sensitive nature of the question. Most of these savings are either kept at home or with another family member outside of the household. This savings behavior is notable as over half of all households hold a free savings account at Banco de la Nación for receipt of JUNTOS payments. The majority of JUNTOS beneficiaries do not know that they can leave money in these accounts, and cashiers do not ask them how much they would like to withdraw, instead assuming that they will withdraw the full amount. The exception is in the district Rondocan, where JUNTOS is piloting an incentivized savings scheme.

Table 17 Savings

	Acomayo	Canas	Total
% of households with savings	41	25	31
% of households with formal savings account	3	0	1
Savings balance of those with savings (S/.)	143	121	129
<i>Of those that have savings:</i>			
% of households saving to buy animals	9	10	10
% of households saving to invest in a business	2	4	3
% of households saving for emergencies or to buy food	58	62	60
% of households saving for education	35	26	30
% of households saving to buy or improve a house	22	18	20
% of households saving for health expenses	17	12	14
% of households saving for other motives	4	2	3

Credit is less common among the households surveyed, with less than a quarter of households currently paying back a loan. This is largely because households that reported currently having a formal loan to the project team were considered non-eligible, given that one of the project's objectives is access to finance. An exception was made for recipients of loans from Caja Nuestra Gente, which has formed a partnership with Programa JUNTOS to provide credit to beneficiaries of the conditional cash transfer program. Given that many of these borrowers would not be eligible for credit in any other institution they were considered eligible for the program. The remainder of eligible households with formal loans either did not report their loan to the program team in the verification survey or took out the loan after the selection process.

Table 18 Loans

	Acomayo	Canas	Total
% of households that took out loan in the past 12 months	13	23	19
% of households that took out formal loan	5	13	10
Original loan amount of those that took out a loan (S/.)	729	1,030	961
Amount owed by those that took out a loan (S/.)	699	871	832
% of households that doesn't have loan because of fear	48	41	44
% of households that doesn't have loan because of requirements	12	11	12
% of households denied a loan in the past 12 months	3	2	2
<i>Of those that took out a loan, loan use (%)</i>			
Loan invested in business	14	11	12
Loan spent on education	17	13	14
Loan spent on health expenses/emergencies	22	13	15
Loan invested in animals	19	40	35
Loan spent on food	5	7	7
Loan spent on a family occasion	4	2	3
Loan spent on buying or improving a house	10	9	9
Loan spent on other item	13	7	8

4.8 Health and nutrition

As shown in Table 3 above, the majority of villages are less than one hour from a medical post or health center. Parents of children of five years or younger are expected to take their children for medical health checks (see Table 19), during which they are weighed and measured to evaluate nutritional condition and checked for symptoms of common illnesses. These checks are monthly until three years of age, after which the recommended frequency (which is obligatory for JUNTOS beneficiaries) decreases to once every six months up until age five. Children who sought medical care other than a regular health check typically had respiratory or digestive problems. Adults suffered from a broader range of conditions, but among all age groups in Peru, respiratory problems were the leading cause of mortality and morbidity.

Table 19 Illness and medical attention

	Acomayo	Canas	Total
% of households in which member visited doctor in past 30 days because sick	48	40	43
% of households in which child 3 years or younger visited doctor for checkup	31	31	31
% of households in which household member couldn't work for 15 days or more because sick	6	2	3
% of households in which member was too sick to work but didn't visit doctor	9	2	4
% of households affiliated to government health insurance program (SIS)	95	92	93
<i>Of those that visited the doctor, illness (%)</i>			
Respiratory problems or colds	50	38	42
Stomach problems	11	12	12
Circulatory problems	1	2	2
Eye or ear problems	2	4	3
Neurological problems	0	1	1
Skin problems	3	3	3
Reproductive or urinary problems	7	7	7
Genetic problems	5	5	5
Injuries	9	9	9
Headache (undiagnosed)	5	6	5
Dental problems	12	13	13
Fever (undiagnosed)	11	11	11

