Young Lives: Peru Round 2 Survey

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Young Lives
An International Study of Childhood Poverty

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Abstract

This report presents initial findings from the second round of data collection in Peru between late 2006 and early 2007. It provides a broad outline of key child poverty indicators, as well as changes that have taken place since the first round of research in 2002.

Although the economic and policy context in Peru has become more favourable – following recent economic growth and increased awareness of the importance of early childhood – inequalities between different groups persist.

The findings show that rural and ethnic minority children are more likely to experience poorer nutrition and educational outcomes, and have lower levels of access to electricity, safe water and sanitation facilities. The data also show how such inequalities interrelate, for example, poor access to services appears to influence nutritional patterns of stunting and being underweight. Interestingly, urban children report higher levels of subjective well-being than their rural counterparts, and ethnic minority children lower levels, perhaps due to perceptions of discrimination.

Evidence of gender inequalities is also found with faltering growth and lower levels of pre-school enrolment among girls, especially in rural areas. Primary school enrolment is more equal but boys are already at an advantage in learning and making the transition to school, following their time at pre-school. Similarly, differences in nutritional status between urban and rural children seem to be defined in the early stages of life. All these findings underline the importance of investing in early childhood.

Future Young Lives research will continue to investigate the inequalities in Peru with particular reference to socio-economic status, the urban-rural divide, gender and ethnicity. It is hoped that empirical evidence of this kind will play a greater role in shaping child-related policies in future.

Contents

Acknowledgements

The authors

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Abbreviations and acronyms

DHS   Demographic and Health Survey

ENAHO   Encuesto Nacional de Hogares (National Survey of Living Standards)

FONCODES   Fondo Nacional de Cooperación para el Desarrollo (Peruvian Social Fund)

GRADE   Grupo de Análisis para el Desarrollo

IIN   Instituto de Investigación Nutricional

INEI   Instituto Nacional de Estadística e Informática (National Institute for Statistics and Information)

LSMS   Living Standards Measurement Study

MCLCP   Mesa de Concertación de Lucha contra la Pobreza (Roundtable for the Fight Against Poverty)

PNAI   Plan Nacional para la Adolescencia e Infancia 2002-2010 (National Plan of Action for Children and Adolescents)

Summary

Young Lives is a long-term international research project investigating the changing nature of childhood poverty in four developing countries – Ethiopia, Peru, India (in the state of Andhra Pradesh) and Vietnam – over 15 years. This is the time frame set by the UN to assess progress towards the Millennium Development Goals (MDGs). Through interviews, group work and case studies with children, their parents, teachers, community representatives and others, we are collecting a wealth of information not only about their material and social circumstances, but also perspectives on their lives and aspirations for the future, set against the environmental and social realities of their communities.

We are following two groups of children in each country: 2,000 children who were born in 2001-02 and 1,000 children who were born in 1994-5. These groups provide insights into every phase of childhood. The younger children are being tracked from infancy to their mid-teens and the older children to adulthood, when some will become parents themselves. When this is matched with information gathered about their parents, we will be able to reveal much about the intergenerational transfer of poverty, how families on the margins move in and out of poverty, and the policies that can make a real difference to their lives.

This report presents initial findings from the second round of data collection which was carried out in Peru in late 2006 to early 2007. It does not aim to give a comprehensive overview of all the findings from Young Lives, rather it gives a broad outline of some of the key indicators of childhood poverty and changes that have taken place in the children's lives between the first round of data collection in 2002 and this second round. Data are mainly presented for the entire age cohort, in most cases separated into wealth groups or by rural/urban location. The full richness of the data is not reflected in this preliminary report, but we hope that it contains enough information to prompt other researchers, policymakers and stakeholders to start to engage with the data.

Peru has enjoyed substantial growth and an overall impressive macro-economic performance in recent years. This resulted in a reduction of aggregate poverty rates between 2004 and 2006, at the same time as an increase in social public expenditure. There has also been an increasing awareness of the importance of early childhood in the policy agenda. This was clearly signalled by the release of the National Plan of Action for Childhood and Adolescence (PNAI 2002-2010) and by the inclusion of pre-school as part of basic education (making it free and compulsory). While the impact of these policies remains to be seen, the political and policy context is undoubtedly more favourable for children than in the past.

However, despite this good economic performance and the positive policy context, profound inequalities persist. In 2006 60 per cent of children under five years old were living in poor households. Although poverty has declined, this has been due entirely to improvements in urban areas, with poverty rates in rural areas remaining virtually unchanged. In addition, inequalities in child well-being indicators persist. Malnutrition remains high and progress through school remains low in the poorest regions.

This report presents the results of the second round of Young Lives study within this context. It also provides a picture of some of the key characteristics and challenges faced by children in the Young Lives sample. Based on the information collected in the two survey

rounds, analysis of Young Lives sample characteristics confirms a number of issues that are evident in other nationally representative surveys and offers new insights into the challenges faced by children. What follows is a summary of some of these findings. Results are based on descriptive statistics as well as regression analysis.

Wealth and access to services

Large numbers of the Young Lives children (80 per cent) live below the national poverty line. The high proportion is due in part to our pro-poor sampling methodology, but over time, between 2002 and 2006/7, we have observed an improvement in household living standards for both the younger and older cohorts across several indicators. Most of these improvements were found in urban areas, thus closely resembling Peru's trends over the same time period, and pointing to the inequalities that persist despite recent economic growth.

We see that household resources have improved in terms of both wealth and assets, and this is reflected in the perceptions of poverty reported by the children's caregivers. While in 2002, 32 per cent of the younger children's families felt they were destitute, this had fallen to 22 per cent in 2006/7. And the number of families reporting that they could manage to get by increased from 27 to 37 per cent. In the older cohort, the number of families reporting that they felt destitute fell from 36 to 28 per cent, although there was only a small change in the number of families feeling they can get by (up from 25 per cent to 27 per cent).

These changes are in part due to improvements in access to services which have significantly improved. Within the younger cohort, 70 per cent of families now have access to electricity, but there are significant differences between rural and urban areas and across our wealth index: 90 per cent of households above the poverty line have access to electricity but only 65 per cent of poorer households do. The figures regarding access to sanitation are equally stark, with 70 per cent of richer households having a flush toilet or septic tank compared to only 35 per cent of poorer households. The picture is similar for the older cohort, where 65 per cent of families now have access to electricity (up from 55 per cent), although stark differences are seen in access to sanitation between urban (61 per cent access) and rural areas (only 9 per cent have a flush toilet or septic tank).

Nutrition

Malnutrition is a major issue for Peru and of great concern to policymakers and planners. Evidence of stunting (chronic malnutrition) is found in the younger cohort at 6–18 months and again at 4–5 years old, as expected. Growth faltering is particularly concerning in rural areas, also as expected. An interesting finding is that a gap in malnutrition rates opens up between children in urban and rural areas during the first months of life and remains relatively constant after that. This suggests that the gap itself is linked to conditions affecting children at a very early stage of their life.

The analysis also finds that urban children are favoured in two respects compared to their rural peers. First, albeit relatively short, on average urban children are still able to follow a normal growth curve. Secondly, there is evidence of 'catch-up' growth for urban children at 4 to 5 years old. Although further research is still needed, current results show that part of the catching-up process is mediated by access to key private assets, such as maternal education, and access to public services, such as electricity, safe water and proper sanitation facilities.

In addition, regression analysis shows that changes in malnutrition rates between Rounds 1 and 2 for the younger cohort are associated with characteristics such as birth weight and mother's health status (as measured in Round 1), as expected, but also to the child's gender. Rates of malnutrition were more likely to increase for girls between rounds, but only for the younger cohort. Finally, maternal education is found to be a strong correlate of chronic malnutrition but not of changes in malnutrition between rounds.

Education

Pre-school enrolment is relatively high (81 per cent) among the Young Lives children but mediated by inequalities according to rural-urban residence, ethnicity and socio-economic status. Interestingly, the probability of ever attending pre-school is lower for children with disabilities in urban areas, reflecting another dimension of inequality. Maternal education is found to be a strong factor that determines pre-school enrolment, as expected.

The older children were at the stage where they were just completing the transition from primary to secondary school. For this cohort, school enrolment is almost universal. However, the majority of these children (60 per cent) are over-age (above the normal age for their grade either because they started school later or had been kept back due to poor achievement). Maternal education is a strong predictor of this result, as expected. In addition, there is evidence of a gender gap, as boys in urban areas are more likely to be over-age. A qualitative study by the Young Lives team will complement this quantitative data for both cohorts by looking at the perspective of parents, teachers and students regarding the availability and quality of educational services, particularly in the transition from primary to secondary school.

Child work

For the older cohort, paid child labour has increased from 24 to 51 per cent between rounds. Although an increase in child labour was expected (as the children are getting older), the percentage of children involved in paid work is high compared to official statistics. In fact, this result resembles the average level of child labour found in the poorest quintile of the population. Evidence of a gender dimension is also found, with boys more likely to be involved in paid activities and girls more likely to undertake unpaid domestic chores.

Subjective well-being

Children in the older cohort were asked about their perception of well-being. In particular, they were asked to position themselves on a nine-step ladder. Using regression analysis, several interesting results are found based on their answers. Urban children consider themselves to be higher up the ladder than children in rural areas do. Girls are also more likely to position themselves higher and so are children living in households where the father is present. Interestingly, it was also found that ethnicity is correlated with a lower position on the ladder, which could be associated with a perception of discrimination.

Overall, the Young Lives sample confirms some factors already evident from other nationally representative surveys and provides evidence of less-known aspects. On the one hand, it shows that differences in children's nutritional trajectories between urban and rural areas are defined during the first months of life. It also shows some evidence of catch-up growth in urban children, possibly mediated by access to key private and public assets. These results highlight again the importance of investing in early childhood.

Our results also shed some light on less-explored dimensions of children's well-being. For instance, there seems to be a gender dimension associated with pre-school enrolment and with changes in malnutrition during the first years of life. Disabled children are less likely to be enrolled in pre-school in urban areas. In addition, ethnicity is found to be a factor associated with children's own perception of subjective well-being even after controlling for a variety of other factors. While causality is not claimed in any of these results, we expect these initial findings will encourage researchers and policymakers to exploit the unique opportunity offered by the Young Lives project to study the causes and consequences of childhood poverty, in order to implement policies and practices to reduce it.

1. Introduction

About Young Lives

Young Lives is a long-term international research project investigating the changing nature of childhood poverty in four developing countries – Ethiopia, Peru, India (in the state of Andhra Pradesh) and Vietnam – over 15 years. This is the time frame set by the UN to assess progress towards the Millennium Development Goals. Through interviews, group work and case studies with the children, their parents, teachers, community representatives and others, we are collecting a wealth of information not only about the children's material and social circumstances, but also perspectives on their lives and aspirations for the future, set against the environmental and social realities of their communities. In Peru, Young Lives is known as Niños del Milenio.

We are following two groups of children in each country: 2,000 children who were born in 2001-02 and 1,000 children who were born in 1994-5. These groups provide insights into every phase of childhood. The younger children are being tracked from infancy to their mid-teens and the older children through to adulthood, when some will become parents themselves. When this is matched with information gathered about their parents, we will be able to reveal much about the intergenerational transfer of poverty, how families on the margins move in and out of poverty, and the policies that can make a real difference to their lives.

The longitudinal nature of the survey and our multidimensional conceptualisation of poverty are key features of Young Lives. Much existing knowledge about childhood poverty is based on cross-sectional data that reflect a specific point in children's lives, or relate to only one dimension of children's welfare. Children's own views on poverty and well-being are seldom explored. Research is rarely tied in a systematic way to investigation of broader societal trends or policy changes.

The potential of the project lies in its focus on tracking children's progress throughout childhood – over 15 years. We collect quantitative data and qualitative data at the individual, household and community level. Quantitative data are gathered through comprehensive surveys that include interviews with the children themselves as soon as they are old enough to participate directly, with their parents and caregivers, and with key community members (such as teachers, village elders or elected council representatives). Data are collected in each round on households' economic circumstances, livelihoods, assets and social capital. The questionnaires also collect evidence related to coping strategies such as migration, parental education and other experiences, child outcomes and the extent to which children and their parents and carers use services (e.g. health care, pre-school care or education programmes). In this way we can create a detailed picture of children's experiences and well-being linked to information about their households and communities and set within the national context. This provides us with data suitable for in-depth analysis of children's poverty and the effectiveness of government policies that concern their lives and well-being.

Young Lives is a collaboration between key government and research institutions in each of the study countries with the University of Oxford, the Open University, and the Institute of Education (London) in the UK, alongside the international NGO, Save the Children-UK.

The partners in Peru are the Instituto de Investigación Nutricional (IIN, the Institute for Nutrition Research), responsible for data collection and analysis, and the Grupo de Análisis para el Desarrollo (GRADE, the Group for the Analysis of Development), responsible for data management and analysis, including a small team who carry out our policy engagement and communications work in Peru. The first round of qualitative research in 2007 was led by Patricia Ames, a researcher from the Instituto de Estudios Peruanos contracted by GRADE.

About this report

This report presents initial findings from the second round of data collection which was carried out in late 2006 to early 2007. It does not aim to be a comprehensive overview of all the findings from Young Lives, rather it gives a broad view of some of the key indicators of childhood poverty and changes that have taken place in the children's lives between the first round of data collection in 2002 and this second round. Data are mainly presented for the entire age group cohort, in most cases separated into wealth groups or by rural/urban location. The full richness of the data is not reflected in this preliminary report, but we hope that it contains enough information to prompt other researchers, policymakers and stakeholders to start to engage with the data.

The report also gives an overview of further work in progress by the Young Lives team. This all serves to highlight various aspects of the broad research questions that Young Lives seeks to answer:

1. What are the factors that act on children's lives to either increase or reduce poverty and its effects?

2. What effects does poverty have on children, during childhood and into adulthood?

3. To what extent are current international and national policies effective in reducing childhood poverty in the study countries?

Young Lives uses an innovative methodology, with multi- and interdisciplinary research and a mix of qualitative and quantitative methods. While this report focuses on the quantitative data from the second survey round, it is important to note that its interpretation will be strengthened and complemented by analysis of the qualitative data.

Report structure

The next section of the report introduces Peru's socio-economic context and the policies that have affected children and childhood poverty over recent years. The third section gives an overview of the methodology used by Young Lives to collect quantitative data for Round 1 and 2 respectively. Greater detail is provided on the preparation and implementation of Round 2 data collection. Post-fieldwork operations such as data entering, cleaning, and archiving are also outlined.

The fourth section presents some preliminary analysis of data from the two survey rounds – both descriptive statistics and regression analysis – on several issues of interest. Indicators of child well-being including household wealth and consumption, health and nutrition, education and subjective well-being are examined. The factors behind these outcomes include a range of child, household and commune characteristics. A particular feature of this section of the report is the presentation of detailed findings on children's

nutritional status. Within Young Lives, this analysis is specific to Peru, firstly because chronic malnutrition is an issue of such concern in Peru, and secondly because we are fortunate that one of our research partners in Peru is a specialist at the nutrition research institute.

Although the analysis is preliminary it gives important insights into trends between the two rounds, key factors affecting children in Peru and the extent of inequalities between children of different groups. The analysis enables us to pinpoint policy implications for tackling childhood poverty as well as important and interesting avenues for future research.

2. Childhood poverty in Peru

2.1 Economic growth and poverty

In recent years Peru has experienced continued economic growth, at over 6 per cent GDP per year between 2002 and 2006 when the two Young Lives surveys were carried out. Inflation has remained below 2 per cent, while exports have grown by over 25 per cent per year. Table 1 shows the evolution of some key macro-economic indicators over the last 15 years.

Although this macro-economic performance is impressive, its effect on poverty reduction is disappointing. Monetary poverty continues to be very high, with almost half of the population living in poverty and one in six Peruvians living in extreme poverty (World Bank 2007).

Only in the last few years has poverty fallen slightly, from 48.6 per cent to 44.5 per cent between 2004 and 2006. However the reduction is almost entirely urban, while poverty in rural areas remains at the same levels despite the overall impressive macro-economic growth performance (see Figures 1 and 2).

Table 1. *Peru: main macro-economic indicators*

	Early 1990s	Late 1990s	Early 2000s
Real GDP Growth (per annum)	2.1	6.8	4.8
Trade Openness (X+M /GDP)	20.6	26.0	32.7
FDI Stock / GDP	4.0	13.1	19.4
Inflation (% per annum)	132.0	8.6	3.7
Poverty Rate	54.5	42.7	48.0
Extreme Poverty Rate	23.5	18.2	14.9
Inequality (Gini)	0.388	0.386	0.403

Source: Escobal (2007)

Figure 1. *Poverty rates in Peru (2001-06)*
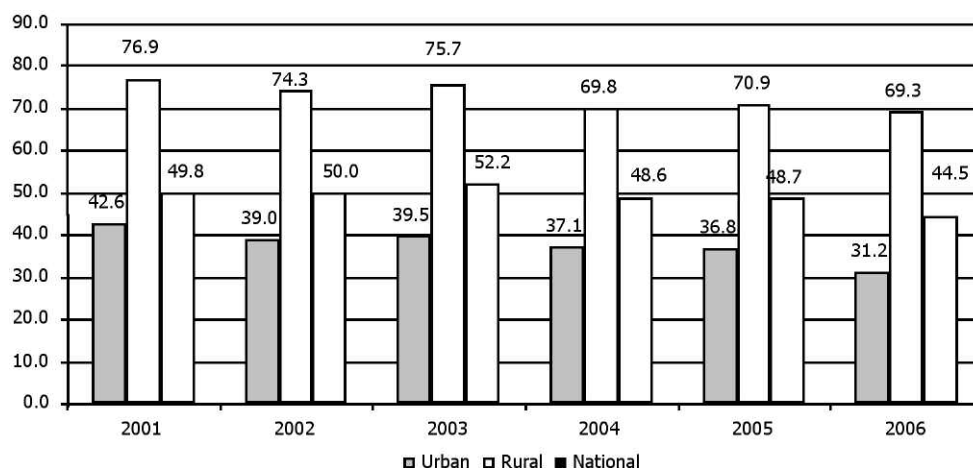
Poverty Rates between 2001-03 are not strictly comparable with the 2004-06 period

Source: World Bank (2007) based on INEI data

Figure 2. *Extreme poverty in Peru (2001-06)*
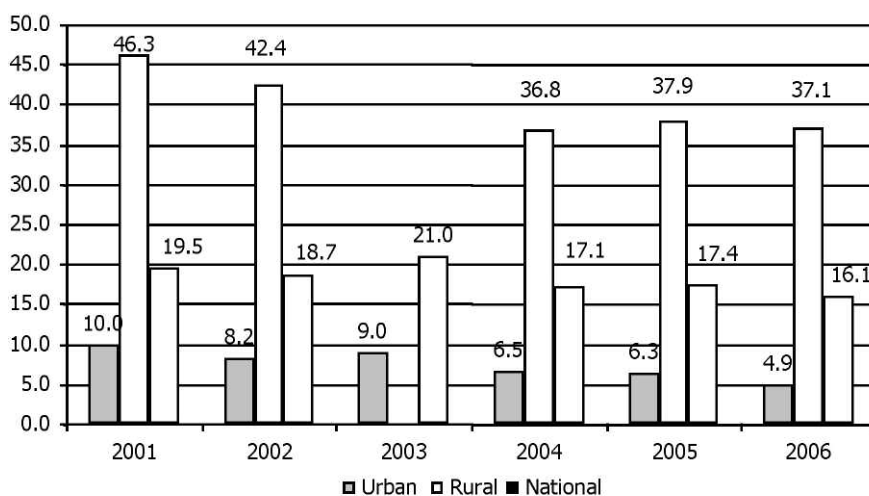
Poverty rates between 2001-03 are not strictly comparable with the 2004-06 period

There are no available data for the rural poverty rate in 2003

Source: World Bank (2007) based on INEI data

It is important to note that although the poverty rate for the total population was 44.5 per cent in 2006, 60 per cent of children under 5 were living in poor households. Similarly, 58 per cent of children aged between 6 and 11 years live in poor households.

2.2   Child-focused policies

There is an increasing awareness of the importance of early childhood in the policy agenda in Peru, with several recent initiatives introduced to promote children's well-being. A National Plan of Action for Children and Adolescents (PNAI 2002-2010) was introduced in 2002 (building on the previous Plan of Action for Children), involving several different Ministries and monitored annually with a report from the Prime Minister to the Congress. The *Mesa de Concertación de Lucha contra la Pobreza* (MCLCP, Roundtable for the Fight Against Poverty) has acknowledged early childhood as a priority and demanded more funding for health and education. The National Agreement (*Acuerdo Nacional*, a long-term plan for the economic and social development of Peru agreed by political parties and civil society organisations) has included these demands, acknowledging that attention to early childhood is necessary to reduce poverty and achieve equality of opportunity without discrimination (state policies 10 and 11).

In the education sector, a new General Law of Education was approved in 2003 that includes pre-school as part of basic education, thus making it free and compulsory. A National Plan of Education for All (2004) was approved following the international agreements at Jomtien and Dakar. Also in this period and for the first time, a National Education Project (2006-2021) was produced by the National Council of Education and approved as state policy in 2007. The National Education Project stresses the need to implement specific educational policies to contribute to the development of early childhood and identifies issues of equity and quality as the main challenges to Peru's education system. This profuse body of laws and norms constitutes a positive context to address childhood poverty issues, although implementation and action need to be monitored closely.

2.3   Social expenditure and child well-being

Social expenditure has been rising steadily over recent years, not only in absolute terms but also as a percentage of GDP, in a context where GDP has also been growing steadily (see Table 2).

During the last decade, the Ministry of Health's objective was to increase its coverage throughout the country. As a consequence, the number of health centres increased from 4,561 in 1990 to over 8,000 in 2005. During the same period, infant and child mortality rates fell substantially and the percentage of children fully vaccinated increased from 57.7 per cent in 1990 to 66.3 per cent in 2000. The Ministry of Education had already achieved a good primary school enrolment rate (91 per cent by 2002), and while that rate remains at 93 per cent, pre-school enrolment has increased substantially (from 52 per cent in 2002 to 59 per cent in 2006). Secondary school enrolment levels are less substantial but still growing (from 70 per cent to 72 per cent by 2006). Despite this increase and the generally high enrolment rates, it must be noted that there is still a high proportion of children out of school, especially at the pre-school and secondary level. Children being over-age for their grade is also a widespread phenomenon (PREAL-GRADE 2006; Unidad de Estadística Educativa, MED 2007).

Despite the increases in budget allocated to social expenditure in general and to child-related expenditure in particular, profound inequalities persist. As can be seen in Table 3, the infant mortality rates within the poorest 20 per cent of the population are 4.5 times higher than for the richest 20 per cent of families. Even higher inequalities can be found in under-5 mortality rates, stunting and wasting. Similarly, pre-school absenteeism is 2.5 times higher in the poorest quintile compared to the richest quintile. For the 6- to 11-year-old age group, inequalities are also reflected in school absenteeism and involvement in paid labour activities.

Table 2. *Social public expenditure (as a percentage of GDP)*

	1997 Real	1998 Real	1999 Real	2000 Real	2001 Real	2002 Real	2003 Real	2004 Real	2005 Real	2006* Real
I. Education	2.53	2.65	2.96	2.87	2.88	3.04	3.11	3.00	3.06	3.07
II. Health	1.27	1.34	1.39	1.35	1.37	1.45	1.51	1.50	1.52	1.67
III. Social protection	3.41	3.37	3.89	3.92	4.02	4.10	3.82	3.90	3.89	3.76
A. Pension	2.52	2.65	2.93	3.16	3.25	3.35	3.17	3.10	3.18	3.08
B. Social protection net	0.88	0.74	0.96	0.76	0.77	0.75	0.65	0.76	0.71	0.68
B.1 Food programmes	0.40	0.56	0.41	0.40	0.48	0.43	0.39	0.40	0.37	0.31
B.2 Temporary work	–	–	–	–	0.05	0.14	0.11	0.06	0.06	0.07
B.3 Social funds	0.48	0.38	0.55	0.36	0.24	0.18	0.15	0.30	0.24	0.24
IV. Other social expenses										
B.4 Conditional cash transfers									0.04	0.06
TOTAL	7.21	7.36	8.24	8.14	8.27	8.59	8.44	8.40	8.47	8.50

*Estimates based on historic growth

Sources: World Bank (2007) based on INEI; SIAF-DNPP; Pronamachs; PRONAA; PAAG (MINSA); BCRP; Perú en Números 1997-2004

Table 3. *Child well-being indicators by age groups and quintiles (in percentage points)*

Age Group	Indicators	Q1 Poorest	Q2	Q3	Q4	Q5 Richest
0 - 5 years	Infant mortality rate	64	54	33	27	14
	Under-5 mortality rate	93	76	44	35	18
	Stunting (chronic malnutrition (H/A))	47	31	17	7	5
	Global malnutrition (W/A)	15	7	3	2	1
	Pre-school absenteeism	61	8	39	29	25
6 - 11 years	School absenteeism	11	7	5	3	3
	Child paid labour (10-11 years)	53	26	19	15	9
12 - 16 years	School absenteeism	26	18	14	8	8
	Late school enrolment	33	27	19	11	7
	Child paid labour (12-14 years)	53	26	19	15	9

Notes: Infant mortality rate and under-5 mortality rate are the number of deaths per 1,000 live births. The stunting rate is the number of children under 5 whose height-for-age is less than -2 SD (z-scores). The global malnutrition rate is the number of children whose weight-for-age is less than 2 SD (z-scores).

Source: World Bank (2007) based on 2000 DHS and 2003 LSMS data

Moreover, the increase in social expenditure has not necessarily been allocated to improve the quality of services. Thus, in the case of education for example, much of the increase was directed to teachers' salaries with little or no investment in other needs. Learning outcomes therefore persist at low levels and with profound inequalities and have not improved in the last decade. For example, the most recent evaluation by UNESCO for Latin America shows that across five tests of reading, mathematics, and science, Peru is the country with the largest gap between urban and rural students. In Peru rural students tend to be poorer and more likely to be raised in an indigenous language and culture (UNESCO 2008).

Regional inequalities in child well-being indicators are also visible when we compare indicators across administrative regions (*Departamentos*). For example, according to UNICEF's *The State of the Child in Peru* (2008), the gap in well-being between poor regions like Huancavelica, Cajamarca, Apurimac or Ayacucho and better endowed areas like Tacna, Tumbes, Moquegua or Lima is very high (see Figure 3).

In Panel 3.1 in Figure 3 we can see that the likelihood of births not being attended by a trained health worker is 12 times more likely if the mother lives in a poor region rather than Lima. Similarly, Panel 3.2 shows that chronic malnutrition rates for children under 5 are 5 times higher if the child lives in a poor region than if the child lives in a richer area. If we look at late school enrolment (Panel 3.3), the rates are 4 times higher for children in poor regions. Finally, access to piped water and sanitation facilities (Panel 3.4) is 10 times less likely if the children live in a poor area (typically the highlands or Amazon areas) than if they live in the richer coastal regions.

Figure 3. *Regional inequalities in key child well-being indicators*

Deliveries not attended by trained personnel
(2004-2006)

Chronic Manlutrition for Children under 5 years

Late School Enrolment for Children in the 6-11 years age range

Children Under 11 years of Age without Access toPiped Water and Sanitation Services
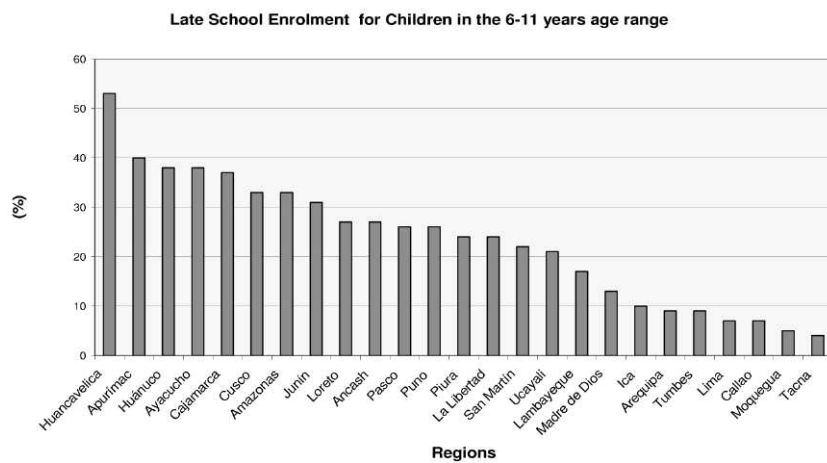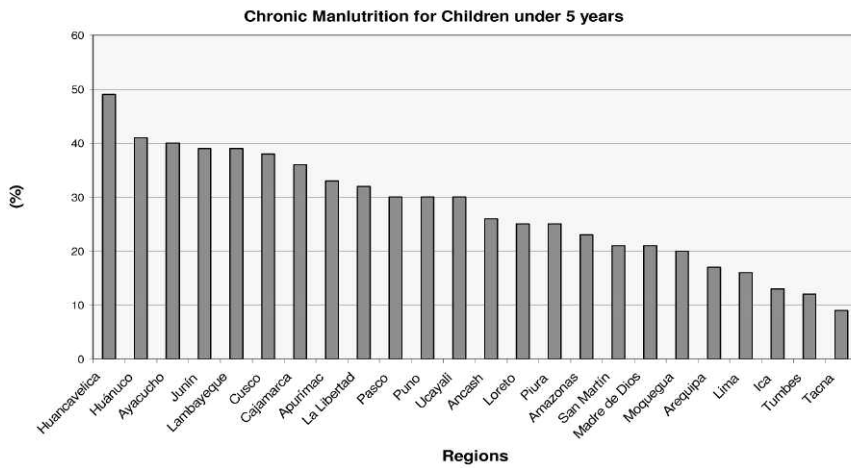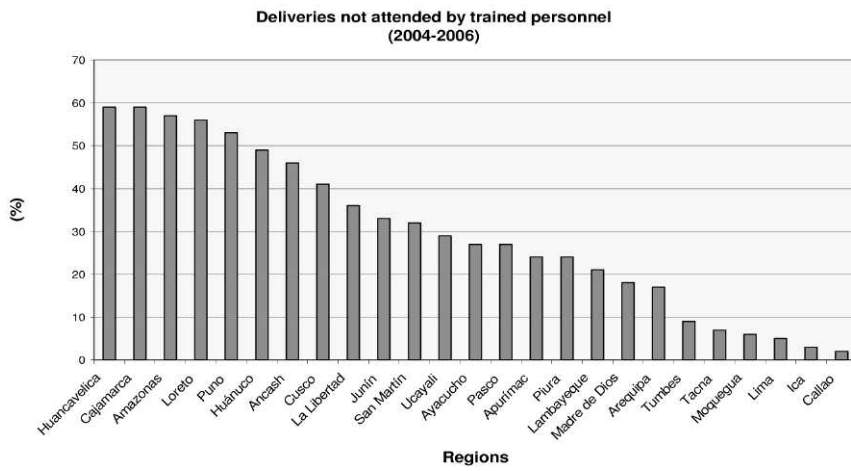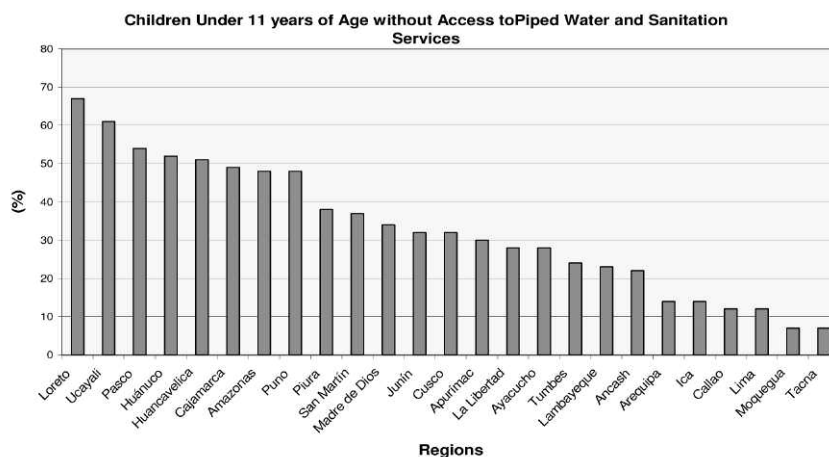
Source: UNICEF (2008)

2.4 Empirical research on childhood poverty

Most of the recent, quantitative, research into childhood poverty in Peru has focused on schooling and nutrition outcomes. As mentioned above, inequalities remain a problem despite considerable progress in access to health and education. Here we briefly mention some of the key issues related to chronic malnutrition and progress through school (particularly, the incidence of over-age children in each grade).

In the recent literature about stunting, mother's level of education and household income are found to have a strong, positive impact on nutrition.[1] No trace of gender bias is found, but an ethnicity gap affecting indigenous children (i.e. non-Spanish speakers) remains, even after controlling for other contextual characteristics, which suggests the persistence of social exclusion. Evidence for the nutritional effect of access to public services and health care is less clear. The effect seems to vary by area of residence. For instance, Valdivia (2004) finds that the expansion in health infrastructure during the 1990s had a positive effect on nutrition for children in urban areas, but not in rural areas. Similarly, Cortez (2002) finds that the effect access to sanitation and piped water has on nutrition varies between urban and rural areas. An important suggestion by Escobal et al. (2005) is that the impact of access to basic services on nutrition might differ according to the education level of the mother.

It is also noteworthy that large-scale public food programmes are not found to have a nutritional impact on children, which might be due to a variety of reasons. But there are some (relatively) new initiatives in progress (e.g. Crecer established in 2007 or Juntos established in 2005) whose impact on nutrition and other dimensions of child development is yet to be evaluated.[2]

With regards to schooling, recent research has focused on identifying the factors which influence school achievement and on understanding the high rates of overage and school dropout that prevail, especially in rural areas.[3, 4] Overage means that the student is above the age-norm for his/her grade and is a consequence of late enrolment, repetition and

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1. See Escobal et al. (2005), Valdivia (2004) and Cortez (2002).

2. See Sanchez (2008) for a review of the literature on nutrition in Peru.

3. See Cueto (2007) for a meta-analysis of the literature on factors associated with school achievement.

4. For recent studies on overage and school abandonment, see Cueto et al. (2005), Lavado and Gallegos (2005) and Cueto (2004).

temporary absenteeism. Factors associated with overage and school drop-out rates are numerous. On the one hand, secondary schools are few and far between in rural areas and bilingual education in primary school is still relatively scarce. School characteristics differ greatly between urban and rural areas and between private and public schools, with students from private or urban schools more likely to perform better.[5]

School quality certainly plays a role as suggested by recent studies,[6] but household and child characteristics also matter. Over-age students generally come from relatively poor households with less-educated mothers. They have poorer nutrition and are more likely to drop out of school than on-age students (Cueto 2004, 2005). As with nutrition, an ethnicity gap has also been identified, with children of indigenous mothers being more likely to be over-age.

Although school dropout is strongly related to overage, it has causes of its own (Cueto 2004). As children grow older, they are required to become more involved in paid work and domestic activities, so are more likely to drop out. Drop-out rates are high for adolescents (both boys and girls) in rural areas, but adolescent girls are most affected.

5. The socio-economic level of the school is a robust correlate of school achievement in many studies (Cueto 2007).

6. Cueto (2004) and Cueto et al. (2006) show that there is a clear link between the use of time in the classroom, the type of exercises solved by students, and their performance.

3. Methodology

Young Lives is designed as a panel study that will follow 3,000 children in each country over 15 years. In Peru the sample consists of two cohorts: a younger cohort of 2,000 children who were aged between 6 and 18 months when the first survey round was carried out (in 2002) and an older cohort of 860 children then aged between 7.5 and 8.5 years.

The children were selected from 20 sentinel sites that were defined specifically in each country. The concept of a sentinel site comes from health surveillance studies and is a form of purposeful sampling where the site (or cluster, in sampling language) is deemed to represent a certain type of population or is expected to show early signs of trends affecting those particular people or areas. For example, monitoring a typical slum in a given city may detect events and trends which will have an impact on most slums in that city.

The first round of data collection took place in 2002, and this report gives an initial analysis from the second round of data collection in 2006. In each case, the child's caregiver was interviewed as well as the older cohort of children (the younger children were still too young in 2006, being aged 5). The height and weight of each child was measured and a community-level questionnaire was completed for each sentinel site to give contextual information about the children's lives and facilities available to them.

3.1 Young Lives sampling strategy

The Young Lives sampling strategy was based on randomly selecting 100 children within 20 'clusters' or geographic sites. This strategy was conceived as a way of looking at 'mini-universes' in which detailed and reliable data were collected in order to build up a picture of the area covered by the site, as well as tracking changes in these variables over time. Further, it was decided to over-sample poor areas, excluding rich areas from the sampling frame (Wilson et al. 2003: 11).

The idea of looking at the heterogeneity of children living in poverty rather than at national average statistics made the project move away from a random clustered sampling approach. Thus the project was framed in the following terms: 'Young Lives is intended much more as an in-depth study of relationships between pieces of information, rather than an instrument to collect national statistical results, such as is the requirement from the more traditional systems' (Wilson et al. 2003: 13).

The Peru team followed a three-stage approach to sampling.

1. First the country was divided into equal geographic regions by population size using available data. These clusters were ordered by a poverty index and were systematically sampled randomising the starting place. The most recent poverty map of the 1818 districts in Peru at that time (FONCODES 2000) was used to select the 20 sentinel sites. Factors which determine the ranking of districts included infant mortality, housing, schooling, roads and access to services. To achieve the aim of over-sampling poor areas, the 5 per cent of districts ranked highest were excluded enabling a systematic selection of the remaining districts, yielding approximately 75 per cent of sample sites considered to be 'poor' and 25 per cent to be 'non-poor'. Districts were listed according to population size. A random starting point was then selected and a systematic sample of districts taken using the population list.

Ten selection runs were made by computer and the resulting sample of districts was examined for coverage of the issues above such as rural/urban/peri-urban and jungle areas and for logistical feasibility.

2. Second, a random population centre (i.e. village or hamlet) was chosen within the district. The maps of census tracts for the selected population centres were obtained from the national statistics institute (INEI), after which a census tract was randomly selected. Within each chosen census tract, the number of *manzanas* (street blocks) was counted and, again using random number tables, one was selected as the starting point.

3. Finally, the selected block was assigned to one fieldworker and neighbouring blocks assigned to the other fieldworkers (one each). All dwellings in each block or clusters of houses were visited to search for children of the right age. On completion of one block, the next available neighbouring block was visited by the fieldworker until the required number of children was found.

All districts were ranked according to the poverty index. Since all districts were divided into equal population groups before sampling the 20 clusters, we can contend that each district had a probability of being selected that was proportional to its population size.

Non-response rate

At initial enrolment, only 88 children had to be replaced as their caregivers did not want to participate in the survey (53 refusals for the younger cohort and 35 in the older cohort). This is equivalent to a non-response rate of 3.2 per cent, which, to all intents and purposes, is very modest.

The project visited a total of 36,375 dwellings to enrol 2,751 children. Although this may seem high, we estimated (using the Peru population census information) that we would need to visit 13 dwellings to enrol one child of the right age. This is about the same ratio reported for our enrolment procedures.

3.2 Data collection in Round 2

Most of the second round of data collection was carried out between November 2006 and May 2007 (with some of the children who had migrated from their original sites being interviewed between June and July 2007).

Sample attrition occurs when children who were surveyed in Round 1 were either not found or refused to participate in Round 2. Young Lives, like all longitudinal surveys, is concerned to minimise the potential of attrition bias, which occurs when attrition is non-random and the variables affecting attrition might be correlated with the outcome variable to be studied. We have taken care to ensure that we can track as many children as possible between the survey rounds to minimise the risk of dropout.

As Outes-Leon and Dercon (2008) report, attrition rates for Peru are low: 3.52 per cent between rounds for both the younger and older cohort. This is attrition of 0.72 per cent per year which is the lowest we know of compared to similar studies. Attrition in Peru is slightly higher than that in the other Young Lives countries, first because the Peru sample is geographically more dispersed, and second as migration is higher in Peru than in the other countries.

It is interesting to note that if we use the unweighted sample, Young Lives households appear to be better-off than the national average for some socio-economic indicators. Nevertheless, and crucially, the Young Lives sample of households covers a wide range of wealth index values, akin to the variability observed in Peru's population as a whole. However if we adjust the estimations for the sample design, the distribution is statistically indistinguishable. Further, comparisons with the National Survey of Living Standards' poverty rates for 2001 (ENAHO) appear to imply that Young Lives households are more likely to be poor but these differences are statistically insignificant.

Round 2 questionnaire: structure, development and differences from Round 1

The information recorded in the child, household and community questionnaires is described in Table 4. Table 5 describes the country-specific topics that were covered in Peru only.

Table 4. *Main areas in Young Lives questionnaires (Round 2)*

Child questionnaire (8-year-old children)	
Section 1	School and activities
	1a Child's schooling
	1b Child's time use
Section 2	Child health
Section 3	Social networks, social skills and social support
Section 4	Feelings and attitudes
Section 5	Parents and household issues
Section 6	Perceptions of the future, environment and household wealth
Section 7	Child development

Household questionnaire

Section 1   Parental background

              1a General questions

              1b Mother's migration background

Section 2   Household education

Section 3   Livelihoods and asset framework

              3a Land and crop agriculture

              3b Time allocation of adults and children

              3c Productive assets

              3d Earnings (income) from agricultural
                  and non-agricultural activities

              3e Transfers, remittances and debt

Section 4   Household food and non-food consumption and expenditure

              4a Expenditures on foods bought, supplied from
                  own sources and own supplies

              4b Other expenditures – non-food items

              4c Food security

Section 5   Social capital

              5a Support networks

              5b Family, group and political capital

              5c Collective action and exclusion

              5d Information networks

Section 6   Economic changes and recent life history

Section 7   Socio-economic status

Section 8   Child care, education and activities

Section 9   Child health

Section 10   Anthropometry

Section 11   Caregiver perceptions and attitudes

              11a General

              11b Mother's health

              11c Child's perceptions about his/her development

Community questionnaire

Module 1	General module
Section 1	General community characteristics
Section 2	Social environment
Section 3	Access to services
Section 4	Economy
Section 5	Local prices
Module 2	Child-specific module
Section 1	Educational services (general)
Section 2	Child day-care services
Section 3	Educational services (pre-school, primary, secondary)
Section 4	Health services
Section 5 –	Child protection services

When we compare the questionnaires for Round 1 and Round 2, we see that several topics were added as appropriate to the children's age and that some aspects that were not important in Round 1 were important for Round 2. For example, child's schooling and child's time use were added for the younger cohort. Similarly, questions regarding maternity and breastfeeding practices were no longer relevant in Round 2.

In addition to the core modules, the Peru research team added a number of lines of country-specific enquiry. A migration module was added to cover the migration history of the children's mothers as we expect this to be a critical element in explaining child-rearing practices and their impact on child well-being. The fact that many of the mothers come from areas deeply affected by Peru's internal conflict in the 1980s and 1990s needs to be explored further as it may capture elements related to the intergenerational transmission of poverty.

The questionnaire also included a food security module to assess how perceptions may affect livelihood strategies. The Peru team also considered that it was important to research how credit and liquidity constraints may hinder human capital investments, again affecting the intergenerational transmission of poverty. Thus several questions related to access to different types of credit and risk aversion were included. We expect that this will allow us to construct indicators of credit constraints that may explain livelihood strategies adopted by families and children.

Table 5. *Topics included in Peru questionnaires only (both cohorts)*

1. Mother's migration history
   - Community of origin
   - Communities of transition before the current community
   - Reasons why she moved from / returned to the community
   - Educational level reached when moved from/returned to the community

2. Livelihoods and asset framework
   - Income in kind: Donated food

   Organisation from which it was received

3. Credit constraints
   - Any household member had ever applied for a loan
   - Reasons for not applying
   - Had received the loan
   - Perception of maximum credit line
   - Risk aversion
   - Perceptions surrounding financial decisions

4. Food security
   - Type of food ingested in the past year
   - Existence of food shortage in the past year
   - Main reasons for the food shortage
   - Frequency of nourishing /eating patterns
   - Use of community kitchens (reasons for attending)
   - Use of 'Vaso de Leche' (school nutrition programme), (reasons for attending)

5. Social capital
   - Access to Internet service

6. Maternal mental health
   - SRQ20 questions

7. Others
   - GPS of dwellings

Piloting, translation, fieldworker training

Round 1 data collection took place between August and December 2002, with field teams consisting of a supervisor, a data entry clerk, and six interviewers who carried out the sampling, enrolled families and conducted the interviews. Following evaluation of the process, we realised that we had underestimated the difficulties faced by the supervisors who had multiple tasks and roles making it difficult to maintain the integrity of the group. At that time we were forced to make changes during the course of data collection and despite the overall successful completion of Round 1, we felt we needed a new approach for Round 2.

As a result, we decided to put special emphasis on the selection and training of the supervisors. We designed a process that would build on good practice from other projects to be sure we would select the right people for the job and lay good foundations for their training. We found little published literature to help us with this so based our programme on our own combined experience in psychological assessment and preparing teams for other projects with IIN.

Through intensive role-playing, a reasonably good level of standardisation was achieved. A paper entitled Selection and Training of Supervisors for Fieldwork: Experiences from the Young Lives Study in Peru (Oré et al. 2007) documents the process. We know of no other publication that specifically addresses the selection and training of leaders or supervisors for community field research or similar situations involving autonomous groups working as a team and adhering to rigorous quality control while confronting varied and challenging circumstances.

We also developed two levels of back translation to ensure the accuracy and consistency of the questionnaires. First, the questionnaires were translated from English into Spanish, and then back to English to ensure that the right question is actually being asked and the core questions are comparable across countries. In addition, back translation was also used to ensure that the questions were consistent between Spanish and local languages (in particular Quechua).

Data quality and archiving

Once the questionnaires were collected from the field we conducted five levels of data quality checks at various stages of the programme in an effort to reduce error rates. The first was a verification of the questionnaire. The data management team developed a check list (in close coordination with the research team) that identified areas where general mistakes could be made during data collection. We used these check lists to check the questionnaires for inconsistencies and completed any missing information with a standard coding scheme for Missing or Not Applicable. Once each questionnaire was verified, a data entry assistant keyed the data into a pre-designed database. The databases were built with validation rules to limit the types of data that can be entered, thus further cleaning the data. Each questionnaire was entered twice into two separate databases and once data entry was completed, a double data entry comparison was run using Epi-Info. Epi-Info automatically generates a report outlining instances where data varies between questions in the databases. We worked with the international standard of 1 per cent as an acceptable error rate. Our error rate to date is 0.4 per cent, well below the accepted norm.

Young Lives is committed to the widest possible dissemination of our research, including public archiving of the data to enable policymakers and other researchers to benefit from this unique longitudinal survey.

The anonymised data from the Round 1 quantitative survey is archived in the UK with the Economic and Social Data Service (project reference: SN 5307).[7] The Round 2 dataset will be deposited with ESDS in late 2008, and both datasets will be available on CD-rom for users in developing countries.

Sampling weights

Although the sampling strategy used in Peru followed the general principles laid out by the project, there were some important differences that affect the way the sample relates to those in the other countries (Escobal and Flores 2008).

As we have mentioned, since all districts were divided into equal population groups before sampling the 20 clusters, we can conclude that each district had a probability of being selected that is proportional to its population size. Further, all census tracts within a cluster and all dwellings within a census tract had the same probability of being selected. Finally, the probability of sampling a child of the required age is proportional to the average number of children of that age in each of the districts. Considering this, expansion factors for this sample can be obtained as follows:

$$f_{\exp} = \frac{Pop_T}{Pop_{d_i}} * \frac{NHou_{e_i}}{NChild_{d_i}}$$

Where Pop_T is the total population in the country; Pop_{d_i} is the total population in the selected district; $NHou_{e_i}$ is the number of eligible households in the district i; and, $NChild_{d_i}$ the number of children in the sample of the district i.

Table 6 summarises the characteristics of the selected sentinel sites: their poverty index, poverty ranking, actual population (based on 2005 census information), number of eligible households per cluster, the number of children elected and the respective expansion factor that can be used in the analysis. Taking into account the different size of each district, sampling units within each sentinel site show quite diverse weighting factors given the different proportion of children under 1 year old in each sampled district.

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7. http://www.data-archive.ac.uk/findingData/snDescription.asp?sn=5307.

Table 6. *Characteristics of districts sampled in Young Lives in Peru*

District	Region	Poverty Index	Poverty classification	Population	No. of eligible households	Number of children selected	Expansion factor
1	Tumbes	15.07	Regular	90,625	5,350	100	522
2	Piura	21.08	Poor	22,279	1,462	100	580
3	Piura	38.43	Very poor	11,564	523	101	392
4	Amazonas	32.99	Very	7,697	478	101	538
5	San Martín	30.25	Very poor	16,194	1,237	101	662
6	San Martín	16.28	Regular	66,997	3,045	102	386
7	Cajamarca	22.35	Poor	141,588	7,950	107	434
8	La Libertad	20.35	Poor	124,766	7,070	102	482
9	Ancash	26.05	Poor	9,585	476	103	414
10	Ancash	17.97	Regular	55,732	2,306	105	332
11	Huánuco	42.69	Extremely Poor	10,773	757	101	609
12	Lima	14.60	Regular	713,018	39,943	100	495
13	Lima	17.81	Regular	380,480	21,245	102	475
14	Lima	14.24	Regular	324,107	18,205	103	468
15	Junín	27.41	Poor	24,376	1,839	105	605
16	Ayacucho	35.50	Very poor	7,392	1,064	108	1091
17	Ayacucho	23.00	Poor	17,068	1,052	102	524
18	Apurimac	28.99	Poor	15,282	1,099	105	577
19	Arequipa	19.12	Regular	10,329	310	102	255
20	Puno	23.12	Poor	189,275	10,150	102	456
Total				2,239 127	125,561	2,052	

Sources: FONCODES 2000 and INEI 2006

If we compare the unweighted and weighted Young Lives samples with the Peru Demographic and Health Survey (DHS) we find that while both cover the whole asset distribution, the weighted sample fits the national distribution more closely. This pattern is depicted in Figure 4 for the unweighted sample and in Figure 5 for the weighted sample.