Interviews with health post workers and project field workers suggest that people often treat an illness with home remedies and will postpone a visit to the health facility for at least a week, or until the pain becomes unbearable. Household interviews from IPA's qualitative study confirm that people prefer to treat most illnesses with herbal tea infusions, rubs and other home remedies. Distance, transport,

childcare and loss of a day's work are the most persistent deterrents from immediately seeking out professional healthcare. By the time people visit a health post, their condition is often too complicated for the local post to handle and they must be sent to a regional hospital. Recognizing this trend, health post workers visit the communities and schools to promote preventative health practices and encourage use of their resources.

Households were also asked about the particular foodstuffs they had consumed in the past seven days, and the quantity consumed of each foodstuff. The total calorific intake of each household was calculated and then adjusted to be on an adult basis (children under 15 years of age valued as 0.5 capita). Table 20 indicates that during the months of the baseline survey, relatively few households reported calorie intake below the recommended daily allowance, but that fat, iron and calcium deficiencies are widespread. The overwhelming majority of households reported consuming some type of animal produce and fruit in the past seven days. This contrasted with the project team's observations in the zone, and it is possible that households exaggerated their consumption of animal produce and fruits. Families that indicated that they had reduced their intake of food due to economic constraints typically did so in the months from January to March, immediately prior to the harvest.

Table 20 Nutrition

	Acomayo	Canas	Total
% of households whose calorie intake is below RDA (2000 KCal daily)	14	11	12
% of households whose protein intake is below RDA (50g daily)	11	14	13
% of households whose fat intake is below RDA (65g daily)	53	59	57
% of households whose iron intake is below RDA (18 mg daily)	20	19	20
% of households whose calcium intake is below RDA (1000mg KCal daily)	73	59	64
% of households who consumed animal products in the past week	94	91	92
% of households who consumed fruit in the past week	90	93	92
% of households in which member reduced food consumption in past 12 months	23	29	27
% of households in member went without food for a day in past 12 months	5	4	4
% of households in which child reduced food consumption in past 12 months	8	8	8

4.9 Social inclusion

Tables 21 and 22 summarize the participation of households surveyed about their community life, tabulated first by gender and then by age. In contrast to other project sites, highland Peruvian villages are characterized by a relatively high degree of social integration. This results both from long-held Andean communal traditions and the land reforms of the mid-twentieth century, which placed *hacienda* lands in the hands of the community as a collective. The results of the baseline survey show that men are on average more literate, politically active and mobile, and have more trust in institutions than women. They also appear to me more optimistic regarding their level of wealth compared to others in the village.

Middle-aged respondents were more politically active than those under 30 or over 50. Older respondents were more likely to trust traditional political authorities while younger respondents were more likely to trust NGOs.

Table 21 Social inclusion, by gender

	Males	Females
% that self-report as at least partially literate	78	56
Literacy test score (0-1)	0.5	0.2
% that are members of village committee, village security or water board	51	18
% that are catholic	76	77
Number of times left community in past 30 days	1.6	0.7
Number of times to district capital in past 12 months	20.9	18.0
Number of times to provincial capital in past 12 months	10.9	9.2
Number of times to Cusco in the past 12 months	2.2	0.9
Number of times to Lima in the past 12 months	0.0	0.0
Number of telephone calls made or received in the past 30 days	3.5	1.8
Number of times spoke to mayor in past 12 months	1.7	0.3
% that attend municipal meetings	42	14
% that spoke in the last village meeting	54	18
% that report that village members respect him or her a lot	41	31
Number of potential lenders in the community (for S/. 50)	2.6	1.5
% that trust local mayor	34	30
% that trust village authorities	57	46
% that trust banks or MFIs	24	18
% that trust NGOs	46	34
% that trust other people in the village	59	49
<i>Perception of wealth compared to others in the village (% of households)</i>		
Poorer than average	61	68
About average	37	31
Richer than average	2	1