Figure 4

Asset Distribution in YL and DHS Samples
(Unweighted - National level)

Figure 5

Asset Distribution in YL and DHS Samples
(Weighted - National level)
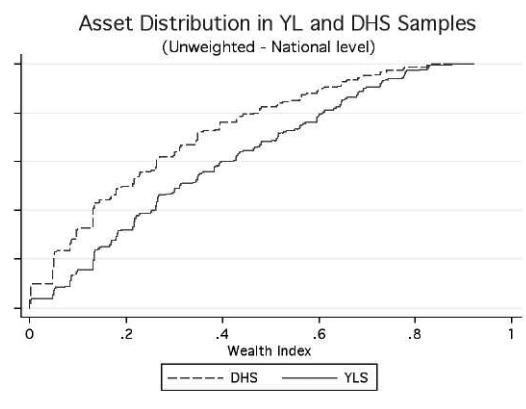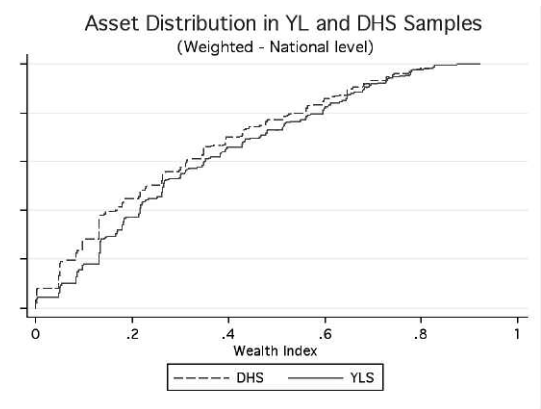
Source: Young Lives Round 1 data and DHS 2000

4. Aspects of poverty for Young Lives children

Young Lives seeks to improve understanding of the causes and consequences of childhood poverty. Preliminary analysis of the data from Rounds 1 and 2 addresses the following questions:

- How has child well-being changed over time?

- What are the determinants of child outcomes such as nutrition, school enrolment, child labour and subjective well-being?

- Are characteristics such as parental poverty, rural location, ethnicity and gender important determinants of child outcomes and therefore causes of inequality?

These three questions are the basis for this section, which proceeds thematically. Firstly, trends and patterns in indicators of household wealth, expenditure and poverty are examined. Then patterns in and determinants of nutrition, education, child labour and subjective well-being are analysed.

The section presents descriptive statistics, for both cohorts, from both rounds. These statistics illustrate the prominent changes and trends in the sample as well as disparities by income, location, ethnicity and gender. Econometric results from Ordinary Least Squares (OLS)[8] and Probit[9] regressions for child outcomes are also presented. Regression analysis has the benefit of incorporating multiple relevant variables at the same time, giving a better understanding of the processes at work. For example, a regression analysis makes it possible to consider whether parental education has an impact on child nutrition separately from its indirect effect via household income.

It is important to note that no causality is claimed in this report. This requires more careful in-depth study, which is already in progress as Young Lives moves forward.[10] However, this preliminary work highlights interesting trends and correlations that will be a basis for future investigation.

It is also important to note that in many instances we will be looking at children at two different points in their growth cycle (i.e. children aged 5 and children aged 12). Such comparisons need to be carefully assessed since the widening of a particular gap (e.g. malnutrition levels) may be the result of a process that started even before Round 1 data were collected and cannot be used as an indicator of what is happening in the country to children of that age. The best way of looking at the dynamics that the Young Lives data offer is to show how gaps are widening or narrowing for specific groups of children in

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8. A regression (equation) is an equation representing the relation between values of one variable (x) and observed values of the other (y). A regression equation permits the prediction of the most probable values of y given the observed values of x. A commonly used form of regression is Ordinary Least Squares, which is suitable for use when the outcome variable, y, is continuous, such as a child's height or weight. The coefficients from an OLS regression can be interpreted as the marginal effects of the corresponding variables.

9. OLS is not suitable when the outcome variable can only be one or zero, such as whether or not a household is in poverty. In this case a probit or logit model is usually preferred. A coefficient from a probit regression cannot be interpreted as the marginal effect of the corresponding variable because the marginal effect depends on the value of the dependent variable. But it can be calculated for a particular value of the dependent variable. In this report marginal effects are calculated and reported at the mean value of the dependent variable.

10. For example, forthcoming working papers will examine the impact of family migration history on child welfare outcomes (Escobal), the relation between food acquisition, animal source foods and stunting (Penny), and early nutrition and cognitive achievements in rural Peru (Sanchez). See reference list for further topics to be covered.

comparison to the overall sample. Of course the above caveat, valid when following a particular cohort through their lives, also applies – although not as strongly – when looking at changes in the socio-economic conditions of households over time, particularly if we acknowledge that at any given period different families will be at different stages of the life cycle.

With this in mind, we first present results for the younger cohort (aged 5 to 6 at the time of data collection) related to household well-being, nutrition and educational outcomes. We then present a similar analysis for the older cohort (aged 12 to 13), extending the analysis to include child labour and subjective well-being indicators. In both cases, regression analysis is used to assess how robust the relationships are between changes in child well-being and child and household characteristics, once we control for contextual characteristics.

4.1 The Younger Cohort

4.1.1 Wealth, consumption expenditure and poverty

Objective indicators of poverty for households in the younger cohort are presented in Table 7a. Measures used include consumption-based indicators, value of assets owned by the household and a measure of prosperity (wealth index) that reflects the welfare of the household in terms of housing, use of durable goods and access to public services (represented as a value between zero and one, with a higher value reflecting higher household wealth).[11] For each indicator we present averages for those children from Round 1 who were also interviewed in Round 2 (the panel sample).[12] The consumption and asset value measures are valued in the local currency (Soles).

Overall, results show an improvement in all aspects of household well-being – the wealth index, per capita and real per capita consumption, and the assets value at median prices from one round to another.[13] The pattern of improvement is similar to the one found in national statistics with well-being indicators improving during this period. It is interesting to note that when we look at the assets (valued at median Round 1 prices) a pattern of asset accumulation emerges.

Table 7a also shows that 80 per cent of Young Lives children live in absolute poverty. Poverty rates were calculated comparing the per capita household expenditure with the official poverty line produced by INEI. The lines differ depending on whether the household is urban or rural, its region (of the 24 administrative Departamentos) and geographic location (northern, central and southern coastal regions; the highlands; the Amazon regions; and metropolitan Lima). The poverty rates among the Young Lives sample are found to be so high because of the pro-poor sampling strategy we adopted, where the wealthiest 5 per cent of households were excluded, as were those without children of the appropriate age. In addition it is important to highlight that since the sample focuses on families with at least one child of the targeted age groups, poverty rates will typically be much higher when compared to the national poverty rate reported in Table 3 (44.5 per cent).

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11. See Escobal et al. (2003) for a full definition.

12. As mentioned above, Outes-Leon and Dercon (2008) show that the attrition rate between rounds has been very low by international standards. They conclude it is unlikely that attrition will lead to a bias in the results as few systematic differences are found between attritting and non-attritting households.

13. For the consumption-based indicators, we should recognise that there is a possible bias here as all the families in Round 1 had a small infant who would not have eaten much but is counted in the per capita estimate.

Table 7a. *Indicators of poverty (Younger cohort)(1)*

Variables	Round 1 (Panel)	Round 2	Change between Rounds(1)
Absolute poverty (% living below poverty line)	–	80.3%	–
Wealth index	0.39	0.41	5.2% (**)
Consumption per capita (food)	62.81	102.6	41.1% (***) (2)
Real per capita consumption (food)	69.58	106.5	48.7% (***) (2)
Asset value at median prices (12 assets)	759.2	883.7	16.4% (*)
Asset value at median prices (22 assets)	850	1073	26.2% (***)
Number of responses (N)	1963		

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

Table 7b reports households' feelings about poverty. Consistent with the previous results, 37 per cent declared that they 'manage to get by', a 9.8 point increase from Round 1, while those feeling they were poor or destitute had decreased considerably (from 32 to 22 per cent).

Table 7b. *Household perceptions of poverty (Younger cohort)*

Variables	Round 1 (Panel)	Round 2	Change between Rounds(1)
Perception in the household			
Can Manage to get by	27.2%	37.0%	9.8%
Poor/Destitute	32.2%	21.9%	-10.3%
Number of responses (N)	1963		

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

Table 8a presents indicators regarding poverty status and access to public services. It shows a significant improvement in access to services such as electricity and sanitation facilities of about 10 percentage points in both cases. However, if the sample is divided by area of residence (Annex 2), it is clear that most of the improvements are found in urban areas, reflecting national trends.

Table 8a. *Poverty and differences in access to public services (Younger cohort)*

Variables	Round 1 (Panel)	Round 2	Change between Rounds(1)
Absolute poverty (% living below poverty line)	–	80.3%	–
Relative poverty	–	13.2%	–
% of children living in households in the lowest wealth index quintile (WI<0.2)	25.7%	26.5%	0.8%
Access to electricity	59.4%	69.9%	10.5% (***)
Access to water piped into the dwelling	75.1%	84.1%	9.0% (***)
Access to safe drinking water (public net)	–	77.0%	–
Sanitation facilities (flush toilet and/or septic tank)	38.0%	42.0%	3.9%

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

As noted above, poverty rates in the Young Lives sample are clearly higher than those reported in the national statistics. Table 8a shows that the percentage of Young Lives children living in households in the lowest wealth index quintile (WI below 0.2) remains about the same as in Round 1 (26 per cent), suggesting that the reduction in poverty seen in Peru since 2001 (Figure 2 above) was unequally distributed and that families with children the age of our cohort did not experience the same improvements as the rest of the population.

Table 8b reports access to public services separately for households below and above the poverty line in Round 2. Due to different data collection methods in Rounds 1 and 2, changes in consumption[14] (which we use to identify a household as poor in monetary terms) could not be compared at this point and further analysis is needed to assure compatibility of consumption estimates. However, the table confirms that inequalities in access to basic services between poor and non-poor households are profound, with less than two-thirds of poor households having access to electricity, and only a third having access to sanitation.

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14. Used as an approximate variable to measure the individual's status above or below the poverty line.

Table 8b. *Access to public services by poverty level (Younger cohort)*

Variables	HH below poverty line	HH above poverty line
Access to electricity	65.0%	90.3%
Access to water piped into the dwelling	82.3%	91.2%
Access to safe drinking water (public net)	74.7%	86.7%
Sanitation facilities (flush toilet and/or septic tank)	34.9%	70.7%

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

4.1.2 Nutrition

Malnutrition is another dimension of childhood poverty. For analysis of nutrition, we focus on height-for-age and to a lesser extent on weight-for-age measures. Low height-for-age, or stunting, is regarded as a measure of chronic malnutrition, while low weight-for-age is a measure of global less specific undernutrition. The definition of stunting is the incidence of child height-for-age z-scores more than two standard deviations below the median of the WHO reference population.[15] Based on the WHO 2006 standard, 37 per cent of the younger cohort were chronically malnourished in Round 2 (Table 9).

Table 9. *Chronic malnutrition (Younger cohort)*

Variables	Round 1 (Panel)	Round 2	Change between Rounds
Chronic Malnutrition (OMS 2006)	30.9%	37.4%	6.5% (***)
Number of responses (N)	1963		

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%
(1) T-test adjusted for sample design

As mentioned above, we are interested in highlighting the different evolution of sub-samples over time. In particular, we look at how nutritional trajectories (as measured by height-for-age) differ by area of residence, mother's education level and by access to basic services. By doing this, we intend to highlight how well-being paths may differ because of structural differences or because of potential policy interventions.

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15. The WHO reference population was purposely designed to reflect the growth curve of healthy children living in conditions adequate to fulfill their genetic growth potential. For details of the current WHO standard, see Annex 3.

We find important differences in children's nutritional status when we divide the sample by area of residence. Within this, further differences are apparent between sub-groups according to mother's education level and access to public services. Such distinct patterns are a clear example that changes in child well-being over time are strongly mediated by key private assets (like education) or different access to public services (like electricity, safe water or proper sanitation facilities).

Figure 6 shows how height-for-age z-scores vary with age and by area of residence. The horizontal axis represents the children's age in months and the vertical axis is the associated length/height for age.[16] Each point represents the average length/height z-score of children at a given age. The zero line represents the WHO standard. Observations for children aged 6 to 18 and 53 to 73 months (4.5 to 6 years) correspond to measurements from Rounds 1 and 2 for the younger cohort, respectively. In addition, length at birth is also included in the graph (the two points on the vertical axis) as reported by caregivers of the same children in Round 1.

The first aspect to observe in this graph is the difference in average length at birth in urban and rural areas. This is reported data and there are a large number of missing values, nevertheless it can be seen that there is already a small difference at birth, with rural children being shorter. The graph also shows the expected growth retardation between the sixth and the eighteenth month of life. In both rural and urban areas children at 18 months are about 1 standard deviation of median length for age below the 6-month-old children. The retardation in rural areas parallels urban areas but shows a greater degree of stunting.

Figure 6. *Differences in the average z-score (± 95% confidence interval) of height-for-age (younger cohort) by month of age and by area*

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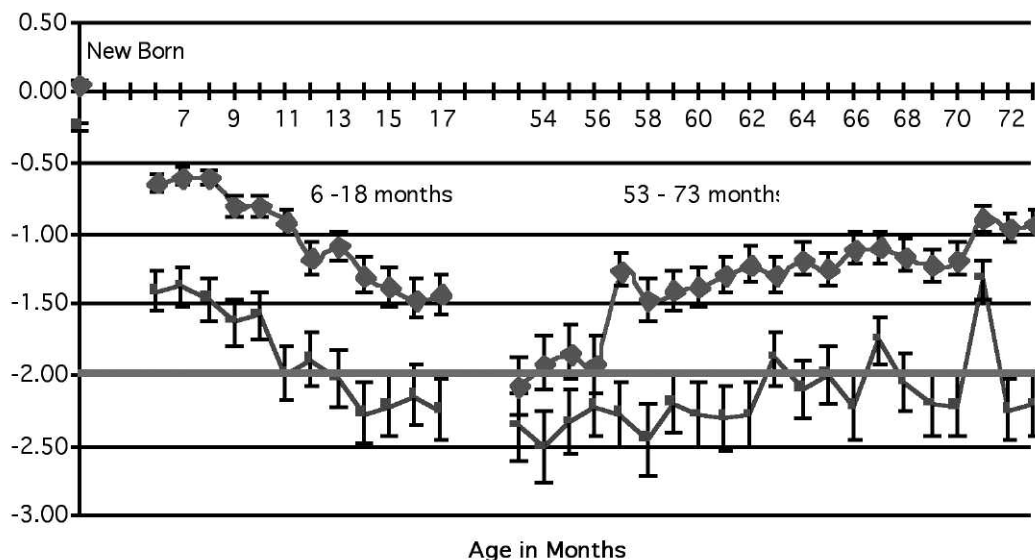
16. Under 24 months, a child's length is measured. For children over 24 months, height is reported.

An interesting pattern emerges, that to our knowledge has not been recognised before, the gap between rural and urban children, present at birth, opens up even more between 0 and 6 months but then remains constant. This suggests that the measure of inequality is due to events before 6 months after which both urban and rural children suffer alike.

During the period between survey rounds (from 18 months to 53 months), for which we have no measurement, it appears that there has been further growth retardation, especially in the urban areas. Height-for-age data for children aged 53 to 73 months (in Round 2) show another interesting phenomenon. There appears to be 'catch up' in the urban children such that the 6-year-olds are about 1 standard deviation less stunted than the 4.5-year-olds in the same area of residence. This is not seen in the rural children. Future analysis will probe individual growth between Rounds 1 and 2 and explore this apparent catch-up.

Figures 7 to 10 show how the length/height deviates from the expected growth trajectory for both boys and girls in Round 1 and Round 2. The graphs show the fitted values (or the expected average) for length (cm) in Round 1 and height (cm) in Round 2. The graphs show the median height-for-age for the WHO reference population as well as the upper and lower boundaries (± 2 standard deviations). It can be clearly seen that the Young Lives children fall well below the expected average. The shaded area indicates the range of variation within our sample.

Figure 7. *Distribution of fitted values for height of boys from the younger cohort (by months of age in Round 1 and area of residence)*
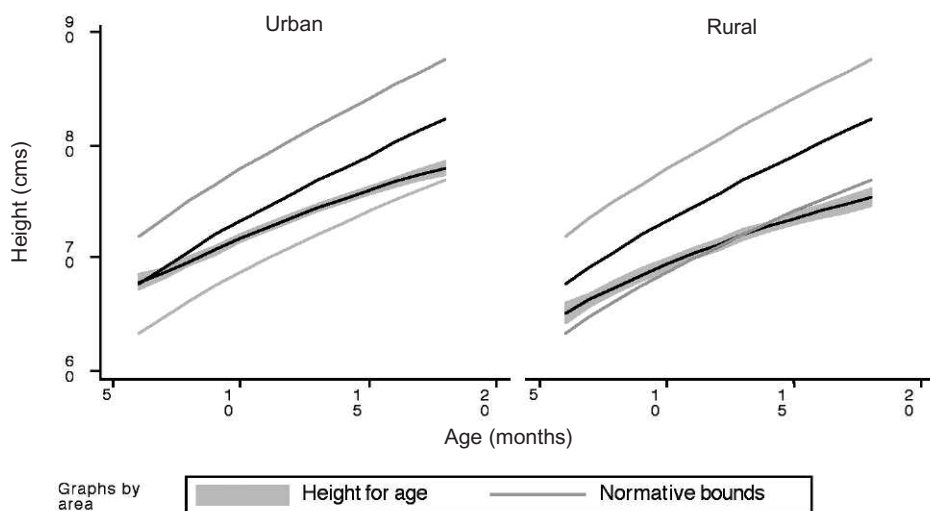
*Upper and lower limits stand for ±2 standard deviations

Figure 8. *Distribution of fitted values for height of boys from the younger cohort (by months of age in Round 2 and area of residence)*
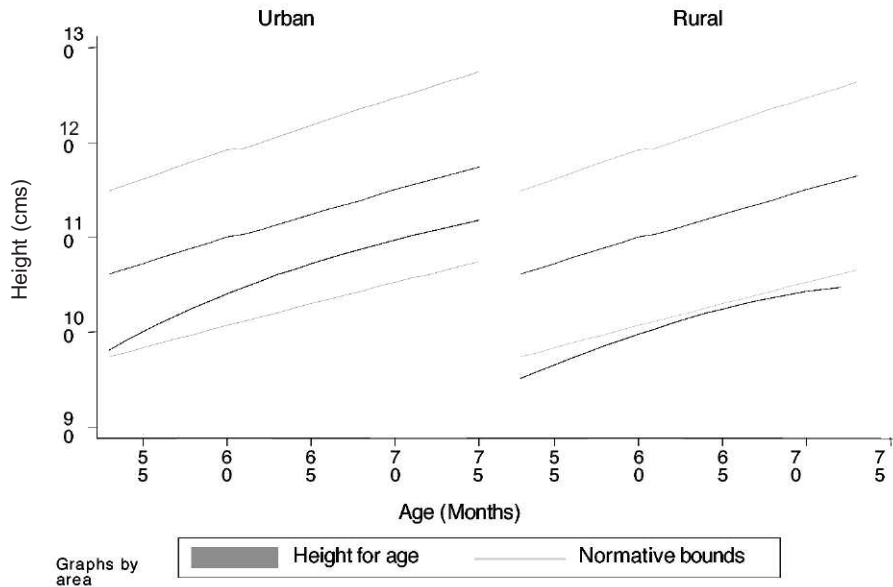
*Upper and lower limits stand for ±2 standard deviations

The graphs depicted in Figure 7 show length for Young Lives boys compared with the WHO reference population and provide more insight into sub-groups of the younger cohort children divided by urban and rural residence. Here it is apparent that rural boys are shorter than their urban peers at every age, and by 18 months the rural boys are on average less than 2 standard deviations from the norm. This means that by 18 months more than half of the rural children are stunted. Interestingly, the difference in height between urban and rural boys remained much the same between 6 and 18 months, suggesting that both are showing growth retardation to a similar extent.

Figure 8 shows the same figures for the same cohort in the second round of data collection, when the boys were aged between 53 and 73 months. As shown in Table 9, stunting increased from 31 per cent to 37 per cent in the younger cohort during this period. As expected, the average height for boys in the younger cohort remains below the WHO international standard, and the difference between urban and rural boys is maintained. However, it is interesting to note that the fitted value of height for boys suggests that there is some catch-up growth in the urban children, which is less evident in rural boys.

Figure 9. *Distribution of fitted values for height of girls from the younger cohort (by months of age in Round 1 and area of residence)*
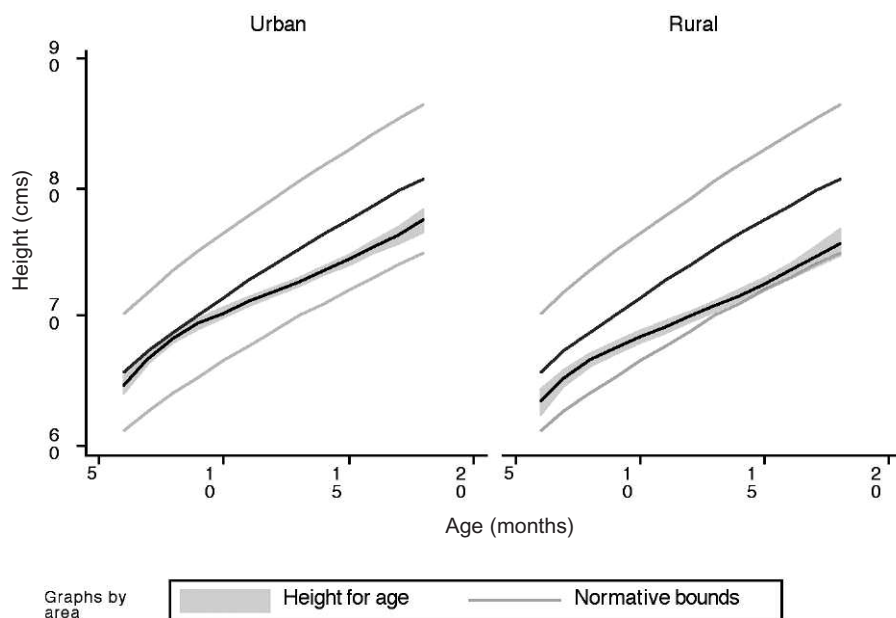
*Upper and lower limits stand for ±2 standard deviations

Figure 10. *Distribution of fitted values for height of girls from the younger cohort (by months of age in Round 2 and area of residence)*
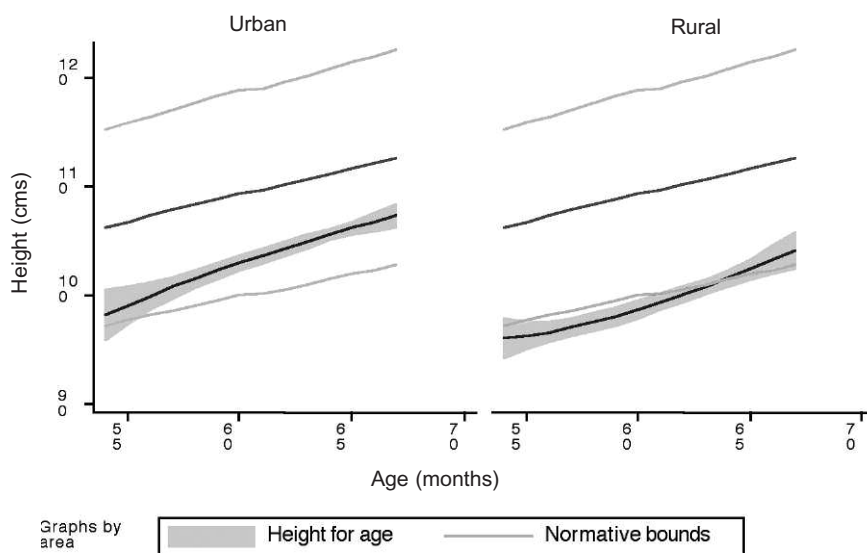
Figures 9 and 10 show the evolution of this same indicator for girls. Here we see the same pattern as for boys in both urban and rural areas, although it seems that the marked departure from the growth curve occurs a few months later in girls in both urban and rural areas.

How do these changes in child growth differ between those having more access to key private assets like education or improved access to public services like electricity, drinkable water or sanitation? Figures A.1 and A.2 in Annex 4 show height for the sample restricted to those that have access to electricity, for girls and boys, respectively, compared to WHO standards. Figures A.3 and A.4 show these curves restricted to those that have access to improved sanitation facilities; again for girls and boys respectively.

It seems that children who have improved access to public services have greater chances of the catch-up we noted previously. This is reasonably clear for urban areas and, in the case of improved sanitation facilities, is true even in rural areas. The mean height of the urban sample that has access to electricity is always above the -2 standard deviation boundary whereas average height of rural children hardly reaches this level. In urban areas, where there is greater access to sanitation facilities, there also seems to be some evidence of catch-up growth.

Figures A.5 to A.8 in Annex 4 further divide the urban and rural sub-samples according to mother's educational level. When we look at urban children and compare nutritional trajectories of those whose mothers have no education with those whose mothers have completed at least secondary school, we observe that the latter group tends to be taller, although there are few mothers in urban areas with no education. In the case of rural areas there is little evidence of catch-up for either boys or girls, regardless of mother's education level.

4.1.3 Regression analysis

Building on the above analysis, in this section we first look at changes in nutrition scores between rounds for the younger cohort using linear regressions (Tables 10, 11 and 12). Outcome variables in this case are height-for-age z-scores (associated with stunting or chronic malnutrition) and weight-for-age z-scores (associated with underweight or global malnutrition). In addition, a non-linear regression (probit analysis) is used to identify factors associated with the probability of being stunted. As before, anthropometric indicators are calculated using the new WHO (2006) growth standards.[16]

The estimations control for child-, parent- and household-specific characteristics as well as context or community characteristics. To reduce the risk of potential endogeneity bias (which would lead to incorrect inferences of causality), we have used Round 1 characteristics in these profiles. Thus, we are evaluating how Round 1 characteristics are correlated with changes in child well-being between Rounds 1 and 2. Characteristics we consider include gender, birth weight, age of the child when interviewed in Round 1, and whether the child was ever breastfed. Parental characteristics include: mother's age, education, health (proxied by Body Mass Index), and presence of the father. Household characteristics are controlled using the wealth index (i.e. capturing key variables associated with socio-economic status, consumer durables, and construction and availability of services in the family's home).

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17. The estimations shown here were replicated using the previous WHO growth standard to assure the robustness of the results. Potential discrepancies associated with the methodology change in international standards used by WHO are explored in further detail in Annex 3. Despite this change, results of malnourishment proved to be reasonably robust between both methodologies, thus the profiles presented show the results for the new standard.

For these regressions, we controlled for a diverse array of community (district) characteristics such as access to electricity, paved roads, school facilities etc. As an alternative to controlling for all these variables, one may control for community effects using an aggregate index of district wealth. For this we may use the FONCODES poverty index produced by the Ministry of Women and Social Affairs.[18] As mentioned previously, this index was the one used in the sampling methodology to select Young Lives sites as it reflected the relative socio-economic status of Peru's districts. It is itself comprised of an array of variables related to access to services (health facilities, classrooms, population with access to piped water, sanitation facilities and electricity), road accessibility, school attendance, and child malnutrition.[19]

Table 10 also shows that changes in z-scores are correlated to child, household and community characteristics (the higher the score the greater the improvement in nutritional status). Birth weight and child's age are, as expected, strong correlates. It was less expected to find a gender dimension in these results, with boys more likely to increase their scores between rounds (hence improving their nutritional status) compared to girls. This gender gap should be explored further in future research.

Table 10. *Association between child, household and context characteristics and changes in z-scores between rounds for nutrition indicators (changes in height-for-age and weight-for-age z-scores)*

	Height for age	Weight for age
Index child is a boy	0.2515***	0.3703 ***
	(0.0594)	(0.0508)
Lives in a rural area	-0.1445	0.1293
	(0.0947)	(0.0772)
Birth weight (kgs)	-0.0004***	-0.0001**
	(0.0000)	(0.0001)
Age in months (Round 1)	0.0956***	0.0525 ***
	(0.0108)	(0.0074)
Child was ever breastfed	-0.2886	-0.3226*
	(0.2334)	(0.1621)
Mother's age in years (Round 1)	0.0083*	0.0068*
	(0.0040)	(0.0034)
Mother's years of education (Round 1)	0.0023	0.0060
	(0.0090)	(0.0064)
Mother's Body Mass Index (BMI) (Round 1)	-0.0802	0.0277
	(0.0509)	(0.0364)
Mother's Body Mass Index (BMI) squared (Round 1)	0.0017*	0.0006
	(0.0009)	(0.0006)

18. It is important to note that the FONCODES Index is a poverty index and not a welfare index. As such it gives lower values to the wealthiest districts and higher values to the poorest districts.

19. The reported results are from estimates controlling for district characteristics. These results are very similar to the ones we obtain if district characteristics are replaced by the FONCODES Index. This alternative estimation is available upon request.

	Height for age	Weight for age
Father was mentioned in the household roster (Round 1)	0.0905 (0.0974)	0.0656 (0.0538)
Wealth index (Round 1)	0.2969 (0.1922)	0.2674 ** (0.1090)
Days passed since interviewed in Round 1	0.0010** (0.0004)	-0.0004 (0.0004)
% Malnourished population (6-9 years old) (Round 1)	2.0241*** (0.5035)	-0.2315 (0.4462)
No. of classrooms in the district (Round 1)	-0.0002*** (0.0000)	-0.0001** (0.0000)
Index of road inaccessibility	-0.0887** (0.0319)	0.0300 (0.0261)
% Population without access to electricity	-0.3944* (0.2008)	-0.2581 (0.1591)
Constant	-1.2842 (0.9789)	0.4253 (0.8682)
Valid Cases (N)	1677	1678
F-Test	0.00	0.00
R-squared	0.1640	0.0907

(1) Standard errors adjusted for 20 clusters

(2) Standard errors in parentheses

(3)* Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

Tables 11 and 12 present profiles for urban and rural areas in order to evaluate possible structural differences between them. It is important to note that gender plays a significant role in both estimations. However for urban areas the gender gap is larger for global malnutrition (weight-for-age) than it is for stunting. In rural areas the gap is similar for both indicators. Additionally, as expected, weight at birth and age in months when interviewed in Round 1 are key factors to be taken into account when evaluating the change between levels of z-scores for malnourishment (weight-for-age) and stunting (height-for-age). The mother's health status (proxied by Body Mass Index) appears significant in both urban and rural areas, despite the fact that it was not significant overall.

Table 11. *Association between child, household and context characteristics and changes in z-scores between rounds for nutrition indicators in urban areas (changes in height-for-age and weight-for-age z-scores)*

	Chronic Malnutrition – Stunting (H/A)	Global Malnutrition (W/A)
	WHO 2006	WHO 2006
Index child is a boy	0.2254** (0.0815)	0.3668*** (0.0631)
Birth weight (kgs)	-0.0004*** (0.0001)	-0.0001** (0.0001)
Age in months - Round 1	0.0907*** (0.0127)	0.0532*** (0.0066)
Mother's age in years – Round 1	0.0077 (0.0059)	0.0029 (0.0037)
Mother's years of education – Round 1	0.01 (0.0091)	0.0166** (0.0075)
Mother's Body Mass Index (BMI) – Round 1	-0.0995* (0.0540)	-0.0449 (0.0294)
Mother's Body Mass Index (BMI) squared – Round 1	0.002** (0.0009)	0.001* (0.0005)
Father was mentioned in the household roster – Round 1	0.1354 (0.1242)	-0.0442 (0.0453)
Wealth index - Round 1	0.1671 (0.2118)	0.1998 (0.1319)
Days passed since interviewed in Round 1	-0.0001 (0.0007)	-0.0011** (0.0005)
Poverty Index by FONCODES 2000	0.0084 (0.0100)	-0.0087 (0.0076)
Constant	0.9256 (1.6748)	1.4464 (1.0650)
Valid Cases (N)	1176	1177
F-Test	0	0
R-squared	0.1246	0.0913

(1) Standard errors adjusted for 20 clusters

(2) Standard errors in parentheses

(3)* Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

Table 12. *Association between child, household and context characteristics and changes in z-scores between rounds for nutrition indicators in rural areas (changes in height-for-age and weight-for-age z-scores)*

	Chronic Malnutrition – Stunting (H/A)	Global Malnutrition (W/A)
	WHO 2006	WHO 2006
Index child is a boy	0.3798***	0.3827***
	(0.0857)	(0.0877)
Birth weight (kgs)	-0.0003***	-0.0001
	(0.0001)	(0.0001)
Age in months - Round 1	0.1126***	0.0516**
	(0.0143)	(0.0167)
Mother's age in years – Round 1	0.0115*	0.0158**
	(0.0061)	(0.0049)
Mother's years of education – Round 1	0.0142	-0.0044
	(0.0316)	(0.0087)
Mother's Body Mass Index (BMI) – Round 1	0.095	0.2129
	(0.1615)	(0.1365)
Mother's Body Mass Index (BMI) squared – Round 1	-0.0016	-0.0046*
	(0.0032)	(0.0025)
Father was mentioned in the household roster – Round 1	0.0868	-0.0974
	(0.1400)	(0.1867)
Wealth index - Round 1	0.549	0.3565
	(0.5937)	(0.3360)
Days passed since interviewed in Round 1	0.0014**	-0.0002
	(0.0005)	(0.0006)
Poverty Index by FONCODES 2000	-0.0028	0.0073
	(0.0111)	(0.0105)
Constant	-4.6294**	-3.5265**
	(2.0089)	(1.5266)
Valid Cases (N)	503	503
F-Test	0	0
R-squared	0.1887	0.0941

(1) Standard errors adjusted for 20 clusters

(2) Standard errors in parentheses

(3) *Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

Table 13. *Chronic malnutrition (stunting) – Probit Estimates (Round 2)*

	Stunting – (H/A)		
	Urban Area	Rural Area	Total
Index child is a boy	-0.0872	0.0046	-0.0392
	(0.0778)	(0.1117)	(0.0609)
Lives in rural area - Round 2	-	-	0.2729***
	-	-	(0.0919)
Age in months - Round 2	-0.0099	-0.0390**	-0.0203*
	(0.0137)	(0.0166)	(0.0118)
Child has a disability - Round 2	1.0331***	0.4608	0.8373***
	(0.2754)	(0.3738)	(0.2458)
Child was ever breastfed	0.4002	-	0.3787
	(0.4637)	-	(0.4485)
Mother's age in years - Round 2	0.0054	-0.0087	-0.0010
	(0.0063)	(0.0108)	(0.0060)
Mother's years of education - Round 2	-0.0640***	-0.0579***	-0.0576***
	(0.0093)	(0.0198)	(0.0095)
Mother's Body Mass Index (BMI) - Round 2	0.1014	-0.1798	0.0399
	(0.1070)	(0.1947)	(0.0979)
Mother's Body Mass Index (BMI) squared -Round 2	-0.0021	0.0034	-0.0009
	(0.0019)	(0.0037)	(0.0017)
Father was mentioned in the household roster - Round 2	0.0498	-0.2304	-0.0349
	(0.1058)	(0.1796)	(0.0905)
Wealth index - Round 2	-0.8306***	-0.2523	-0.7912***
	(0.1895)	(0.4128)	(0.1965)
Poverty Index by FONCODES 2006	0.5104**	0.0659	0.3981*
	(0.2175)	(0.3403)	(0.2134)
Constant	-1.0474	5.6872**	0.5963
	(2.0464)	(2.3869)	(1.9234)
Valid Cases (N)	1274	541	1815
Log- Pseudo Likelihood	-573.18	-349.30	-929.85
Pseudo - R2	0.1219	0.0423	0.1871

(1) Standard errors adjusted for 20 clusters

(2) Standard errors in parentheses

(3) *Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

Table 13 shows the factors associated with the probability of a child being stunted in Round 2, controlling for Round 2 characteristics. Again these characteristics include child-specific factors, parent and household characteristics as well as contextual characteristics proxied by the FONCODES poverty index at the district level. These profiles are estimated for the entire sample and for urban and rural areas. If we compare these estimates to those depicted in Tables 11 and 12, we can see that if we introduce a cut-off point to assess stunting it seems that there is no gender difference once we control for children, parents, household and contextual factors.

This table also shows that maternal education is a critical factor associated with the probability of being stunted, independent of poverty and maternal nutritional status. Considering that maternal education was not associated with changes in z-scores between rounds, we may hypothesise that it plays a critical role, especially in the first years of a child's life.

4.1.4 Education

Pre-school enrolment is high for the younger cohort (81 per cent), but several inequalities are evident. For example, 89 per cent of urban children are enrolled compared to 71 per cent of rural children. There is a slight difference in favour of boys (with 85 per cent enrolled compared to 82 per cent of girls), although this gender difference is greater in rural areas (76 per cent of boys compared to 70 per cent of girls). Differences according to language are stronger, however, with the Quechua and Aymara populations reporting pre-school enrolment rates that are 12 and 19 percentage points below the Spanish-speaking population. Other indigenous groups in the Amazon show the lowest enrolment (54 per cent) (Figure 11).

Figure 11. *Pre-school enrolment according to area of residence, gender and mother's language*
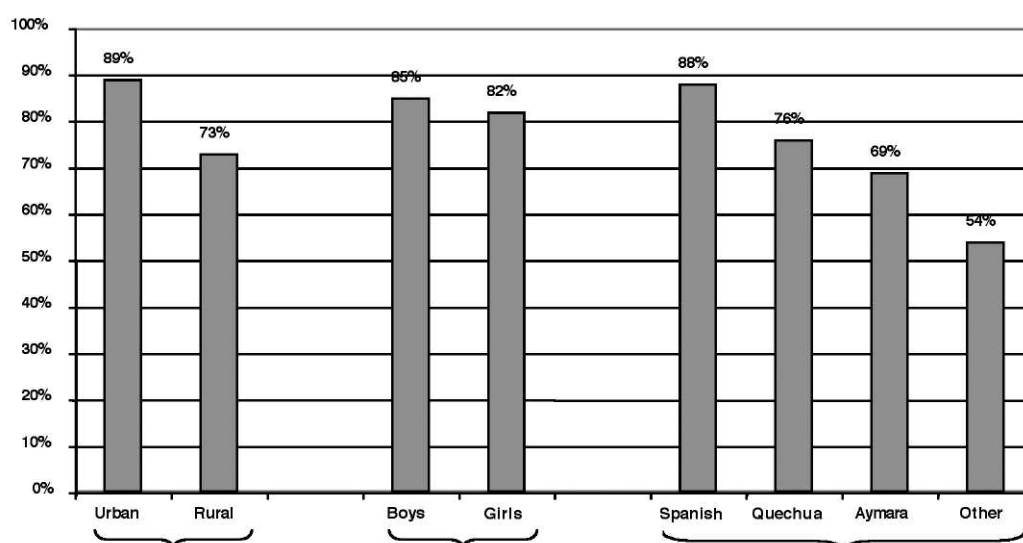
* Estimates do not account for sample design

Figure 12. *Pre-school enrolment according to wealth quintiles*
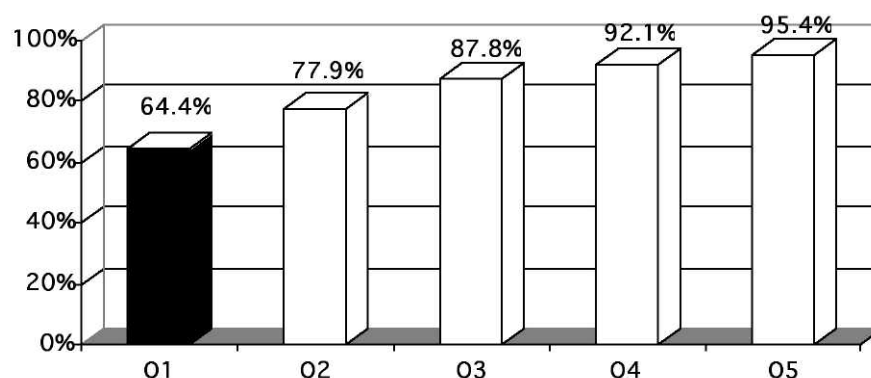
* Estimates do not account for sample design

We also find that among the poorest households 35 per cent of children do not attend pre-school compared to only 5 per cent in the richest quintile (see Figure 12). Thus, although average figures for pre-school enrolment are high, the figures mask inequalities between urban and rural areas and according to ethnicity and poverty level.

Qualitative sub-studies started in 2007 have included classroom observations and interviews with children about their experience of pre-school and school. These studies will complement the quantitative survey data and will include perspectives of parents, teachers and students regarding the availability and quality of early childhood education services, particularly in the transition from home or pre-school to primary school.

Table 14. *Pre-school enrolment* – Probit Estimates (Round 2)*

	Estimate of Pre-School Enrolment - Round 2 by Probit		
	Urban Area	Rural Area	Total
Index child is a boy	-0.0170 (0.0851)	0.1478 (0.1217)	0.0801 (0.0669)
Lives in rural area - Round 2	- -	- -	0.4853 *** (0.1858)
Age in months - Round 2	0.0703 *** (0.0113)	0.0235 (0.0229)	0.0510 *** (0.0121)
Child has a disability - Round 2	-1.2409 *** (0.3213)	-0.4238 (0.4984)	-0.8012 *** (0.2082)
Birth order in the family	-0.2173 *** (0.0478)	-0.0565 (0.0470)	-0.1126 *** (0.0347)
Mother's first language: Quechua	-0.0187 (0.3461)	0.1253 (0.3164)	0.0981 (0.2800)
Mother's first language: Aymara	-0.8966 *** (0.1873)	- -	-0.8566 *** (0.1986)

Estimate of Pre-School Enrolment - Round 2 by Probit

	Urban Area	Rural Area	Total
Mother's first language: Native Jungle	-0.5977** (0.2846)	-0.4219 * (0.2369)	-0.3744 * (0.2255)
Mother's age in years - Round 2	0.0311*** (0.0108)	-0.0059 (0.0169)	0.0115 (0.0107)
Mother's years of education - Round 2	0.0459*** (0.0141)	0.0268 (0.0300)	0.0431*** (0.0158)
Mother's Body Mass Index (BMI) -Round 2	0.2252** (0.1134)	-0.2896 (0.2652)	0.1321 (0.1124)
Mother's Body Mass Index (BMI) squared - Round 2	-0.0037 * (0.0021)	0.0061 (0.0051)	-0.0021 (0.0020)
Father was mentioned in the household roster - Round 2	0.1194 (0.2133)	0.3883*** (0.1462)	0.2387 (0.1555)
Wealth index - Round 2	1.9284*** (0.4846)	2.0459** (0.7902)	1.8922*** (0.4236)
Poverty Index by FONCODES 2006	0.4116 (0.3282)	-0.6536 (0.8066)	-0.0493 (0.3666)
Constant	-8.4798 *** (2.0372)	2.5324 (4.0513)	-5.6276 *** (1.9656)
Valid Cases (N)	1258	539	1799
Log - Pseudo Likelihood	-343.99	-275.54	634.81
Pseudo - R2	0.2644	0.1075	0.2076

*Defined as regular attendance at a pre-school centre since the child turned 3 years old

(1) Standard errors adjusted for 20 clusters

(2) Standard errors in parentheses

(3) *Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

In terms of the factors associated with the probability of a child attending pre-school (Table 14), it is interesting to note that children with disabilities are less likely to attend pre-school in urban areas, reflecting yet another dimension of the inequalities they face. Ethnicity (proxied here using mother's language) also reflects that some language groups (Aymara and native Amazonian) are either less likely to send their children to pre-school or there are no pre-school facilities in their area.

It is important to highlight that for the younger cohort pre-school enrolment seems to be biased in favour of children with more educated and wealthier mothers. Also, being the first-born and having the father present in the household increases the probability of pre-school enrolment.   Surprisingly, the parameter estimate associated with rural area becomes positive and significant which is counter-intuitive, especially because pre-school enrolment is higher in urban than rural areas, as we have already mentioned. This may reflect biases arising from the inadvertent omission of some variables from the estimation, so further investigation is clearly needed.

4.2   The Older Cohort

4.2.1   Wealth, consumption expenditure and poverty

Indicators of poverty for the older cohort show an overall improvement, similar to those observed in the younger cohort. Specifically, positive changes are reported for the wealth index, nominal and real per capita food consumption, as well as asset value indicators (see Table 15a).[20] There was also a slight improvement in the percentage of households reporting that they 'manage to get by' and a reduction in the number of households perceiving themselves as poor (Table 15b). However, differences are not statistically significant. In the case of assets (valued at median prices for Round 1) they show an increase, reflecting that there may have been some asset accumulation between rounds.

Table 15a. *Objective indicators of poverty (Older cohort)*

Variables	Round 1 (Panel)	Round 2	Change between Rounds (1)
Absolute poverty (% living below poverty line)	-	87.3%	-
Relative poverty	-	25.5%	-
% of Children living in households below 0.2 in the wealth index	25.0%	24.4%	-0.6%
Wealth index	0.36	0.37	4.3% (*)
Per capita food consumption	16.2	22.8	41.4% (**)(2)
Real per capita food consumption	18.3	24.2	32.5% (2)
Asset value at median prices (12 A)	471.7	589.6	25.0% (**)
Asset value at median prices (22 A)	604.8	764.8	26.6% (**)

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

20. As mentioned above the consumption and asset value measures are valued in the local currency (Soles).

Table 15b. *Household perceptions of poverty (Older cohort)*

Variables	Round 1 (Panel)	Round 2	Change between Rounds
Perception in the Household (2)			
Can Manage to get by	25.0%	27.4%	2.4%
Poor/Destitute	36.1%	28.5%	-7.6%

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Obtained from Section 6 Economic Changes in Household

In addition, there has been a significant general improvement in access to services such as electricity, piped water and sanitation facilities (Table 15c), again mirroring the results found for the younger cohort and confirming a national trend. Although there has been an overall improvement in socio-economic indicators, looking more closely, important inequalities prevail, notably in access to basic services between urban and rural areas (Table 15d). Of particular importance is the very low level of adequate sanitation facilities in rural areas.

Table 15c. *Access to services (Older cohort)*

Variables	Round 1 (Panel)	Round 2	Change between Rounds
Access to electricity	54.9%	64.8%	9.9% (***)
Access to water piped into dwelling	75.5%	83.1%	7.9% (**)
Access to safe drinking water (public net)	-	69.3%	-
Sanitation facilities (flush toilet or septic tank)	28.1%	34.3%	6.2% (**)

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

Table 15d. *Access to services (by area of residence): Round 2 (Older cohort)*

Variables	Urban	Rural
Access to water piped into dwelling	87.2%	79.6%
Sanitation facilities (flush toilet or septic tank)	60.2%	8.6%

4.2.2 Nutrition

As with the younger cohort, we focus here on chronic malnutrition (height-for-age z-scores) and look at how children's nutritional gap widens or narrows for specific sub-populations using Rounds 1 and 2 data.

Table 15e. *Chronic malnutrition rates (Older cohort)*

Variables	Round 1 (Panel)	Round 2	Change between Rounds
Stunting (height-for-age)	34.4%	41.8%	7.4% (**)

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%
(1) T-test adjusted for sample design

Table 15e shows that there has been an increase in stunting for the older cohort between rounds. This change is difficult to interpret without further information regarding the age the adolescent growth spurt begins in this population. Analysis of the results of the adolescent stage of development, using the silhouettes we introduced in the Round 2 questionnaire for self- and parental assessment, may throw more light on this.

Figure 13 shows that rural girls are more malnourished than their urban peers in Round 1 for the older cohort. Although there is much more variance in Round 2 (Figure 14), the gap persists. Possibly the timing of puberty may be responsible for this variability.

Figure 13. *Fitted values for height of girls from older cohort (by months of age in Round 1 and area of residence)*
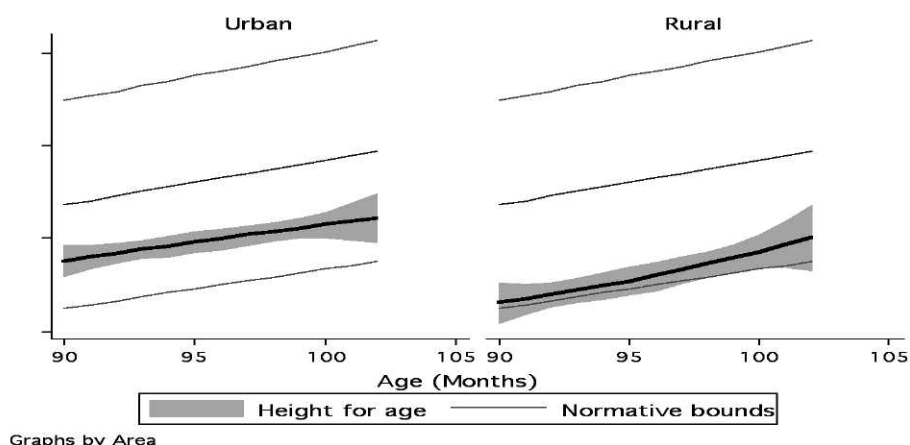
*Upper and lower limits stand for ±2 standard deviations

Figure 14. *Fitted values for height of girls from older cohort (by months of age in Round 2 and area of residence)*

*Upper and lower limits stand for ±2 standard deviations
Source: Young Lives Second Round Data

A similar difference in height-for-age can be found when we look at the trajectories of urban and rural boys (Figures 15 and 16). It appears from our data that urban boys show some catch-up in height, although again puberty may colour our conclusion. We will need to follow this closely in the next survey round and also when the younger cohort reaches this age to make our analysis more robust.