Table 22 Social inclusion, by age

	Adults 30 years of younger	Adults between 31 and 50 years	Adults over 50 years
% that self-report as at least partially literate	81	70	36
Literacy test score (0-1)	0.5	0.4	0.2
% that are members of village committee, village security or water board	27	34	32
% that are catholic	76	77	76
Number of times left community in past 30 days	1.3	1.1	0.6
Number of times to district capital in past 12 months	19.5	20.0	16.6
Number of times to provincial capital in past 12 months	9.2	10.5	8.7
Number of times to Cusco in the past 12 months	1.0	1.6	1.7
Number of times to Lima in the past 12 months	0.0	0.0	0.0
Number of telephone calls made or received in the past 30 days	2.5	2.6	2.3
Number of times spoke to mayor in past 12 months	0.7	1.0	0.6
% that attend municipal meetings	23	29	20
% that spoke in the last village meeting	28	38	28
% that report that village members respect him or her a lot	30	36	40
Number of potential lenders in the community (for S/. 50)	2.2	2.1	1.3
% that trust local mayor	25	33	38
% that trust village authorities	45	52	52
% that trust banks or MFIs	21	21	20
% that trust NGOs	37	42	32
% that trust other people in the village	47	54	60
<i>Perception of wealth compared to others in the village (% of households)</i>			
Poorer than average	68	62	69
About average	31	37	29
Richer than average	1	1	1

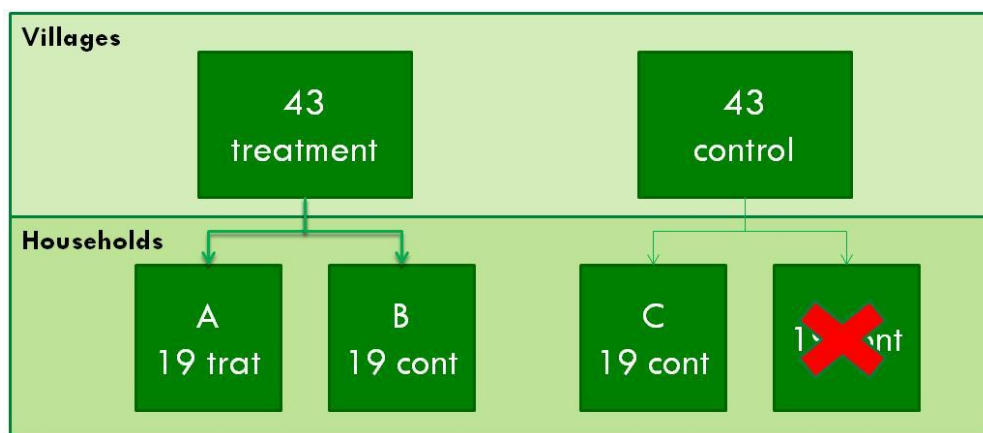
5 Comparison of treatment and control groups

This section explains the design of the IPA study and evaluates the comparability of the randomly selected treatment and control groups.

5.1 Evaluation design

IPA designed a randomized controlled trial (RCT) that will measure both the direct impacts of the program and spillover effects to other village members. Figure 1 shows that in total 86 villages participate in the study, of which half are treatment villages and half are control. In each of the treatment villages there are on average 38 households that participate in the study. Half of these households are program beneficiaries (Group A) and the other half are not (Group B). In each of the control villages there are on average 19 households that participate in the study and none of these is a program beneficiary (Group C).

Figure 1 Randomized controlled trial design



In order to measure the direct impacts of the program IPA will compare the outcomes for Group A and Group C, the group of beneficiary households with the group of households in villages without any beneficiaries. The study design also allows for the measurement of spillover effects by comparing Group B – who may have received an indirect benefit from their neighbors that participated in the program – with Group C.