Figure 15. *Fitted values for height of boys from older cohort (by months of age in Round 1 and area of residence)*

*Upper and lower limits stand for ±2 standard deviations

Figure 16. *Fitted values for height of boys from older cohort (by months of age in Round 2 and area of residence)*
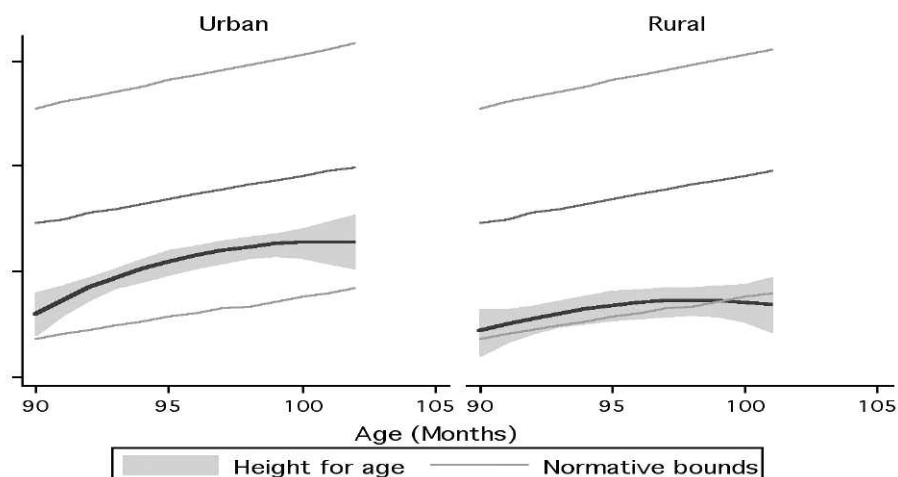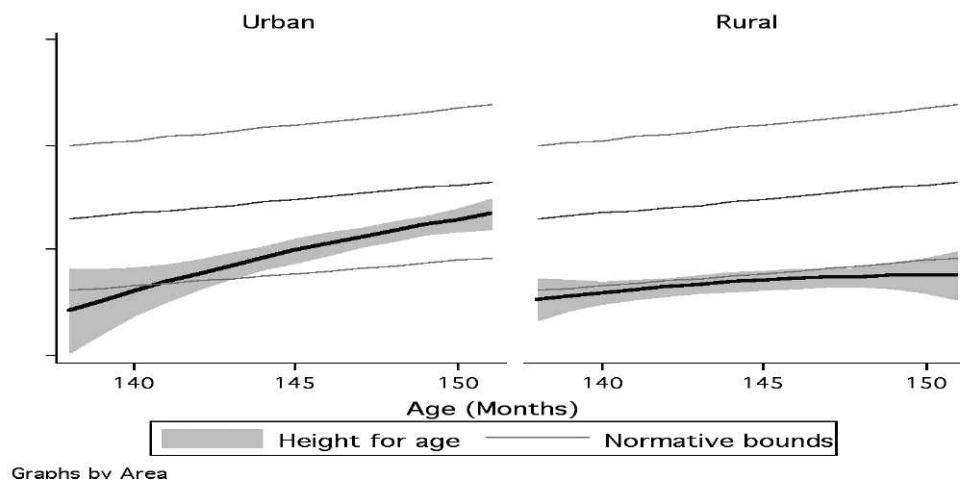
Graphs by Area

*Upper and lower limits stand for ±2 standard deviations

We can also explore the effect of accessing key public services on child malnutrition. Figures A.9 and A.10 in Annex 4 show the pattern of height-for-age for those girls and boys in households that have access to electricity. Again it is evident that the level of malnutrition is higher in rural areas. However it is also evident that there is a strong catch-up process for children in urban areas who have access to electricity. Once again this merits further analysis as the number of cases is reduced where we have further split the sample.

This same pattern is evident for boys in the older cohort who have access to sanitation facilities (Figure A.11 in Annex 4). The figures show that most of this improvement occurred in urban areas – which is consistent with the national trend – where the greatest reduction in poverty is found.

The urban sample reinforces evidence of the 'catch-up' process mentioned previously. In the rural sample, there is some evidence of deterioration in access to sanitation facilities, highlighting the inequality experienced by this part of the population.

4.2.3 Regression analysis

To assess the robustness of our previous analysis, we used regression techniques to look at factors associated with changes in malnutrition scores between rounds (Table 16) and with the probability of a child being stunted in Round 2 (Table 17). We control for child-, parent- and household-specific characteristics and context or community characteristics from Round 1 to reduce endogeneity bias (which would lead to incorrect inferences of causality). Results are reported for the whole sample and separately for urban and rural areas.

Table 16. *Association between child, household and context characteristics and changes in z-scores between rounds associated with chronic malnutrition (changes in height-for-age z-scores)*

	Chronic Malnutrition - Stunting (H/A)		
	Urban Area	Rural Area	Full Sample
	WHO 2006	WHO 2006	WHO 2006
Index child is a boy	0.0045	-0.0457	-0.0087
	(0.0901)	(0.1149)	(0.0739)
Lives in a rural area	-	-	-0.1499
	-	-	(0.0890)
Age in months - Round 1	-0.0165	-0.0085	-0.0138
	(0.0135)	(0.0108)	(0.0101)
Child was ever breastfed	0.0633	-0.5325	-0.2031
	(0.1225)	(0.4455)	(0.2226)
Mother's age in years - Round 1	-0.0006	0.0124	0.0029
	(0.0067)	(0.0070)	(0.0050)
Mother's years of education - Round 1	-0.0089	-0.0102	-0.0092
	(0.0179)	(0.0180)	(0.0131)
Mother's Body Mass Index (BMI) - Round 1	0.1228	0.1314*	0.1325*
	(0.0982)	(0.0653)	(0.0657)
Mother's Body Mass Index (BMI) squared -Round 1	-0.0022	-0.0021 *	0.0023**
	(0.0016)	(0.0011)	(0.0011)
Father was mentioned in the household roster - Round 1	0.1475 *	0.0861	0.1354*
	(0.0764)	(0.1519)	(0.0680)
Wealth index - Round 1	-0.1527	0.73	-0.0342
	(0.2904)	(0.5157)	(0.2411)
Days passed since interviewed in Round 1	0.0001	0	0.0002
	(0.0004)	(0.0004)	(0.0003)
Poverty Index by FONCODES 2000	-0.0144 *	-0.0092	-0.011*
	(0.0072)	(0.0091)	(0.0056)
Constant	-0.0368	-1.2376	-0.5208
	(1.8181)	(1.7158)	(1.4017)
Valid Cases (N)	455	183	638
F-Test	0.006	0	0.005
R-squared	0.0208	0.069	0.0342

(1) Standard errors adjusted for 20 clusters

(2) Standard errors in parentheses

(3)* Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

Table 16 shows the changes in z-scores for height-for-age (chronic malnutrition). It seems that gender does not affect the changes in z-score at this age, which indicates that the gender gap is generated at an early age and there is no evidence of the gap narrowing after it has appeared. It is interesting to note that contextual factors (captured here using the FONCODES index) continue to be relevant in shaping the opportunities for improving malnutrition.

Table 17. *Chronic malnutrition (stunting): Probit estimates (Round 2)*

	Stunting (H/A)		
	Urban Area	Rural Area	Full Sample
Index child is a boy	0.1802	0.2583*	0.1782*
	(0.1424)	(0.1539)	(0.0985)
Lives in a rural area	-	-	0.0484
	-	-	(0.1977)
Age in months - Round 2	0.0072	0.0332	0.0140**
	(0.0103)	(0.0220)	(0.0063)
Child has a disability - Round 2	0.4778	-0.0718	0.0165
	(0.5496)	(0.6901)	(0.5676)
Child was ever breastfed	-	-0.8449	-0.3528
	-	(0.6184)	(0.3669)
Mother's age in years - Round 2	-0.0182 *	0.0047	-0.0100
	(0.0108)	(0.0145)	(0.0080)
Mother's years of education - Round 2	0.0222	0.0230	0.0201*
	(0.0175)	(0.0245)	(0.0121)
Mother's Body Mass Index (BMI) -Round 2	0.1581	0.2476	0.2009
	(0.1570)	(0.2444)	(0.1466)
Mother's Body Mass Index (BMI) squared - Round 2	-0.0028	-0.0046	-0.0036
	(0.0029)	(0.0046)	(0.0027)
Father was mentioned in the household roster - Round 2	-0.1047	0.0885	-0.0463
	(0.1818)	(0.2513)	(0.1604)
Wealth index - Round 2	-1.2442***	-2.4385 ***	-1.6606 ***
	(0.3824)	(0.9268)	(0.3451)
Poverty Index by FONCODES 2006	1.5128***	0.4987	1.1636 ***
	(0.2995)	(0.5188)	(0.2846)
Constant	-3.1837	-7.3231	-4.4368 **
	(2.2616)	(5.2280)	(2.1734)
Valid Cases (N)	453	171	628
Log - Pseudo Likelihood	-203.41	-107.2	-316.41
Pseudo - R2	0.1581	0.0918	0.185

(1) Standard errors adjusted for 20 clusters

(2) Standard errors in parentheses

(3)* Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

Table 17 complements the z-score profile estimating the probability of a Young Lives child being stunted. As before, the estimation is done for the entire sample and for the urban and rural areas. For the older cohort, having chronic malnutrition (stunting) in Round 2 is associated with being a boy in a rural area, with a less-educated mother, and the father being absent from the household.

4.2.4 Education and child labour

School enrolment for the older cohort is almost universal (Table 18). However, this does not necessarily mean that all children are at the grade and level that correspond to their age. Repetition and temporary dropout (as well as late enrolment) have produced the persistent problem of overage (students who are older than they should be for their grade), which increases the chances of permanent dropout. Our sample shows a high percentage of overage (60 per cent), which is considerably higher in the poorest quintile of the population (71 per cent) compared to the richest quintile (44 per cent), one percentage point higher for boys than girls, and 3 percentage points higher in rural than urban areas.

Although there is no major difference in the rate of overage between children from Spanish and Quechua-speaking communities, and the Aymara population shows a lower overage rate than average, children whose mothers speak another indigenous language (i.e. Amazonian) show the highest rate of overage (70%). In addition, complementary work shows a positive association between three variables: parental education, the child's grade in school and his/her results in standardised tests (Cueto et al. forthcoming). This suggests inequalities in educational achievement associated with the socio-economic status of families (and shows how, over the longer term, the poverty gap is perpetuated by low levels of education). These results will be supplemented by data from our on-going qualitative sub-studies that include classroom observations and interviews with parents, teachers and students regarding the quality of educational services, particularly in the transition from primary to secondary school.

Table 18. *School enrolment and child labour (Older cohort)*

Variables	Round 1 (Panel)	Round 2	Change between Rounds
School Enrolment	99.2%	99.0%	-0.2%
Child Labour (Paid)	24.1%	50.6%	26.5%

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%
(1) T-test adjusted for sample design

Although school enrolment is high, the percentage of children engaged in some form of paid work increased between rounds from 24 per cent to 51 per cent. This indicator should be treated with caution as it is very much related to the increase in age of the older cohort. Nevertheless it means that a high proportion of Young Lives children are working, close to the rate found in the poorest section of the population in national figures (see Table 3).

To make an assessment of the factors linked to overage and child labour we report estimations using both outcomes as dependent variables. We define overage as a child who is at least one year older than the expected age for his/her grade and use the number of years overage as the dependent variable (Table 19). In the case of child labour, we

present two types of estimation. In the first, we report three estimations using changes in reported child labour between rounds (No-Yes, Yes-Yes and Yes-No) as dependent variables (Table 20), and in the second case we report different estimations to calculate the probability of being involved in four different daily activities that include domestic and paid tasks (Table 21).

Table 19. *Overage in schooling: Poisson estimates (Round 2)*

	Estimate of Overage Schooling for Round 2 by Probit		
	Urban Area	Rural Area	Full Sample
Index child is a boy	0.2522**	0.1182	0.1941**
	(0.1191)	(0.1177)	(0.0870)
Lives in a rural area	-	-	-0.1421
	-	-	(0.1408)
Age in months - Round 1	-0.0246	0.0810***	0.0106
	(0.0196)	(0.0186)	(0.0194)
Child was ever breastfed	-0.2776	-0.6222 **	-0.5159 *
	(0.5673)	(0.2992)	(0.3059)
Mother's age in years - Round 1	0.0022	0.0057	0.0036
	(0.0075)	(0.0066)	(0.0058)
Mother's years of education -Round 1	-0.0413***	-0.0412 *	-0.0398 ***
	(0.0099)	(0.0222)	(0.0115)
Mother's Body Mass Index (BMI) - Round 1	0.1679*	0.0487	0.1273 *
	(0.0999)	(0.0689)	(0.0714)
Mother's Body Mass Index (BMI) squared - Round 1	-0.0029 *	-0.0006	-0.0021*
	(0.0017)	(0.0012)	(0.0012)
Father was mentioned in the household roster - Round 1	-0.0498	-0.1144	-0.0765
	(0.1632)	(0.1628)	(0.1241)
Wealth index - Round 1	-1.4913 ***	-2.5569 **	-1.5751 ***
	(0.3166)	(1.0588)	(0.2933)
Poverty Index by FONCODES 2000	-0.0231***	0.0125	-0.0163 *
	(0.0075)	(0.0289)	(0.0086)
Constant	1.4071	-7.7520 ***	-1.2865
	(2.3173)	(1.9418)	(1.9232)
Valid Cases (N)	451	182	633
Log - Pseudo Likelihood	-501.59	-236.13	-749.73
Pseudo - R2	0.057	0.0823	0.0565

(1) Standard errors adjusted for 20 clusters
(2) Standard errors in parentheses
(3) *Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

Table 19 reports results of the estimation for overage. Based on these results, we see that overage is negatively associated with mother's education and household welfare. We also found a gender dimension, as boys – in urban areas – are more likely to be subject to overage. This may be associated with the different gender roles that boys and girls assume.

Table 20. *Changes between rounds in paid child labour (Older cohort)*

	Urban Area			Rural Area			Full Sample		
	No-Yes	Yes-Yes	Yes-No	No-Yes	Yes-Yes	Yes-No	No-Yes	Yes-Yes	Yes-No
Index child is a boy	-0.0031	0.0457***	-0.0161	0.1024**	0.0335	-0.0451	0.0354	0.0398***	0.0249
	(0.0417)	(0.0114)	(0.0237)	(0.0487)	(0.0364)	(0.0678)	(0.035)	(0.0142)	(0.0259)
Lives in a rural area	-	-	-	-	-	-	-0.0153	-0.0156	0.0027
	-	-	-	-	-	-	(0.0662)	(0.0116)	(0.0297)
Age in months - Round 1	0.0023	0.0013	-0.0035	-0.0015	0.0032	-0.0050	0.0013	0.0015	-0.0041
	(0.0057)	(0.0020)	(0.0032)	(0.0053)	(0.0047)	(0.0080)	(0.0045)	(0.0016)	(0.0034)
Child was ever breastfed	-0.0661	0.0386***	-0.1334	0.2423***	0.0639***	0.1874***	0.1096	0.0469***	0.0378
	(0.1816)	(0.0123)	(0.1347)	(0.0599)	(0.0135)	(0.0416)	(0.1201)	(0.0100)	(0.0619)
Mother's age in years - Round 1	-0.0019	-0.0007	0.0003	0.0029	0.0004	0.0004	-0.0008	-0.0003	0.0003
	(0.0036)	(0.0007)	(0.0015)	(0.0047)	(0.0014)	(0.0034)	(0.0030)	(0.0006)	(0.0015)
Mother's years of education - Round 1	-0.0153***	-0.0022	-0.0014	0.0031	-0.0008	-0.0056	-0.0093	-0.0017	-0.0030
	(0.0052)	(0.0013)	(0.0035)	(0.0115)	(0.0019)	(0.0069)	(0.0060)	(0.0012)	(0.0035)
Mother's Body Mass Index (BMI) - Round 1	0.0588	0.0119	-0.0242	0.1498**	0.0369	-0.0090	0.0676*	0.0206	-0.0240
	(0.0468)	(0.0120)	(0.0180)	(0.0685)	(0.0497)	(0.0478)	(0.0347)	(0.0144)	(0.0200)
Mother's Body Mass Index (BMI) squared - Round 1	-	-0.0002	0.0004	-0.0029**	-0.0006	0.0002	-0.0012*	-0.0004	0.0004
	-	(0.0002)	(0.0003)	(0.0013)	(0.0009)	(0.0009)	(0.0006)	(0.0003)	(0.0003)
Father was mentioned in the household roster - Round 1	-0.0553	-0.0278	-0.0364	-0.0126	-0.0846	0.0058	-0.0477	-0.0438*	-0.0300
	(0.0467)	(0.0175)	(0.0362)	(0.1172)	(0.0699)	(0.0892)	(0.0462)	(0.0238)	(0.0379)
Wealth index - Round 1	-0.1589**	-0.0665**	-0.0239	0.1552	-0.3081*	-0.4140*	-0.1310	-0.0971***	-0.1081
	(0.0774)	(0.0287)	(0.0614)	(0.3382)	(0.1579)	(0.2190)	(0.1121)	(0.0317)	(0.0754)
Poverty Index by FONCODES 2000	0.0014	0.0009	0.0054***	0.0004	0.0016	-0.0027	0.0014	0.0009	0.0047**
	(0.0041)	(0.0009)	(0.0019)	(0.0052)	(0.0020)	(0.0052)	(0.0038)	(0.0008)	(0.0018)
Valid Cases (N)	96	27	36	46	17	34	142	44	70
Y Predicted	0.19174	0.03	0.06	0.18304	0.05	0.14	0.213786	0.04	0.09

(1) Obtained from child questionnaire: In the past 12 months, have you done anything to earn money or stuff for yourself or your family?

(2) Base outcome: 'No Work - No Work' for both rounds

(3) Standard errors adjusted for 20 clusters

(4) Standard errors in parentheses

(5) *Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

Source: Young Lives Second Round Data

Table 21. *Profile: Domestic chores and daily activities of the child (Probit Estimates – Round 2 – Older Cohort)* **(continued overleaf)**

	Care of Other Household Members			Other Domestic Chores			Child Labour in Family Businesses			Child Paid Activities		
	Urban Area	Rural Area	Full Sample	Urban Area	Rural Area	Full Sample	Urban Area	Rural Area	Full Sample	Urban Area	Rural Area	Full Samp
Index child is a boy	-0.1593 (0.1192)	0.0484 (0.1577)	-0.1183 (0.0901)	-0.3693** (0.1588)	-0.1922 (0.3091)	-0.3440** (0.1373)	-0.0773 (0.1539)	0.3368** (0.1483)	0.0283 (0.1189)	-0.0011 (0.1445)	0.3601* (0.2030)	0.1151 (0.1295)
Lives in a rural area	- -	- -	-0.2020 (0.1269)	- -	- -	-0.2386 (0.2032)	- -	- -	-0.0643 (0.1967)	- -	- -	-0.3825 (0.2895)
Age in months - Round 2	0.0116 (0.0111)	0.0099 (0.0226)	0.0105 (0.0089)	-0.0098 (0.0234)	0.0135 (0.0217)	-0.0056 (0.0179)	0.0073 (0.0112)	0.0548*** (0.0159)	0.0166* (0.0100)	0.0136 (0.0189)	0.0041 (0.0157)	0.0092 (0.0147)
Child has a disability - Round 2	-0.7395 (0.7089)	-0.5434* (0.2794)	-0.6368** (0.2769)	-0.9315 (0.6178)	-0.7880** (0.3388)	-0.9296*** (0.3058)	0.7016 (0.6764)	-0.0548 (0.4981)	0.0396 (0.4305)	- -	0.4100 (0.4232)	0.1765 (0.3459)
Child was ever breastfed	-0.3024 (0.7121)	0.3596 (0.6563)	-0.0160 (0.4837)	- -	- -	- -	- -	-0.6175 (0.6681)	0.0815 (0.4268)	-0.7632 (0.4986)	- -	-0.0181 (0.5721)
Mother's age in years - Round 2	-0.0485*** (0.0086)	-0.0022 (0.0125)	-0.0362*** (0.0093)	-0.0203 (0.0135)	-0.0011 (0.0277)	-0.0145 (0.0108)	0.0038 (0.0083)	0.0045 (0.0176)	0.0053 (0.0084)	0.0095 (0.0181)	0.0049 (0.0159)	0.0078 (0.0117)
Mother's years of education - Round 2	-0.0152 (0.0149)	-0.0226 (0.0202)	-0.0202 (0.0129)	-0.0348 (0.0233)	-0.0202 (0.0512)	-0.0319 (0.0246)	-0.0173 (0.0183)	-0.1000*** (0.0372)	-0.0345** (0.0161)	-0.0404 (0.0265)	-0.0399** (0.0198)	-0.0424** (0.0208)
Mother's Body Mass Index (BMI) - Round 2	-0.0239 (0.1222)	-0.1234 (0.1533)	-0.0481 (0.0963)	-0.3798* (0.2291)	-0.7824 (0.6184)	-0.3346 (0.2180)	0.0979 (0.1167)	-0.3380 (0.2143)	-0.0006 (0.1012)	-0.2514** (0.1106)	0.3891 (0.2867)	-0.0604 (0.1090)
Mother's Body Mass Index (BMI) squared - Round 2	0.0004 (0.0021)	0.0012 (0.0026)	0.0006 (0.0017)	0.0058 (0.0037)	0.0148 (0.0109)	0.0052 (0.0035)	-0.0019 (0.0020)	0.0067 (0.0041)	0.0000 (0.0017)	0.0042** (0.0018)	-0.0056 (0.0045)	0.0012 (0.0018)

	Care of Other Household Members			Other Domestic Chores			Child Labour in Family Businesses			Child Paid Activities		
	Urban Area	Rural Area	Full Sample	Urban Area	Rural Area	Full Sample	Urban Area	Rural Area	Full Sample	Urban Area	Rural Area	Full Samp
Father was mentioned in the household roster - Round 2	0.2670* (0.1361)	0.0087 (0.3246)	0.1996* (0.1116)	0.1036 (0.1344)	-0.3905 (0.5799)	0.0170 (0.1350)	-0.0394 (0.1031)	0.4797** (0.2147)	0.0782 (0.0972)	-0.2741* (0.1565)	-0.1412 (0.2245)	-0.2172 (0.1359)
Wealth index - Round 2	-0.0738 (0.3617)	-0.9079** (0.3973)	-0.1146 (0.2843)	-0.0156 (0.8506)	-0.9041 (0.7099)	-0.1473 (0.6617)	-0.6439 (0.6713)	-0.7818 (0.6181)	-0.8139 (0.5322)	-1.1335*** (0.3831)	0.0501 (0.6165)	-0.8086*** (0.3115)
Poverty Index by FONCODES 2006	0.4990 (0.3256)	0.8289** (0.3298)	0.6061** (0.2986)	0.0401 (0.4902)	0.4221 (0.6247)	0.1313 (0.3949)	1.8796*** (0.5209)	1.3640** (0.5859)	1.6168*** (0.4251)	0.4222 (0.4885)	0.6350 (0.4331)	0.4978 (0.4081)
Constant	1.0396 (3.2286)	0.9229 (4.0654)	1.0269 (2.6145)	10.1555* (5.2564)	10.3305 (9.8805)	8.5427** (3.6791)	-2.8054 (2.2374)	-3.6809 (3.9882)	-2.9382* (1.7137)	1.8732 (3.5720)	-8.3895** (3.6015)	-1.3252 (2.8455)
Valid Cases (N)	456	171	627	452	166	618	452	171	627	453	166	627
Log - Pseudo Likelihood	-286.56	-99.40	-394.17	-117.20	-38.91	-158.49	-234.67	-88.89	-335.37	-151.32	-69.79	-230.21
Pseudo - R2	0.059	0.087	0.048	0.067	0.097	0.061	0.168	0.178	0.210	0.117	0.074	0.075

(1) Standard errors adjusted for 20 clusters
(2) Standard errors in parentheses
(3) *Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

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Tables 20 and 21 explore children's time use and work. As we already mentioned, the percentage of children engaged in paid work increased steeply between rounds from 24 to 51 per cent. Table 20 indicates that the probability of beginning work in the older cohort increased for boys in rural areas. It also shows that controlling for other socio-economic factors, the absence of the father increases the likelihood of working for both urban and rural children. Of the children who were already working in Round 1, we find that boys and urban children are likely to still be working. Mainly it is girls from poorer households who have stopped paid work since Round 1.

In Table 21 we observe the time-use profile of boys and girls in the older cohort. As expected, paid child labour is more common among boys in both urban and rural areas. Those households whose wealth has decreased are more likely to have boys engaged in paid labour. Girls are very much more commonly involved in domestic chores, especially in urban areas.

4.2.5   Subjective well-being

Finally we look at the main factors associated with children's subjective perceptions of well-being. Using a comparable indicator between rounds, we find that on average children's perception of positive well-being has improved significantly, with an increase of 12 percentage points between rounds (Table 22).

Table 22. *Children's perceptions of subjective well-being (Older cohort)*

Variables	Round 1	Round 1 (Panel)	Round 2	Change between Rounds
Subjective well-being child PERCEP (2)	77.4%	77.5%	89.1%	11.6% (***)
Subjective well-being child LADDER (3)	-	-	5.97	-

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Measured using a subjective question for the child

(3) Measured using a ladder method to evaluate his/her well-being – with values from 1 to 9 (9 being the highest)

Table 23 shows the correlates for how children feel about their own well-being, assessed by the 'ladder' question. The child was asked the following: 'There are nine steps on this ladder. Suppose we say that the ninth step, at the very top, represents the best possible life for you and the bottom represents the worst possible life for you. Where on the ladder do you feel you personally stand at the present time?'

It is interesting to note that on average girls position themselves higher on the ladder than boys, and that urban children position themselves higher than their rural peers. Girls in urban areas with more educated mothers are more likely to be satisfied with their current situation. On the other hand, ethnicity is correlated with a lower position on the ladder, which may be associated with experience of discrimination.

For rural children, gender is not associated with a difference in how they perceive their well-being. Here, the presence of the father contributes positively to feelings of well-being.

Table 23. *Subjective well-being: Poisson estimates (Round 2)*

Estimate of Child's Subjective Well Being - Round 2 by Poisson

	Urban Area	Rural Area	Full Sample
Index child is a boy	-0.1927***	-0.0402	-0.1535 ***
	(0.0612)	(0.0508)	(0.0587)
Lives in a rural area	-	-	-0.1145
	-	-	(0.1269)
Age in months - Round 2	0.0020	-0.0061	-0.0007
	(0.0032)	(0.0041)	(0.0022)
Birth order in the family	0.0088	0.0003	0.0053
	(0.0164)	(0.0216)	(0.0135)
Child has a disability - Round 2	1.4105**	-0.0860	*0.7339
	(0.670)	(0.0519)	(0.5746)
Child was ever breastfed	0.1491	-0.0042	0.0961
	(0.0921)	(0.1362)	(0.1162)
Child's ethnicity: Quechua	-0.1325*	-0.0909	-0.0925 *
	(0.0788)	(0.0709)	(0.0544)
Child's ethnicity: Aymara	-0.0962*	-	-0.1386 **
	(0.0506)	-	(0.0536)
Child's ethnicity: Other	-0.0882	-0.1927**	-0.0939
	(0.1222)	(0.0757)	(0.0649)
Mother's age in years - Round 2	0.0033	-0.0045	0.0028
	(0.0034)	(0.0062)	(0.0028)
Mother's years of education -Round 2	0.0106	-0.0035	0.0070
	(0.0072)	(0.0085)	(0.0059)
Mother's Body Mass Index (BMI) -Round 2	0.0032	0.0000	0.0029
	(0.0038)	(0.0081)	(0.0040)
Father was mentioned in the household roster - Round 2	0.0579	0.1857**	0.0867**
	(0.0489)	(0.0816)	(0.0413)
Wealth index - Round 2	0.1607	0.2628	0.1099
	(0.1313)	(0.2844)	(0.1534)
Poverty Index by FONCODES 2006	0.2754**	0.0107	0.1933**
	(0.1170)	(0.1167)	(0.0750)
Constant	0.9415*	2.6664***	1.4828***
	(0.5350)	(0.7317)	(0.4241)
Valid Cases (N)	457	171	628
Log - Pseudo Likelihood	-1044.5	-376.98	-1465.2
Pseudo - R2	0.0813	0.0175	0.0372

(1) Standard errors adjusted for 20 clusters

(2) Standard errors in parentheses

(3) *Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

Source: Young Lives Second Round Data

5. Concluding remarks

After two rounds of data collection the Young Lives sample both confirms a number of issues that are evident in other nationally representative samples and can offer a unique perspective, as the same children are being followed over time.

First, our data confirm the evidence that Peru's economy is growing and there are indeed some improvements in well-being at the household level, especially in urban areas. Beyond consumption or income figures, our sample also shows an improvement in subjective well-being: 37 per cent of households in Round 2 mention that they 'manage to get by', a 9.8 per cent increase from Round 1. In addition, access to key public services like electricity and sanitation facilities also improved slightly between rounds (approximately 10 per cent).

However, despite increases in public infrastructure and social expenditure, inequality is a distinctive feature in Peru and is reflected in the Young Lives sample. Inequalities in wealth, access to services, and opportunities are prevalent, especially between urban and rural areas and between ethnic groups.

Inequalities in access to public services continue to be a major factor contributing to inequalities in child well-being and our research clearly shows the impact this can have on nutritional outcomes such as stunting and being underweight. It is striking that children who have access to electricity, improved water sources or proper sanitation (predominantly found in urban areas) are able to follow a relatively normal growth curve compared to those who do not. Further, we see that children in urban areas with improved access to services show evidence of some catch-up in their growth curves at the age of approximately 4 to 5 years. This catch-up is more likely to occur among children with a higher birth weight, boys and girls who have better educated mothers, and better access to key public services such as electricity, clean water and sanitation. This catch-up highlights the importance of investing in areas with high malnutrition rates and the difference this may make for severely malnourished children. Of course, preventative policies would always be preferable, but we should not rule out the usefulness of complementary remedial policies in order to improve the well-being of children who were even disadvantaged from birth.

School enrolment rates in Peru are generally high, particularly for primary education, but are far from universal in pre-school and secondary school, although both are considered to be basic education. Our sample confirms that ethnicity, socio-economic status and the urban-rural divide all affect pre-school enrolment and the incidence of overage in primary and secondary school, highlighting persistent inequalities in educational services, especially for rural and minority children. We are also finding evidence that children's achievement in school (measured by their grade and age) and in standardised tests is clearly linked to their parents' level of education, suggesting a cycle of low education and poverty that is transmitted through generations. Quality of public education is an area of great concern in Peru and further research is needed to help explain the educational opportunities – available to children of different backgrounds – which influence school grade and achievement outcomes.

Gender inequalities are also very evident in the Young Lives sample. We find that girls are more likely to experience faltering growth than boys, especially in rural areas. Nationally, girls have slightly lower pre-school enrolment rates than boys; the difference is larger in rural areas, and although enrolment in primary school is more equal, this gives boys an advantage in both making the transition to school and learning in the early years. As might be expected, we find more boys are in paid work than girls, who often undertake unpaid domestic chores and care for younger siblings.

For the next phase of Young Lives the Peru team is planning to focus on inequalities and how they arise or change over time, looking particularly at socio-economic status, the urban-rural divide, gender and ethnicity. For instance, we have a line of research on how children and their families access public and private services and programmes and the quality of such services. Within this we have already published studies on Wawa Wasi (an integral early childhood programme for children aged 6 to 48 months), and Juntos (a conditional cash transfer programme in rural areas). We will also continue to gather information on the main public programmes that target poor children.

To date we have used our findings to organise events with different stakeholders in order to promote research on childhood poverty and the design and/or better implementation of policies aimed at children. The current context of decentralisation, with regional presidents who are open to new initiatives to improve current social conditions, and the upcoming presidential elections in 2011, motivates us to continue producing information that is relevant for these and other stakeholders, so that in the future empirical evidence can play a more important role in shaping children's policies than at present. For this our aim in the medium term is to create a community of researchers and policymakers that meets regularly to discuss research and its implications for improving the conditions in which Peru's children live and grow.

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Young Lives papers in progress

Ames, Patricia 'Starting School: Who is Prepared? Researching Transition to First Grade in Peru'

Ames, Patricia 'Going to High School: Perceptions, Experiences and Fears'

Ames, Patricia 'Life Trajectories: Children's Narratives on their Past and Future'

Ames, Patricia 'Multiple Trajectories: Moving from Childhood to Adolescence'

Camfield, Laura and Gina Crivello 'Children's Understandings of Ill-being and Poverty in India, Peru and Ethiopia'

Crivello, Gina et al. 'Youth Expectations around School, Work and Migration: Three Illustrative Case Studies from Peru'

Cueto, Santiago, Gabriela Guerrero, Juan Leon, Alvaro Zevallos and Claudia Sugimar 'Promoting Early Childhood Development through a Public Programme: The Case of the Wawa Wasi in Peru'

Cueto, Santiago, Juan Leon, Gabriel Guerrero and Ines Muñoz 'Psychometric Characteristics of Cognitive Development and Achievement Instruments in Round 2 of Young Lives'

Deustua Rossel, Jose 'The Impact of Shocks on Children's Nutrition: Can Peruvian Households Keep Children's Feeding unchanged under the Presence of Shocks?'

Escobal, Javier 'Child Poverty Mapping in Peru'

Escobal, Javier 'The Effect of Family Migration History on Child Welfare Outcomes'

Molina, Oswaldo, Ingo Outes and Alan Sanchez 'Psycho-Social Well-being and Cognitive Development in Peru'

Penny, Mary 'The Effects of Child Labour on Adolescent Well-being and Health'

Penny, Mary 'Access to Animal Source Foods and Stunting in Peru'

Sanchez, Alan 'Early Nutrition and Cognitive Achievement in Rural Peru'

Appendices

Annex 1. *Definitions for variables used in this report* **[continued overleaf]**

	Younger Cohort		Older Cohort	
	Round 1	Round 2	Round 1	Round 2
Index child is a boy (1=Yes, 0=Otherwise)	X	X	X	X
Lives in a Rural area (1=Child Lives in Rural area, 0=Otherwise)	X	X	X	X
Child's Age in months	X	X	X	X
Child was ever breastfed (1=Yes, 0=Otherwise)	X	X	X	X
Mother's age in years	X	X	X	X
Mother's years of education	X	X	X	X
Mother's Body Mass Index (BMI) [BMI=Weight (in Kg)/ Height ^2 (in m)]	X	X	X	X
Mother's Body Mass Index (BMI) Squared [BMI=Weight (in Kg)/ Height ^2 (in m)] ^2	X	X	X	X
Father was mentioned in the Household Roster (1=Yes, 0=Otherwise)	X	X	X	X
Wealth Index (standardised Young Lives index)	X	X	X	X
Poverty Index by FONCODES 2000	X		X	
Poverty Index by FONCODES 2006		X		X
Child has a disability (1=Yes, 0=Otherwise)		X		X
Birth Order in the family		X		X
Child's Ethnicity: Quechua (1=Yes, 0=Otherwise)		X		X
Child's Ethnicity: Aymara (1=Yes, 0=Otherwise)		X		X
Child's Ethnicity: Other (1=Yes, 0=Otherwise)		X		X
Absolute Poverty (% HH living below poverty line)		X		X
Relative Poverty (% HH living below the median of the poverty line)		X		X
% of Children living in HH in the lowest Wealth Index quintile	X	X	X	X
Per Capita Consumption (Food) (HH Consumption per capita)		X		X
Real Per Capita Consumption (Food) HH Consumption per capita		X		X
Asset Value at Median Prices (12 A) (Valorisation of 12 household assets included in the wealth index)	X	X	X	X
Asset Value at Median Prices (22 A) (Valorisation of the 22 household assets asked for in the survey)	X	X	X	X
Perception in the Household [1] (Answered mainly by the caregiver)				
Can Manage to get by *	X	X	X	X
*Poor/Destitute**	X	X	X	X
Subjective Well-being Child PERCEPTION			X	X
Subjective Well-being Child LADDER (Child's rate on a scale from 1 to 9)				X
Chronic Malnutrition (OMS 2006) (1=Yes, 0=Otherwise)	X	X	X	X

	Younger Cohort		Older Cohort	
	Round 1	Round 2	Round 1	Round 2
Global Malnutrition (OMS 2006) (1=Yes, 0=Otherwise)	X	X	X	
School Enrolment (1=Yes, 0=Otherwise)		X	X	X
Child Labour (Paid) (1=Yes, 0=Otherwise)			X	X
Access to Electricity (1=Yes, 0=Otherwise)	X	X	X	
Access to water piped into Dwelling (1=Yes, 0=Otherwise)	X	X	X	
Access to safe drinking water (public net) (1=Yes, 0=Otherwise)		X		
Sanitation Facilities(Flush toilet or septic tank) (1=Yes, 0=Otherwise)	X	X	X	
Pre-School Enrolment (Child has attended pre-school regularly since 3 years old 1=Yes, 0=Otherwise)	X	X		

(1) Obtained from Q6.1, Round 2: Economic Changes in Household

Annex 2.   Additional descriptive tables

Table A.1: *Younger Cohort[1]*

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
Absolute Poverty (% living below poverty line)	-	73.5%	-	-	90.2%	-	-	80.3%	-
Relative Poverty	-	7.4%	-	-	21.8%	-	-	13.2%	-
% of Children living in HH in the lowest Wealth Index quintile	10.0%	8.2%	-1.8%	48.7%	53.2%	4.4%	25.7%	26.5%	0.8%
Wealth Index	0.52	0.54	4.3% (**)	0.2	0.2	8.7% (**)	0.4	0.4	5.2% (***)
Per Capita Consumption (Food)	74.8	111.6	49.2% (***) (2)	46.0	89.5	94.5% (***) (2)	63.1	102.6	41.1% (***) (2)
Real Per Capita Consumption (Food)	80.6	114.1	41.7% (***) (2)	54.3	95.3	75.6% (***) (2)	69.9	106.5	48.7% (***) (2)
Asset Value at Median Prices (12 A)	1126.0	1236.0	9.8%	251.6	368.5	46.4% (***)	770.8	883.7	14.7%
Asset Value at Median Prices (22 A)	1263.0	1521.0	20.4% (**)	275.7	416.9	51.3% (***)	862.4	1073.0	24.4% (**)
Perception in the Household (3)									
Can Manage to get by	30.9%	42.1%	11.2%	19.1%	27.0%	7.9%	26.1%	36.0%	9.9%
Poor/Destitute	25.2%	14.7%	-10.5%	46.4%	36.5%	-9.9%	33.8%	23.5%	-10.3%
Chronic Malnutrition (OMS 2006)	20.5%	22.0%	1.4%	46.0%	59.9%	13.9% (***)	30.9%	37.4%	6.5% (***)
Had/Has attended Pre-school Regularly since 3 years old	-	88.7%	-	-	70.9%	-	-	81.5%	-
Access to water piped into Dwelling	82.5%	89.8%	7.3% (**)	64.1%	75.7%	11.5% (***)	75.1%	84.1%	9.0% (***)
Sanitation Facilities (Flush toilet or septic tank)	60.6%	66.0%	5.4% (**)	5.0%	6.8%	1.8%	38.0%	42.0%	3.9% (**)

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Q 6.1, Round 2: Economic Changes in Household

Table A.2: *Socio-economic indicators for children by area of residence and mother's educational level. Younger Cohort[1]*

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
Education: NONE or FEW YEARS									
Absolute Poverty (% living below poverty line)	-	96.9%	-	-	96.1%	-	-	96.2%	-
Relative Poverty	-	28.8%	-	-	24.8%	-	-	25.4%	-
% of Children living in HH in the lowest Wealth Index quintile	40.1%	31.7%	-8.5%	53.1%	66.9%	13.8% (***)	51.2%	61.9%	10.6% (**)
Wealth Index	0.25	0.28	12.2%	0.18	0.17	-5.9%	0.19	0.18	-2.4%
Per Capita Consumption (Food)	48.63	78.94	62.3% (***) (2)	38.7	82.46	113% (***) (2)	40.13	81.95	104.2% (***) (2)
Real Per Capita Consumption (Food)	52.91	82.43	55.8% (*) (2)	44.87	87.73	95.5% (***) (2)	46.03	86.97	88.9% (***) (2)
Asset Value at Median Prices (12 A)	254	399.7	57.4% (**)	212.9	156.1	-26.7%	218.8	191.1	-12.7%
Asset Value at Median Prices (22 A)	268.8	477.1	77.5% (**)	229.5	192.9	-15.9%	235.2	233.8	-0.6%
Perception in the Household [3]									
Can Manage to get by	25.8%	25.4%	-0.5%	16.7%	25.8%	9.1%	18.0%	25.7%	7.7%
Poor/Destitute	45.9%	45.2%	-0.7%	48.9%	42.4%	-6.5%	48.5%	42.8%	-5.7%
Chronic Malnutrition (OMS 2006)	55.8%	49.4%	-6.4%	62.0%	66.6%	4.6%	61.1%	64.2%	3.0%
Had/Has attended Pre-school Regularly since 3 yrs old	-	63.2%		-	67.8%		-	67.1%	
Access to water piped into Dwelling	54.1%	79.6%	25.5% (*)	57.4%	68.3%	10.9%	57.0%	70.0%	13.0% (**)
Sanitation Facilities (Flush toilet or septic tank)	23.9%	22.7%	-1.2%	1.4%	1.0%	-0.4%	4.6%	4.1%	-0.5%
Education: PRIMARY COMPLETED									
Absolute Poverty (% living below poverty line)	-	89.3%	-	-	91.5%	-	-	90.6%	-
Relative Poverty	-	16.5%	-	-	22.8%	-	-	20.3%	-
% of Children living in HH in the lowest Wealth Index quintile	20.2%	16.6%	-3.6%	51.7%	55.6%	3.9%	39.2%	40.1%	0.9%
Wealth Index	0.38	0.40	5.8%	0.19	0.20	9.5% (*)	0.26	0.28	7.4% (**)
Per Capita Consumption (Food)	55.79	85.54	53.3% (***) (2)	44.25	87.93	98.7% (***) (2)	48.83	86.98	78.1% (***) (2)
Real Per Capita Consumption (Food)	60.53	87.99	45.4% (***) (2)	51.65	93.01	80.1% (***) (2)	55.17	91.02	65.0% (***) (2)
Asset Value at Median Prices (12 A)	587.3	725.1	23.5% (*)	165.2	337.9	104.6% (***)	332.7	491.6	47.8% (***)
Asset Value at Median Prices (22 A)	669.5	844	26.1%	183.5	379.7	107% (***)	376.4	564	49.8% (***)
Perception in the Household [3]									
Can Manage to get by	23.1%	29.1%	6.0%	18.5%	25.1%	6.6.%	20.4%	26.7%	6.3%
Poor/Destitute	36.7%	28.0%	-8.7%	48.4%	37.9%	-10.4%	43.7%	34.0%	-9.7%
Chronic Malnutrition (OMS 2006)	32.1%	35.3%	3.2%	46.6%	64.2%	17.6% (***)	40.9%	52.7%	11.9% (***)
Had/Has attended Pre-school Regularly since 3 years	-	78.6%		-	68.6%		-	72.7%	
Access to water piped into Dwelling	72.3%	83.6%	11.2% (***)	64.5%	75.4%	10.9% (***)	67.6%	78.7%	11.0% (***)
Sanitation Facilities (Flush toilet or septic tank)	39.8%	42.9%	3.1%	4.2%	5.4%	1.2%	18.4%	20.3%	1.9%

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Section 6 Economic Changes in Household

Table A.2: *Socio-economic indicators for children by area of residence and mother's educational level. Younger Cohort[1]* **[continued]**

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
Education: SECONDARY COMPLETED									
Absolute Poverty (% living below poverty line)	-	78.2%	-	-	81.7%	-	-	78.8%	-
Relative Poverty	-	4.5%	-	-	17.8%	-	-	7.1%	-
% of Children living in HH in the lowest Wealth Index quintile	6.8%	5.7%	-1.1%	38.1%	35.5%	-2.6%	12.8%	11.4%	-1.4%
Wealth Index	0.54	0.57	4.8% (**)	0.25	0.29	15.2% (**)	0.49	0.52	5.8% (**
Per Capita Consumption (Food)	74.87	111	48.2% (***) (2)	57.34	100.5	75.4% (***) (2)	71.51	109	52.4% (**
Real Per Capita Consumption (Food)	80.43	113.4	41.0% (***) (2)	70.31	109.8	56.2% (***) (2)	78.49	112.7	43.6% (**
Asset Value at Median Prices (12 A)	1068	1167	9.2%	558	586.7	5.1%	970.8	1056	8.8%
Asset Value at Median Prices (22 A)	1171	1426	21.8% (***)	605.6	648.8	7.1%	1063	1278	20.2% ('
Perception in the Household (3)									
Can Manage to get by	31.0%	43.7%	12.7%	20.6%	31.6%	11.0%	29.0%	41.4%	12.4%
Poor/Destitute	23.1%	11.0%	-12.1%	39.5%	28.6%	-10.8%	26.2%	14.4%	-11.8%
Chronic Malnutrition (OMS 2006)	16.5%	18.8%	2.3%	26.5%	40.5%	14.0%	18.4%	22.9%	4.5% (*
Had/Has attended Pre-school Regularly since 3 years old	-	91.0%	-	-	79.2%	-	-	88.8%	-
Access to water piped into Dwelling	84.6%	90.9%	6.3%	69.5%	82.3%	12.9% (***)	81.7%	89.3%	7.6% (*
Sanitation Facilities (Flush toilet or septic tank)	64.2%	70.2%	6.0% (**)	9.6%	11.1%	1.5%	53.8%	58.9%	5.1% (*
Education: HIGHER									
Absolute Poverty (% living below poverty line)	-	40.7%	-	-	74.3%	-	-	43.2%	-
Relative Poverty	-	0.0%	-	-	4.0%	-	-	0.3%	-
% of Children living in HH in the lowest Wealth Index quintile	1.3%	0.7%	-0.6%	20.0%	5.0%	-15.1%	2.7%	1.1%	-1.7%
Wealth Index	0.67	0.69	2.4%	0.40	0.50	25.3%	0.65	0.67	3.4% (*
Per Capita Consumption (Food)	101.6	149.1	46.8% (***) (2)	66.03	103.3	56.43% (2)	98.97	145.7	47.3% (**
Real Per Capita Consumption (Food)	109.4	152.1	39.0% (***) (2)	81.52	108.3	32.8% (2)	107.3	148.8	38.7% (**
Asset Value at Median Prices (12 A)	1755	2105	19.9%	585.8	1375	134.8%	1668	2051	22.9%
Asset Value at Median Prices (22 A)	2039	2671	31.0%	644.3	1586	146.1%	1935	2590	33.9% ('
Perception in the Household (3)									
Can Manage to get by	41.0%	56.3%	15.4%	47.0%	49.1%	2.2%	41.4%	55.8%	14.4%
Poor/Destitute	13.3%	2.3%	-10.9%	29.3%	10.5%	-18.8%	14.4%	2.9%	-11.5%
Chronic Malnutrition (OMS 2006)	10.3%	8.2%	-2.1%	29.6%	30.8%	1.2%	11.8%	9.9%	-1.9% (*
Had/Has attended Pre-school Regularly since 3 years old	-	98.1%	-	-	89.5%	-	-	97.5%	-
Access to water piped into Dwelling	94.2%	96.8%	2.6%	69.4%	95.0%	25.6% (***)	92.4%	96.7%	4.3% (**
Sanitation Facilities (Flush toilet or septic tank)	82.4%	90.6%	8.1% (**)	22.2%	54.3%	32.1% (***)	78.0%	87.9%	9.9%

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Section 6 Economic Changes in Household

Table A.3: *Socio-economic indicators by area of residence and child's gender. Younger Cohort[1]*

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
The child is a boy									
Absolute Poverty (% living below poverty line)	-	73.3%	-	-	90.0%	-	-	79.6%	-
Relative Poverty	-	6.3%	-	-	21.3%	-	-	12.0%	-
% of Children living in HH in the lowest Wealth Index quintile	11.0%	8.5%	-2.4%	49.6%	52.2%	2.6%	25.6%	25.0%	-0.5%
Wealth Index	0.51	0.54	4.3% (**)	0.20	0.22	8.2%	0.40	0.42	5.0% (**)
Per Capita Consumption (Food)	74.9	109.7	46.4% (***) [2]	44.8	87.0	94.1% (***) [2]	63.5	101.1	59.2% (***) [2]
Real Per Capita Consumption (Food)	80.9	112.6	39.2% (***) [2]	52.9	92.5	74.7% (***) [2]	70.3	105.0	49.4% (***) [2]
Asset Value at Median Prices (12 A)	1134.0	1307.0	15.3%	306.7	396.6	29.3%	820.9	962.5	17.3%
Asset Value at Median Prices (22 A)	1246.0	1587.0	27.4% (*)	333.4	448.2	34.4%	901.0	1156.0	28.4% (*)
Perception in the Household [3]									
Can Manage to get by	30.8%	41.6%	10.7%	18.6%	35.8%	17.2%	26.2%	35.6%	9.4%
Poor/Destitute	24.0%	13.9%	-10.1%	46.7%	38.5%	-8.2%	32.6%	23.2%	-9.4%
Chronic Malnutrition (OMS 2006)	23.6%	21.6%	-1.9%	55.1%	60.7%	5.6%	35.5%	36.4%	0.9%
Had/Has attended Pre-school Regularly since 3 years old	-	88.8%	-	-	74.4%	-	-	83.3%	-
Access to water piped into Dwelling	80.6%	89.4%	8.7% (*)	68.6%	77.8%	9.1% (***)	76.1%	85.0%	8.9% (***)
Sanitation Facilities (Flush toilet or septic tank)	60.5%	64.3%	3.8%	3.7%	6.2%	2.5% (*)	39.1%	42.4%	3.3% (*)
The child is a Girl									
Absolute Poverty (% living below poverty line)	-	73.8%	-	-	90.4%	-	-	81.0%	-
Relative Poverty	-	8.7%	-	-	22.1%	-	-	14.5%	-
% of Children living in HH in the lowest Wealth Index quintile	8.9%	7.9%	-1.0%	48.0%	54.0%	6.0%	25.8%	27.9%	2.0%
Wealth Index	0.52	0.55	4.4% (***)	0.20	0.22	9.1% (**)	0.38	0.40	5.5% (***)
Per Capita Consumption (Food)	74.67	113.6	52.2% (***) [2]	47	91.59	94.9% (***) [2]	62.67	104.1	66.1% (***) [2]
Real Per Capita Consumption (Food)	80.2	115.8	44.4% (***) [2]	55.51	97.83	76.2% (***) [2]	69.49	108	55.4% (***) [2]
Asset Value at Median Prices (12 A)	1117	1159	3.7%	204	344.1	68.7% (**)	721	805.5	11.7%
Asset Value at Median Prices (22 A)	1282	1450	13.1%	225.7	389.9	72.8% (**)	824.1	990.3	20.2% (**)
Perception in the Household [3]									
Can Manage to get by	31.0%	42.7%	11.7%	19.6%	28.0%	8.4%	26.1%	36.3%	10.3%
Poor/Destitute	26.5%	15.5%	-11.1%	45.8%	34.8%	-11.0%	35.0%	23.9%	-11.2%
Chronic Malnutrition (OMS 2006)	17.2%	22.3%	5.1% (**)	38.2%	59.3%	21.1% (***)	26.3%	38.3%	12.0% (***)
Had/Has attended Pre-school Regularly since 3 years old	-	88.6%	-	-	67.3%	-	-	79.6%	-
Access to water piped into Dwelling	84.6%	90.3%	5.7% (**)	60.2%	73.9%	13.6% (***)	74.0%	83.2%	9.1% (***)
Sanitation Facilities (Flush toilet or septic tank)	60.7%	67.8%	7.1% (***)	6.1%	7.3%	1.2%	37.0%	41.6%	4.5% (**)

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Section 6 Economic Changes in Household.