The treatment and control villages were randomly selected from the 86 villages in the study using a statistical software package, STATA. Data from the project team's initial village surveys and the verification surveys was used to balance the treatment and control groups according to province, number of eligible households, accessibility and road type and the PPI score of eligible households. Within control villages, the households were randomly divided using STATA into those that would be included in the study as Group C and those that would not be included in the study. Within treatment villages, district-level meetings were held with communal authorities in which they were able to choose whether the randomization be done using STATA or by pulling names out of a hat. In six of the seven

meetings the authorities chose to randomize using STATA. Where STATA was used, the treatment and control groups were balanced according to PPI score and household size.

5.1 Comparison of treatment and control groups

The following tables compare Group A with Group C and Group B with Group C to determine whether the groups are balanced at the start of the program. The results confirm that the groups are balanced across the majority of variables. The statistically significant differences are highlighted in the tables: Group A households own more cattle and guinea pigs than Group C households, and Group B households own more cattle and horses or donkeys than group C households.

Table 23 Treatment households compared to control households in control villages

	(A) Treatment households	(C) Control households (in control villages)	Difference between (A) and (C)	t-stats
Household size	5.29	5.38	-0.09	-0.68
Number of children under 5 in household	0.82	0.81	0.01	0.16
Age of household head	40.25	40.29	-0.04	-0.06
Female headed household	0.11	0.14	-0.03	-1.60
Years of education of male (head or husband)	6.15	6.40	-0.25	-0.65
Years of education of female (head or wife)	3.71	3.80	-0.09	-0.26
Child under 16 does not study	0.05	0.05	0.00	0.27
House has more than 3 rooms in total	4.48	4.43	0.04	0.26
Family owns the house	0.91	0.90	0.01	0.58
House has electricity	0.68	0.53	0.14	1.88
Household has radio	0.96	0.97	-0.01	-1.17
Household has TV	0.30	0.26	0.04	1.04
Household has bicycle	0.53	0.51	0.02	0.29
Household has motorcycle	0.01	0.02	-0.00	-0.54
Household has refrigerator	0.00	0.00	-0.00	-1.03
Household has blender	0.12	0.10	0.02	0.63
Household has gas cooker	0.27	0.30	-0.03	-0.91
Household has iron	0.02	0.03	-0.00	-0.06
Total weekly consumption per capita (S/.)	30.54	32.09	-1.55	-1.03
Total weekly income per capita (S/.)	13.70	13.17	0.52	0.65
Weekly wage labor income per capita (S/.)	3.04	3.00	0.03	0.07
Weekly transfers income per capita (S/.)	2.73	1.96	0.77	1.89
Number of cattle	2.64	3.28	-0.64	-2.06
Number of sheep and goats	13.27	11.85	1.42	0.80
Number of camelids	2.36	1.95	0.41	0.57
Number of horses and donkeys	2.30	0.96	1.34	1.84
Number of guinea pigs	10.04	6.41	3.64	2.06
Number of birds	4.10	4.52	-0.42	-1.11
Household has savings	0.28	0.30	-0.02	-0.55
Household took out loan in the past 12 months	0.17	0.21	-0.03	-1.04
Household member reduced food consumption in past 12 months	0.26	0.29	-0.03	-0.85

Table 24 Control households in treatment villages compared to control households in control villages