Table A.4: *Socio-economic indicators. Older Cohort[1]*

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
Absolute Poverty (% living below poverty line)	-	82.9%	-	-	91.6%	-	-	87.3%	-
Relative Poverty	-	12.5%	-	-	38.3%	-	-	25.2%	-
% of Children living in HH in the lowest Wealth Index quintile	9.7%	7.7%	-2.0%	40.1%	40.9%	0.8%	25.0%	24.4%	-0.6%
Wealth Index	0.49	0.51	4.5%	0.23	0.24	3.8%	35.8%	37.3%	4.3% (*)
Per Capita Consumption (Food)	11.0	13.8	26.1% (2)	21.3	31.8	49.1% (***) (2)	16.2	22.8	41.4% (**)(2)
Real Per Capita Consumption (Food)	11.7	14.2	21.2% (2)	24.7	34.1	37.8% (*) (2)	18.3	24.2	32.5% (2)
Asset Value at Median Prices (12 A)	717.5	841.8	17.3%	228	339.6	48.9% (***)	471.7	589.6	25.0% (**)
Asset Value at Median Prices (22 A)	832.1	1119	34.5% (**)	379.5	415.4	9.4%	604.8	765.6	26.6% (**)
Perception in the Household (3)									
Can Manage to get by	30.3%	33.5%	3.2%	19.7%	21.4%	1.6%	25.0%	27.4%	2.4%
Poor/Destitute	28.7%	23.1%	-5.6%	43.3%	33.8%	-9.5%	36.1%	28.5%	-7.6%
Subjective Well-being Child PERCEP	80.5%	90.3%	9.8% (***)	74.6%	87.9%	13.3% (***)	77.5%	89.1%	11.6% (***)
Subjective Well-being Child LADDER	-	6.08	-	-	5.85	-	-	5.97	-
Chronic Malnutrition (OMS 2006)	23.7%	25.7%	2.0%	45.1%	57.9%	12.8% (**)	34.4%	41.8%	7.4% (**)
School Enrolment	98.8%	98.6%	-0.2%	99.6%	99.4%	-0.2%	99.2%	99.0%	-0.2%
Child Labour (Paid)	17.5%	67.2%	49.7%	30.6%	34.2%	3.6%	24.1%	50.6%	26.5%
Access to water piped into Dwelling	83.2%	87.2%	4.1%	67.8%	79.6%	11.8% (***)	75.5%	83.4%	7.9% (**)
Sanitation Facilities (Flush toilet or septic tank)	53.1%	60.2%	7.1%	3.4%	8.6%	5.2% (**)	28.1%	34.3%	6.2% (**)

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Section 6 Economic Changes in Household

Table A.5: *Socio-economic indicators for children by area of residence and mother's educational level. Older Cohort[1]*

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
Education: NONE or FEW YEARS									
Absolute Poverty (% living below poverty line)	-	100.0%	-	-	98.2%	-	-	98.4%	-
Relative Poverty	-	47.9%	-	-	40.0%	-	-	41.0%	-
% of Children living in HH in the lowest Wealth Index quintile	7.0%	21.1%	14.1%	32.3%	52.6%	20.3% (***)	0.29	0.48	19.5% (***)
Wealth Index	0.34	0.34	0.0%	0.2108	0.1951	-7.4%	0.2276	0.214	-6.0%
Per Capita Consumption (Food)	14.1	22.7	60.4% (2)	21.0	29.7	41.6% (**) (2)	20.1	28.8	43.3% (*)** (2)
Real Per Capita Consumption (Food)	15.1	23.3	53.9% (2)	24.1	31.1	29.4% (***) (2)	22.9	30.1	31.5% (***) (2)
Asset Value at Median Prices (12 A)	291.2	304.4	4.5%	109.8	194.6	77.3%	133.6	209	56.5%
Asset Value at Median Prices (22 A)	296.2	339.4	14.6%	121.9	241.9	98.4%	144.8	254.7	75.9% (*)
Perception in the Household [3]									
Can Manage to get by	27.6%	29.5%	1.9%	20.0%	16.9%	-3.1%	21.0%	18.5%	-2.5%
Poor/Destitute	25.8%	11.7%	-14.01%	48.6%	41.6%	-7.0%	45.6%	37.7%	-7.9%
Subjective Well-being Child PERCEP	50.5%	100.0%	49.6% (**)	65.5%	83.1%	17.5% (**)	63.6%	85.3%	21.7% (***)
Subjective Well-being Child LADDER	-	6.69	-	-	5.21	-	-	5.40	-
Chronic Malnutrition (OMS 2006)	62.0%	38.2%	-23.8%	45.3%	58.8%	13.5%	47.5%	56.1%	8.6%
School Enrolment	91.5%	100.0%	8.5%	100.0%	100.0%	0.0%	98.9%	100.0%	1.1%
Child Labour (Paid)	31.5%	35.3%	3.8%	38.4%	33.7%	-4.7%	37.5%	33.9%	-3.6%
Access to water piped into Dwelling	87.4%	85.9%	-1.6%	75.4%	90.3%	14.9% (***)	76.9%	89.7%	12.8% (***)
Sanitation Facilities (Flush toilet or septic tank)	23.0%	23.0%	0.0%	0.0%	1.6%	1.6%	3.0%	4.4%	1.4%
Education: PRIMARY COMPLETED									
Absolute Poverty (% living below poverty line)	-	94.2%	-	-	91.6%	-	-	92.7%	-
Relative Poverty	-	18.6%	-	-	43.8%	-	-	33.0%	-
% of Children living in HH in the lowest Wealth Index quintile	18.4%	12.8%	-5.5%	51.0%	41.0%	-10.1%	37.1%	28.9%	-8.1% (*)
Wealth Index	0.37	0.41	9.8%	0.21	0.22	8.7% (*)	0.2768	0.3028	9.4% (**)
Per Capita Consumption (Food)	13.7	17.5	27.2% (2)	20.5	33.4	63.1% (*) (2)	17.6	26.6	51.2% (2)
Real Per Capita Consumption (Food)	14.8	17.9	21.2% (2)	23.8	36.0	51.3% (2)	20.0	28.3	41.8% (2)
Asset Value at Median Prices (12 A)	428.6	504.5	17.7%	235.3	322.7	37.1%	317.8	400.3	25.9%
Asset Value at Median Prices (22 A)	462.2	621.1	34.4%	274.7	371.4	35.2%	354.7	478	34.8% (*)
Perception in the Household [3]									
Can Manage to get by	27.6%	30.3%	2.7%	17.6%	21.2%	3.6%	21.8%	25.0%	3.2%
Poor/Destitute	35.6%	36.7%	1.1%	45.4%	30.2%	-15.2%	41.2%	33.0%	-8.3%
Subjective Well-being Child PERCEP	80.0%	90.6%	10.6%	76.7%	91.1%	14.4% (***)	78.1%	90.9%	12.8% (***)
Subjective Well-being Child LADDER	-	6.03	-	-	6.18	-	-	6.12	-
Chronic Malnutrition (OMS 2006)	24.4%	28.5%	4.1%	46.1%	57.3%	11.2%	36.8%	45.0%	8.1%
School Enrolment	98.8%	97.3%	-1.4%	100.0%	98.7%	-1.3%	99.5%	98.1%	-1.4%
Child Labour (Paid)	24.2%	33.3%	9.2%	32.1%	31.9%	-0.1%	28.7%	32.5%	3.8%
Access to water piped into Dwelling	77.2%	84.3%	7.1%	59.5%	71.5%	12.0% (**)	67.1%	77.0%	9.9% (**)
Sanitation Facilities (Flush toilet or septic tank)	33.1%	48.4%	15.3% (***)	2.1%	7.2%	5.1% (*)	15.4%	24.8%	9.5% (***)

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Section 6 Economic Changes in Household

Table A.5: *Socio-economic indicators for children by area of residence and mother's educational level. Older Cohort[1]* **[continued]**

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
Education: SECONDARY COMPLETED									
Absolute Poverty (% living below poverty line)	-	80.8%	-	-	84.8%	-	-	81.7%	-
Relative Poverty	-	4.6%	-	-	6.8%	-	-	5.1%	-
% of Children living in HH in the lowest Wealth Index quintile	4.0%	3.6%	-0.4%	19.9%	10.2%	-9.7%	7.8%	5.1%	-2.6%
Wealth Index	0.5524	0.5594	1.3%	0.3109	0.3493	12.4% (**)	0.4954	0.5098	2.9%
Per Capita Consumption (Food)	9.1	11.2	23.2% (2)	24.4	31.8	30.3% (2)	12.7	16.1	26.5% (2)
Real Per Capita Consumption (Food)	9.7	11.7	19.8% (2)	28.8	34.4	19.4% (2)	14.2	17.0	19.6% (2)
Asset Value at Median Prices (12 A)	843.1	1035	22.8%	408.6	466.7	14.2%	740.6	900.8	21.6%
Asset Value at Median Prices (22 A)	967.9	1333	37.7% (**)	606.1	573.2	-5.4%	882.5	1153	30.7% (**)
Perception in the Household [3]									
Can Manage to get by	31.7%	31.3%	-0.4%	28.7%	29.5%	0.8%	31.0%	30.9%	-
Poor/Destitute	26.4%	17.4%	-9.0%	27.9%	23.8%	-4.1%	26.7%	18.9%	-
Subjective Well-being Child PERCEP	82.5%	88.3%	5.8%	83.7%	87.2%	3.6%	82.8%	88.1%	5.3%
Subjective Well-being Child LADDER	-	5.95	-	-	5.93	-	-	5.94	-
Chronic Malnutrition (OMS 2006)	24.2%	26.4%	2.2%	31.0%	54.6%	23.6% (**)	25.8%	33.1%	7.3% (*)
School Enrolment	99.3%	99.1%	-0.2%	100.0%	100.0%	0.0%	99.5%	99.3%	-0.2%
Child Labour (Paid)	13.3%	25.2%	11.9% (*)	12.6%	41.7%	29.2%	13.1%	29.1%	16.0% (**)
Access to water piped into Dwelling	84.5%	67.0%	-17.5% (*)	75.1%	49.4%	-25.7% (*)	82.3%	62.8%	-19.5% (***)
Sanitation Facilities (Flush toilet or septic tank)	88.6%	92.0%	3.4%	78.3%	85.7%	7.4% (*)	86.2%	90.5%	4.3% (*)
Education: HIGHER									
Absolute Poverty (% living below poverty line)	-	50.0%	-	-	40.1%	-	-	48.9%	-
Relative Poverty	-	0.0%	-	-	0.0%	-	-	0.0%	-
% of Children living in HH in the lowest Wealth Index quintile	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wealth Index	0.6834	0.7203	5.4% (***)	0.5631	0.5671	0.7%	0.6704	0.7037	5.0% (***)
Per Capita Consumption (Food)	8.7	7.3	-16.0% (2)	15.6	36.5	134.3% (2)	9.4	10.4	10.9% (2)

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Section 6 Economic Changes in Household

Table A.5: *Socio-economic indicators for children by area of residence and mother's educational level. Older Cohort[1]* **[continued]**

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
Real Per Capita Consumption (Food)	9.1	7.3	-19.2% [2]	16.7	41.5	148.4% [2]	9.9	11.0	11.4% [2]
Asset Value at Median Prices (12 A)	1429	1405	-1.6%	908.9	663.6	-27.0%	1373	1325	-3.5%
Asset Value at Median Prices (22 A)	1776	2184	23.0%	968.8	843.4	-13.0%	1688	2039	20.8%
Perception in the Household [3]									
Can Manage to get by	33.1%	53.3%	20.3%	30.0%	59.9%	30.0%	32.7%	54.1%	21.3%
Poor/Destitute	11.2%	0.8%	-10.4%	-	10.1%	-	10.0%	1.8%	-8.2%
Subjective Well-being Child PERCEP	89.0%	93.8%	4.8%	89.9%	100.0%	10.1%	89.1%	94.5%	5.4%
Subjective Well-being Child LADDER	-	6.4	-	-	6.80	-	-	6.45	-
Chronic Malnutrition (OMS 2006)	4.7%	6.6%	1.9%	59.9%	59.9%	0.0%	10.7%	12.4%	1.7%
School Enrolment	100.0%	100.0%	0.0%	100.0%	100.0%	0.0%	100.0%	100.0%	0.0%
Child Labour (Paid)	4.0%	11.6%	7.5% (*)	30.0%	0.0%	-30.0%	6.8%	10.3%	3.5%
Access to water piped into Dwelling	93.9%	98.4%	4.4% (*)	70.0%	100.0%	30.0%	91.3%	98.5%	7.2% (**)
Sanitation Facilities (Flush toilet or septic tank)	85.6%	88.2%	2.6%	59.9%	89.9%	30.0%	82.9%	88.4%	5.6%

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Section 6 Economic Changes in Household

Table A.6: *Socio-economic indicators by area of residence and child's gender. Older Cohort[1]*

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
The child is a boy									
Absolute Poverty (% living below poverty line)	-	83.4%	-	-	90.5%	-	-	87.1%	-
Relative Poverty	-	11.0%	-	-	39.2%	-	-	25.7%	-
% of Children living in HH in the lowest Wealth Index quintile	10.2%	8.9%	-1.3%	42.4%	41.3%	-1.1%	27.0%	25.8%	-1.2%
Wealth Index	0.49	0.53	7.3% (**)	0.23	0.24	3.9%	0.36	0.38%	6.1% (**)
Per Capita Consumption (Food)	9.10	10.2	12.0% [2]	21.5	37.1	72.6% (*) [2]	15.6	24.2	55.8% (**) [2]
Real Per Capita Consumption (Food)	9.8	10.4	7.1% [2]	25.0	39.6	58.2% [2]	17.7	25.7	44.8% (*) [2]
Asset Value at Median Prices (12 A)	692.3	864.1	24.8%	275.3	349	26.8%	474.4	594.9	25.4%
Asset Value at Median Prices (22 A)	811.4	1146	41.2% (**)	316.3	391.9	23.9%	552.7	751.8	36.0% (**)
Perception in the Household [3]									
Can Manage to get by	28.0%	32.4%	4.4%	17.9%	19.6%	1.7%	22.7%	25.7%	3.0%
Poor/Destitute	30.1%	21.0%	-9.1%	44.3%	31.7%	-12.6%	37.5%	26.6%	-10.9%
Subjective Well-being Child PERCEP	79.5%	89.7%	10.1% (**)	81.3%	87.7%	6.4%	80.4%	88.6%	8.2% (**)
Subjective Well-being Child LADDER	-	5.70	-	-	5.54	-	-	5.62	-
Chronic Malnutrition (OMS 2006)	22.8%	26.6%	3.8%	51.3%	57.1%	5.8%	37.7%	42.5%	4.8%
School Enrolment	98.2%	98.0%	-0.2%	99.2%	98.8%	-0.4%	98.7%	98.4%	-0.3%
Child Labour (Paid)	18.5%	29.7%	11.2% (*)	23.7%	39.5%	15.8% (*)	21.2%	34.8%	13.6% (***)
Access to water piped into Dwelling	84.9%	87.2%	2.4%	63.2%	78.0%	14.9% (**)	73.5%	82.4%	8.9% (***)
Sanitation Facilities (Flush toilet or septic tank)	54.2%	62.8%	8.6%	3.8%	7.8%	4.0%	27.9%	34.1%	6.2% (*)
The child is a girl									
Absolute Poverty (% living below poverty line)	-	82.4%	-	-	93.0%	-	-	87.5%	-
Relative Poverty	-	13.0%	-	-	37.3%	-	-	24.7%	-
% of Children living in HH in the lowest Wealth Index quintile	9.2%	6.5%	-2.7%	37.6%	40.5%	2.9%	22.8%	22.9%	0.0%
Wealth Index	0.48	0.49	1.7%	0.23	0.23	3.7%	35.8%	36.6%	2.3%
Per Capita Consumption (Food)	12.8	17.3	37.8% [2]	21.24	25.92	22.1% [2]	16.8	21.4	24.2% [2]
Real Per Capita Consumption (Food)	13.6	17.8	31.0% [2]	24.5	27.9	13.9% [2]	18.8	22.7	20.3% [2]
Asset Value at Median Prices (12 A)	741.9	820.2	10.6%	173.9	328.7	89.0%	468.8	583.9	24.6% (*)
Asset Value at Median Prices (22 A)	852.2	1093	28.3% (**)	451.8	442.2	-2.1%	659.7	780	18.3%
Perception in the Household [3]									
Can Manage to get by	32.5%	34.5%	1.9%	21.8%	23.4%	1.6%	27.4%	29.1%	1.8%

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Section 6 Economic Changes in Household

Table A.6: *Socio-economic indicators by area of residence and child's gender. Older Cohort[1]* **[continued]**

	Urban			Rural			Total		
	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds	Round 1 (Panel)	Round 2	Change between Rounds
Poor/Destitute	27.4%	25.2%	-2.2%	42.2%	36.2%	-5.9%	34.5%	30.5%	-4.0%
Subjective Well-being Child PERCEP	81.4%	90.9%	9.5% (**)	67.1%	87.7%	20.5% (***)	74.4%	89.5%	15.1% (***)
Subjective Well-being Child LADDER	-	6.44	-	-	6.21	-	-	6.33	-
Chronic Malnutrition (OMS 2006)	24.5%	24.7%	0.3%	38.0%	58.8%	20.9% (**)	31.0%	41.1%	10.2% (**)
School Enrolment	99.4%	99.2%	-0.2%	100.0%	100.0%	0.0%	99.7%	99.6%	-0.1%
Child Labour (Paid)	16.6%	25.8%	9.2%	38.4%	28.2%	-10.3%	27.2%	26.9%	-0.2%
Access to water piped into Dwelling	81.6%	87.3%	5.7%	73.2%	81.4%	8.2%	77.5%	84.4%	6.9% (**)
Sanitation Facilities (Flush toilet or septic tank)	52.0%	57.7%	5.7%	2.9%	9.5%	6.6% (**)	28.4%	34.5%	6.1% (**)

*Full sample differences are significant at 10%; **Significant at 5%; ***Significant at 1%

(1) T-test adjusted for sample design

(2) Growth rate based on robust estimation (to account for outliers)

(3) Obtained from Section 6 Economic Changes in Household

Annex 3. Anthropometric differences according to alternative growth standards

In April 2006 the World Health Organisation (WHO) released new standards for assessing the growth and development of children from birth to 5 years of age. These growth charts should replace the charts adopted by the WHO based upon the US National Center for Health Statistics 1978 whose main limitations were:[1]

1. Based on infant data collected between 1929 and 1975 in the USA for middle-class, white Americans living in a relatively small part of the south-west of Ohio. Most of these infants were formula-fed during their first months (very common practice for the time).

2. There is a disjunction in the data collected between 24 and 36 months of age. This meant that when one shifts from 'recumbent length' to 'standing height' there appears to be an upward shift in height that could be misinterpreted as an improvement on the linear growth upward shift, as 'recumbent length' and 'standing height' were taken from different data sets.

In 2000, the US Center for Disease Control and Prevention (CDC) produced a revised growth reference based on more comprehensive USA national survey data and improved statistical smoothing procedures (Roberfroid et al. 2007). Although this revision partially overcomes the above concerns, it was still based on data from just one developed country (CDC 2000).

The new growth charts, introduced by WHO, are the product of a detailed process initiated in the early 1990s involving various reviews of the uses of anthropometric references and alternative approaches to developing new tools to assess growth. The new standards adopt a fundamentally prescriptive approach designed to describe how all children should grow rather than merely describing how children grew at specified a time and place (De Onis et al. 2006).

There are important differences between the new WHO 2006 standards and the NCHS/WHO 1978 reference; these vary by age group, growth indicator, specific percentile or z-score curve, and the nutritional status of the index populations. The main ones are:[2]

1. Data used to construct the reference tables come from a larger country base (Brazil, Ghana, India, Norway, Oman and the United States).

2. During infancy only breast-fed infants were included in the WHO 2006 sample, while formula-fed infants predominate in the NCHS/WHO 1978 reference.

3. Differences in measurement intervals between the two sets of curves (every two weeks in the first two months and monthly thereafter in the WHO 2006 standards versus every three months in the NCHS/WHO 1978 reference) in a period of rapid growth may also explain divergent growth patterns.

4. Differences in the variability of normal growth depicted by the WHO 2006 standards and the NCHS/WHO 1978 reference are probably the result of the prescriptive approach and updated analytical methods on which the WHO 2006 standards are based.

Victorian Government Health Information (2007).

De Onis and Bhandari (2007).

5. The difference in the shapes of the weight-based curves makes the interpretation of growth performance different depending on whether the WHO 2006 standards or the NCHS/WHO 1978 standard is used.

6. It is expected that stunting will increase throughout childhood when assessed using the WHO 2006 standards compared to the NCHS/WHO 1978 reference. Underweight rates will usually be higher in the first half of infancy and lower thereafter. For wasting, the main difference is also during infancy when wasting rates will be substantially higher using the WHO 2006 standard.

Diverse studies have shown that CDC growth reference tables were not appropriate and suggested maintaining the usage of the 1978 NCHS/WHO reference until release of the new WHO multi-country growth charts (see for example Roberfroid et al. 2007).

Table A7 provides information for the younger cohort in Peru for each of the three published standards. In the case of stunting, for example: a) 'stun1978' is based on the NCHS/WHO 1978 reference; b) 'stund2000' is based on the CDC 2000 reference; and c) 'stund2006' is based on the WHO 2006 standards.

Table A.7: *Younger Cohort*

	N	Round 1 (N=2052)	N	Round 1 (Panel) (N=1963)	N	Round 2 (N=1963)	Change between Rounds (Panel)
Urban							
Stun1978	236	17.4%	223	17.2%	264	20.4%	3.2% (**)
Stun2000	145	10.7%	137	10.6%	214	16.6%	6.0%(***)
Stun2006	271	19.9%	256	19.8%	264	20.4%	0.6%
Wast1978	20	1.5%	19	1.5%	5	0.4%	-1.1%(***)
Wast2000	34	2.5%	33	2.5%	17	1.3%	-1.2%(**)
Wast2006	26	1.9%	25	1.9%	-	-	-
Under1978	88	6.5%	81	6.3%	51	3.9%	-2.3% (***)
Under2000	148	10.9%	139	10.7%	75	5.8%	-4.9% (***)
Under2006	56	4.1%	52	4.0%	42	3.2%	-0.8%
Rural							
Stun1978	269	38.8%	254	38.0%	379	56.7%	18.7% (***)
Stun2000	204	29.4%	189	28.3%	320	48.3%	20.0% (***)
Stun2006	309	44.6%	293	43.9%	388	58.1%	14.2% (***)
Wast1978	16	2.3%	16	2.4%	1	0.1%	-2.3% (***)
Wast2000	23	3.3%	20	3.0%	4	0.6%	-2.4%(***)
Wast2006	17	2.5%	17	2.5%	-	-	-
Under1978	125	18.0%	117	17.5%	70	10.5%	-7.0% (***)
Under2000	187	27.0%	179	26.8%	91	13.8%	-13.1% (***)
Under2006	88	12.7%	80	12.0%	66	9.9%	-2.1%
Total							
Stun1978	505	24.6%	477	24.3%	643	32.8%	8.5% (***)
Stun2000	349	17.0%	326	16.6%	534	27.3%	10.7% (***)
Stun2006	580	28.3%	549	28.0%	652	33.2%	5.3% (***)
Wast1978	36	1.8%	35	1.8%	6	0.3%	-1.5% (***)
Wast2000	57	2.8%	53	2.7%	21	1.1%	-1.6% (***)
Wast2006	43	2.1%	42	2.1%	-	-	-
Under1978	213	10.4%	198	10.1%	121	6.2%	-3.9% (***)
Under2000	335	16.3%	318	16.2%	166	8.5%	-7.7% (***)
Under2006	144	7.0%	132	6.7%	108	5.5%	-1.2%

*Full sample differences are significant at 10%; **Significant at 5% ; ***Significant at 1%

(1) T-test does not account for sample design at this time

Further, as a comparison point Table A.8 provides the same indicators for the same age groups using the Demographic and Health Survey (DHS) for year the 2000 (nearest to the first round period); the results match the expected rates in stunting, wasting and underweight. Finally Table A.9 provides the same indicators using the 2004-06 DHS (the latest results published for year the 2006).