	(B) Control households (in treatment villages)	(C) Control households (in control villages)	Difference between (B) and (C)	t-stats
Household size	5.26	5.38	-0.12	-0.89
Number of children under 5 in household	0.82	0.81	0.01	0.21
Age of household head	40.48	40.29	0.19	0.28
Female headed household	0.11	0.14	-0.03	-1.67
Years of education of male (head or husband)	5.81	6.40	-0.59	-1.55
Years of education of female (head or wife)	3.50	3.80	-0.30	-0.90
Child under 16 does not study	0.08	0.05	0.03	1.74
House has more than 3 rooms in total	4.48	4.43	0.05	0.29
Family owns the house	0.91	0.90	0.01	0.51
House has electricity	0.67	0.53	0.13	1.74
Household has radio	0.96	0.97	-0.00	-0.43
Household has TV	0.27	0.26	0.00	0.12
Household has bicycle	0.51	0.51	-0.00	-0.06
Household has motorcycle	0.02	0.02	-0.00	-0.10
Household has refrigerator	0.00	0.00	0.00	0.06
Household has blender	0.11	0.10	0.00	0.21
Household has gas cooker	0.26	0.30	-0.04	-1.03
Household has iron	0.02	0.03	-0.00	-0.03
Total weekly consumption per capita (S/.)	30.62	32.09	-1.48	-0.93
Total weekly income per capita (S/.)	12.47	13.17	-0.70	-0.86
Weekly wage labor income per capita (S/.)	2.84	3.00	-0.16	-0.39
Weekly transfers income per capita (S/.)	2.68	1.96	0.71	1.78
Number of cattle	2.51	3.28	-0.76	-2.64
Number of sheep and goats	12.69	11.85	0.85	0.47
Number of camelids	1.80	1.95	-0.15	-0.24
Number of horses and donkeys	1.34	0.96	0.38	2.31
Number of guinea pigs	8.87	6.41	2.47	1.41
Number of birds	3.82	4.52	-0.70	-1.76
Household has savings	0.34	0.30	0.03	0.89
Household took out loan in the past 12 months	0.20	0.21	-0.00	-0.02
Household member reduced food consumption in past 12 months	0.27	0.29	-0.03	-0.64

6 Conclusion

The results of the baseline study provide insight into the lives of the households in Canas and Acomayo that were determined eligible for the Extreme Poverty Graduation Program. The typical household is comprised of five members – two parents and three children – and lives in a small mud-brick house with two or three rooms. They cook on a fireplace fueled with wood or animal dung. Project households almost certainly own a battery-powered radio and may also own a television. If living in a village with cell phone coverage, households most likely own a cell phone that is used sparingly. In Acomayo the average family keeps around a dozen guinea pigs in the kitchen for the household's own consumption. In the dry highlands of Canas, where there is not enough forage for the guinea pigs, the household may have chickens instead that live off grains and grubs and lay eggs for the family. Farming practices are characterized by diversification. Regarding livestock, most own both cattle and sheep in small numbers and may also possess alpaca, llama or goats. Crops are also diversified, with different crops grown at different altitudes. This diversification mitigates risk in case of the failure of one particular crop.

Results confirm that for most of the households surveyed the average monthly expenditure of the does not even cover the cost of a basic food basket. Moreover, around one third of this expenditure is accounted by the consumption of the household's own agricultural and animal produce. Due to the small scale of production and difficulty in accessing markets, very few households sell their produce on a regular basis. Livestock, in particular, are perceived first and foremost as a form of non-monetary saving – to be sold in case of emergency – rather than as a regular source of food or income. Aside from occasional animal sales, most monetary income comes from casual wage labor, which often implies one or more household members migrate to another department of Peru for several months as an agricultural laborer or gold miner. Particularly in the case of a bad harvest, migrant labor may be the only way to keep the family fed until the following harvest. Indeed, over one quarter of families reported having to reduce their consumption during the pre-harvest months of January to March.

Across most variables the randomly selected treatment and control groups are statistically similar. If it were not for the program, we would expect the groups to remain similar in the future. We can therefore attribute any differences observed between the treatment and control groups to the impact of the program. This measurement will take place in mid-2013 when the program activities finish and then again one year later to determine whether advances, if any, have been sustained. In the nearer term, IPA will administer quarterly surveys to a subsample of the study population during the implementation phase to track the timing of any changes. The quantitative research is complemented by a qualitative research study that is ongoing for the duration of the program.

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