Table A.8: *DHS 2000 growth rates using the WHO standards*

	Group 1: 6-18 months	Group 2: 54-60 months	Change between Rounds
Urban			
Stunting	8.6%	21.6%	13.0% (***)
Wasting	1.6%	1.2%	-0.4%
Underweight	2.4%	3.0%	0.6%
Rural			
Stunting	21.1%	47.5%	26.4% (***)
Wasting	2.3%	1.7%	-0.6%
Underweight	5.0%	7.2%	2.2% (***)
Total			
Stunting	16.0%	37.8%	21.8% (***)
Wasting	2.0%	1.5%	-0.5%
Underweight	4.0%	5.6%	1.7% (***)
N	2327	5704	8031

*Full sample differences are significant at 10%; **Significant at 5% ; ***Significant at 1%

(1) T-test does not account for sample design at this time

Table A.9: *DHS 2004-06 growth rates using the WHO standards*

	Group 1: 6-18 months	Group 2: 54-60 months	Change between Rounds
Urban			
Stunting	12.6%	25.8%	13.1% (***)
Wasting	0.5%	0.0%	-0.5%
Underweight	4.5%	3.1%	-1.5%
Rural			
Stunting	32.3%	48.4%	16.1% (***)
Wasting	1.9%	0.4%	-1.5% (**)
Underweight	13.5%	9.5%	-4.0%(**)
Total			
Stunting	24.9%	41.6%	16.8% (***)
Wasting	1.3%	0.3%	-1.1% (**)

*Full sample differences are significant at 10%; **Significant at 5% ; ***Significant at 1%

(1) T-test does not account for sample design at this time

Annex 4. Additional exploration of height-for-age pattern

Figure A.1. *Fitted values for height of girls from the younger cohort with access to electricity (by months of age in Round 2 and area of residence)*
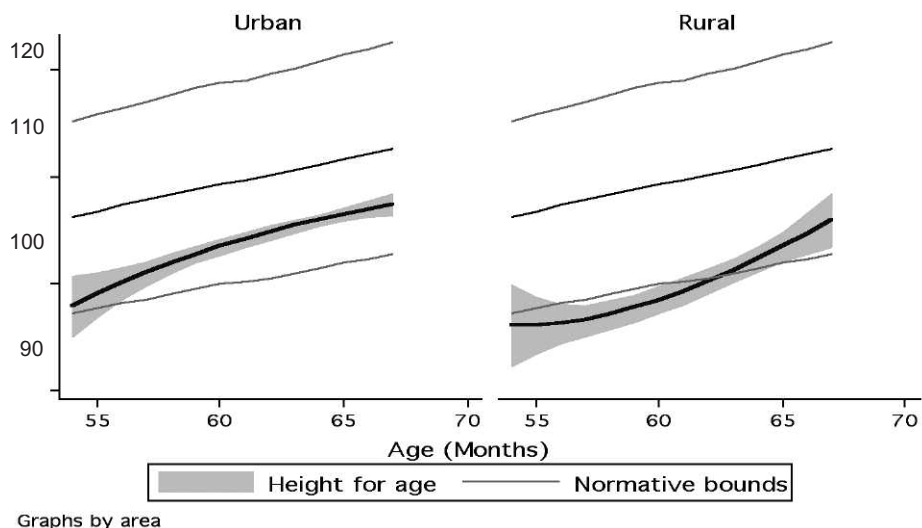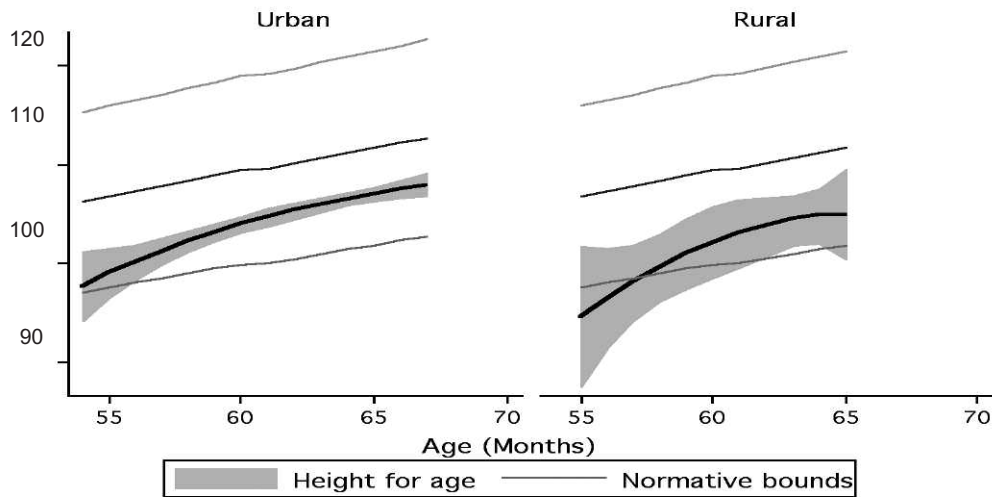

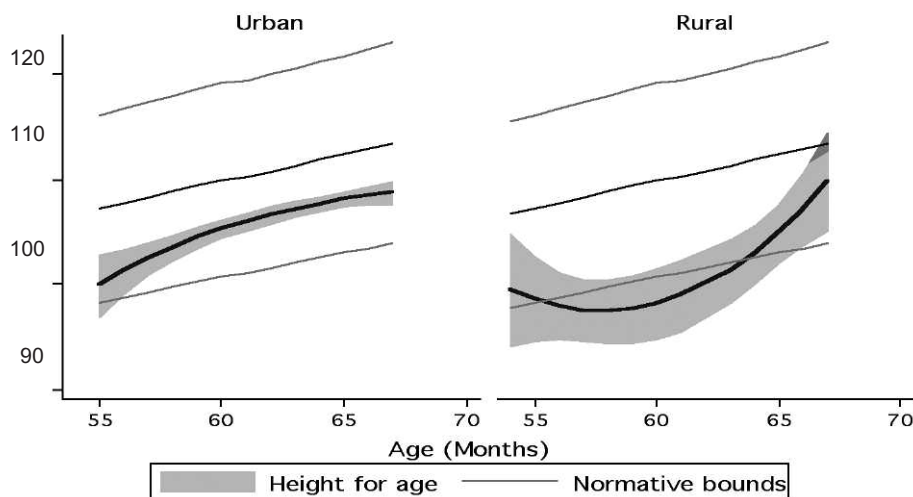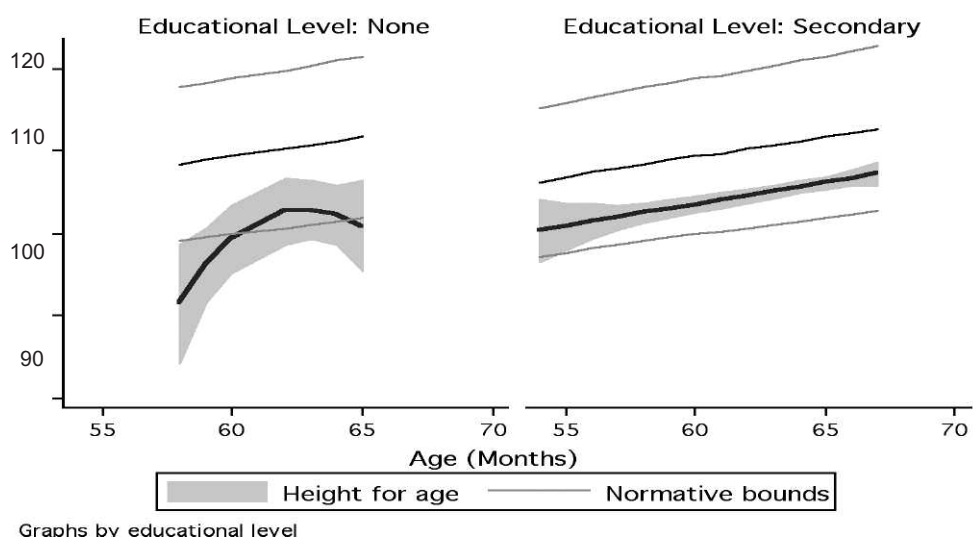*Upper and lower limits stand for ±2 standard deviations

Figure A.2. *Fitted values for height of boys from the younger cohort with access to electricity (by months of age in Round 2 and area of residence)*
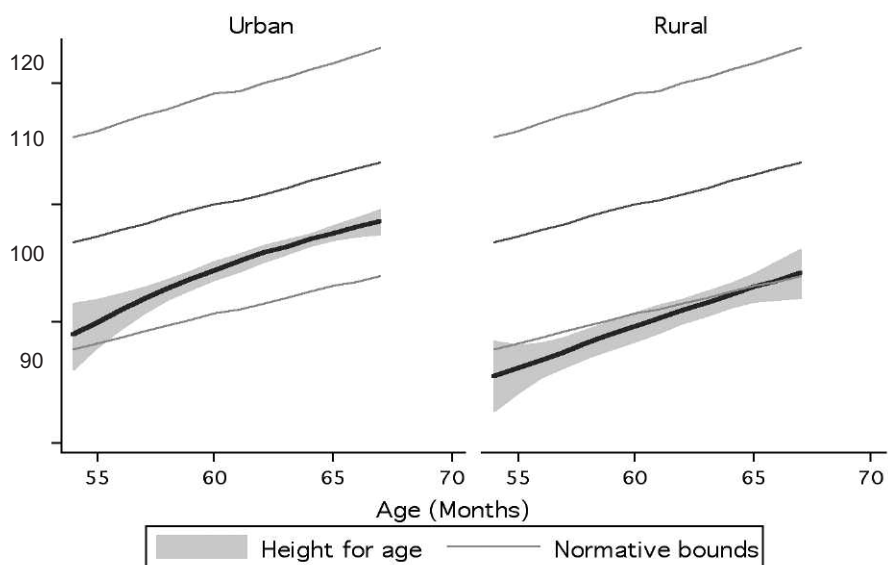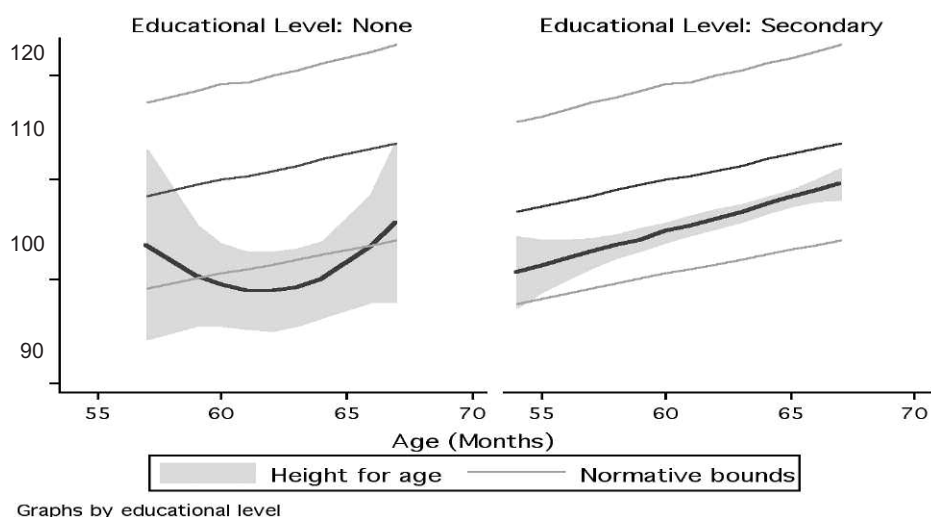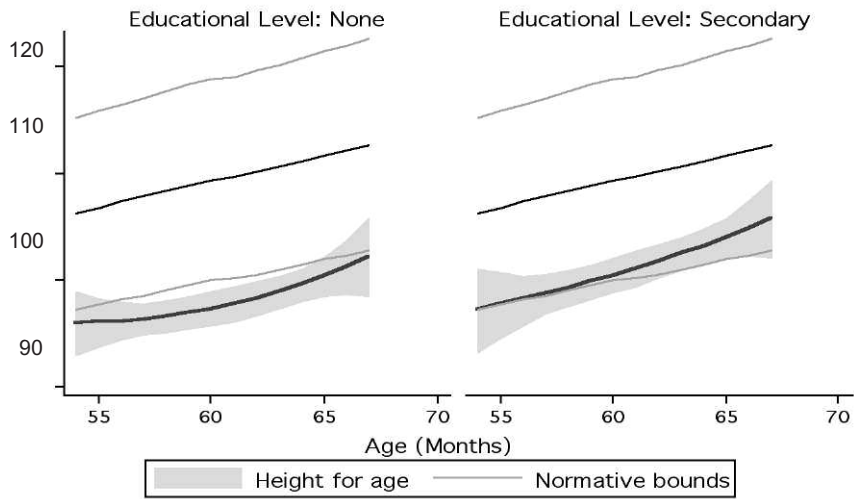

*Upper and lower limits stand for ±2 standard deviations

Figure A.3. *Fitted values for height of girls from younger cohort with access to sanitation facilities (by months of age in Round 2 and area of residence)*

*Upper and lower limits stand for ±2 standard deviations
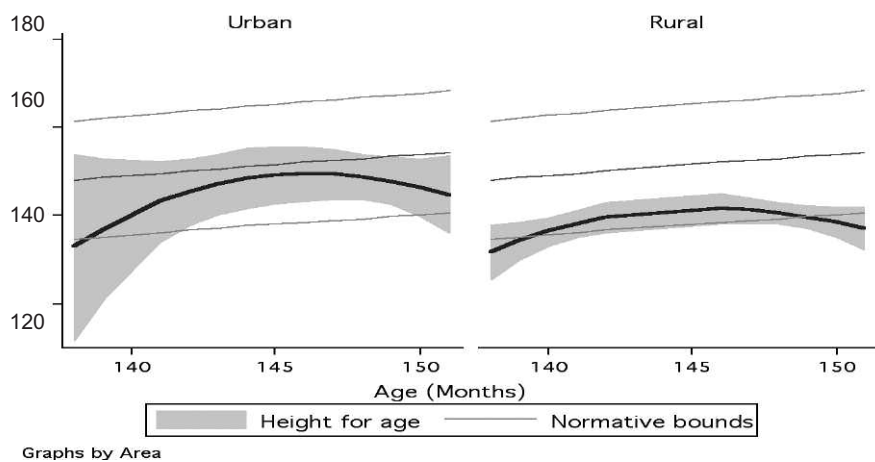
Figure A.4. *Fitted values for height of boys from younger cohort with access to sanitation facilities (by months of age in Round 2 and area of residence)*

*Upper and lower limits stand for ±2 standard deviations

Figure A.5. *Distribution of fitted values for height of girls from younger cohort in urban areas (by months of age in Round 2 and educational level of the mother)*

Graphs by educational level

*Upper and lower limits stand for ±2 standard deviations

Figure A.6. *Distribution of fitted values for height of boys from younger cohort in urban areas (by months of age in Round 2 and educational level of the mother)*

Graphs by educational level

*Upper and lower limits stand for ±2 standard deviations

Figure A.7. *Distribution of fitted values for height of girls from younger cohort in rural areas (by months of age in Round 2 and educational level of the mother)*

*Upper and lower limits stand for ±2 standard deviations

Figure A.8. *Distribution of fitted values for height of boys from younger cohort in rural areas (by months of age in Round 2 and educational level of the mother)*
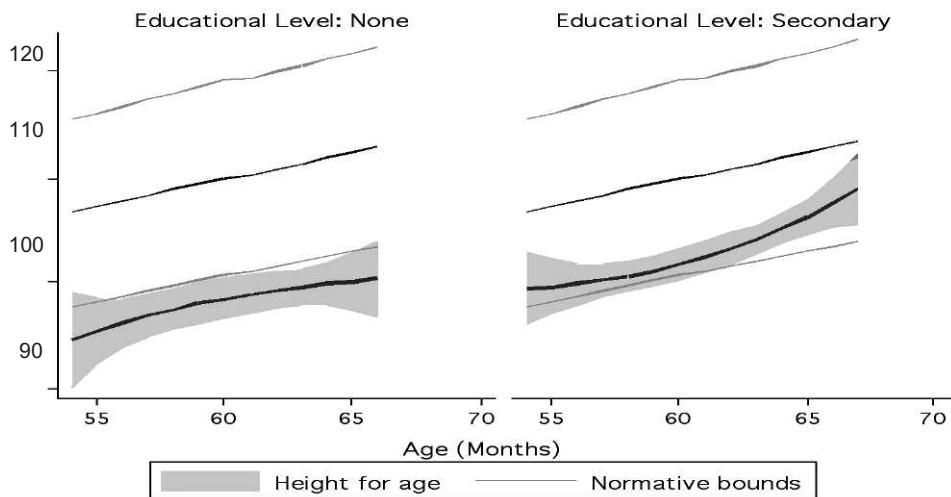
*Upper and lower limits stand for ±2 standard deviations

Figure A.9. *Fitted values for height of girls from older cohort with access to electricity (by months of age in Round 2 and area of residence)*
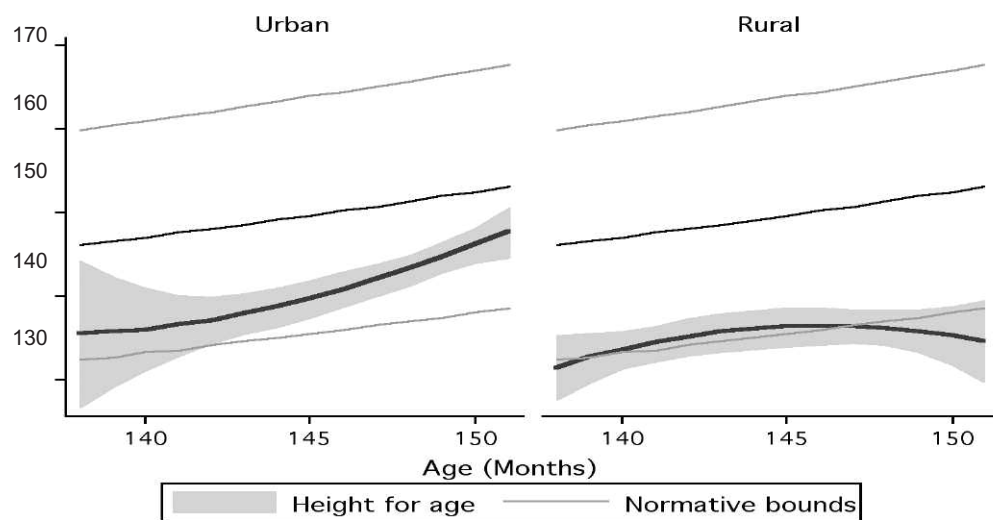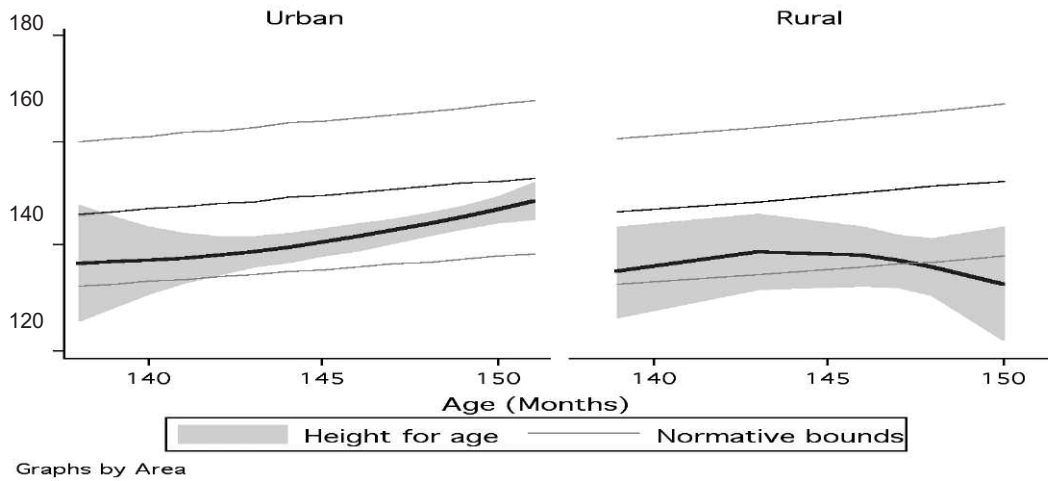

*Upper and lower limits stand for ±2 standard deviations

Figure A.10. *Fitted values for height of boys from older cohort with access to electricity (by months of age in Round 2 and area of residence)*

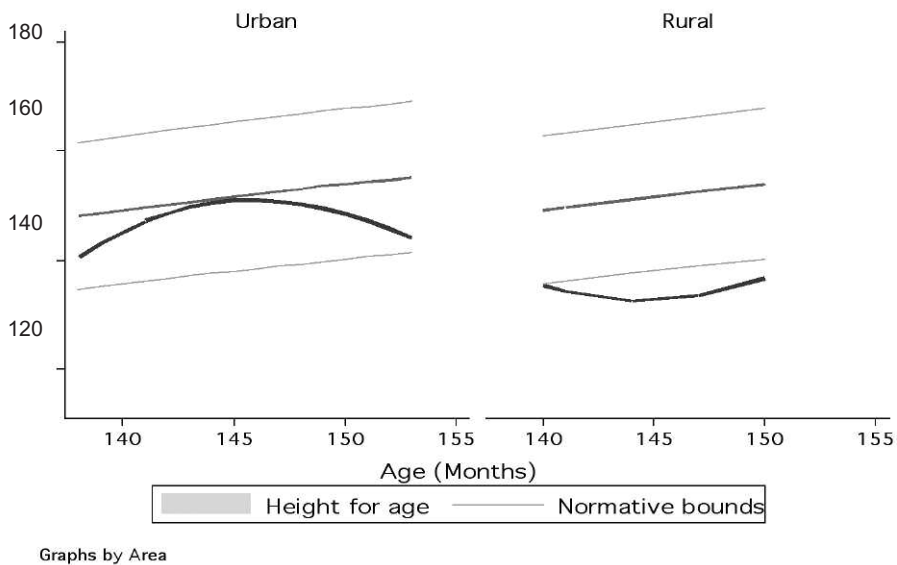....*Upper and lower limits stand for ±2 standard deviations

Figure A.11. *Fitted values for height of boys from older cohort with access to sanitation facilities (by months of age in Round 2 and area of residence)*

*Upper and lower limits stand for ±2 standard deviations

Figure A.12. *Fitted values for height of girls from older cohort with access to sanitation facilities (by months of age in Round 2 and area of residence)*

*Upper and lower limits stand for ±2 standard deviations

Young Lives is an innovative long-term international research project investigating the changing nature of childhood poverty.

The project seeks to:

- improve understanding of the causes and consequences of childhood poverty and to examine how policies affect children's well-being
- inform the development and implementation of future policies and practices that will reduce childhood poverty.

Young Lives is tracking the development of 12,000 children in Ethiopia, India (Andhra Pradesh), Peru and Vietnam through quantitative and qualitative research over a 15-year period.

Young Lives Partners

Young Lives is coordinated by a small team based at the University of Oxford, led by Jo Boyden.

Ethiopian Development Research Institute, Ethiopia

Centre for Economic and Social Sciences, Andhra Pradesh, India

Save the Children – Bal Raksha Bharat, India

Sri Padmavathi Mahila Visvavidyalayam (Women's University), Andhra Pradesh, India

Grupo de Análisis para el Desarollo (Group for the Analysis of Development), Peru

Instituto de Investigación Nutricional (Institute for Nutritional Research), Peru

Centre for Analysis and Forecast, Vietnamese Academy of Social Sciences, Vietnam

General Statistics Office, Vietnam

The Institute of Education, University of London, UK

Child and Youth Studies Group (CREET), The Open University, UK

Department of International Development University of Oxford, UK

Statistical Services Centre, University of Reading, UK

Save the Children UK (staff from the Rights and Economic Justice team in London as well as staff in India, Ethiopia and Vietnam).

Young Lives
An International Study of Childhood Poverty