



Education Trajectories: From Early Childhood to Early Adulthood in Peru

**Santiago Cueto, Alejandra Miranda, Juan León,
and María Cristina Vásquez**

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About Young Lives

Young Lives is an international study of childhood poverty, following the lives of 12,000 children in four countries (Ethiopia, India, Peru and Vietnam) over 15 years. www.younglives.org.uk

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Summary

Over the past few decades, every President in Peru has proclaimed education as a priority; yet, in spite of recent progress across several indicators, educational outcomes are still on average low, and gaps between students large and closely linked with their individual and family background. This paper looks at the education trajectories of children in different stages of life, using data from Young Lives, an international study that follows two groups of children: an Older Cohort (born in 1994) and a Younger Cohort (born in 2001). According to the Peruvian Constitution and General Education Law, education is considered a human right, and all students should have access to a quality service. However, results from our study and others suggest that while there have been important advances over the past two decades, there is still a long way to go for this to become a reality for everyone.

Peruvian early childhood education consists of two types of preschool: Jardines, which are located in urban areas, and PRONOEI, which are usually in rural or impoverished areas. While attendance in preschool education has increased recently, our results show that by the age of 5 there are already differences in abilities that are related to family background. Furthermore, even after adjusting for these, children from Jardines have higher results in primary school than children from PRONOEI.

Peruvian children are expected to attend primary school during middle childhood (ages 6 to 12), and most do. When we compare overage instances between the Older and Younger Cohort, it has been reduced, which is positive as more children are in their normative grade. Achievement in national and international assessments, as well as our own data, also show increases on average scores along with large gaps by wealth, area of residence, maternal education, and ethnicity. Regarding the latter, while Peruvian law states that children have the right to learn in their mother language, our results show that almost 39 per cent of indigenous children learn in Spanish only. In general, we find that educational opportunities are not fairly distributed. For example, urban schools (public and private) congregate richer, Spanish-speaking students and have better resources and more pedagogically able teachers; these students in turn have higher test results.

During adolescence, children are expected to attend secondary schools. Overage at age 15 is higher than in primary, and continues to be related to the family background of students. During this period, we also find large gaps in achievement by student background. In regards to early adulthood, by about age 17 children should have finished secondary school: we found that nearly 68 per cent of our cohort had finished school at age 19 (42 per cent finished on age and 26 per cent overage); 20 per cent of adolescents had dropped out of school. Beyond secondary, young adults from Spanish-speaking homes, wealthier, and with more educated mothers (who had completed secondary education or above), are more likely to attend universities. Additionally, more than 38 per cent of the sample only worked and did not study at age 19; and in the case of women, 25 per cent already had children.

Progress in enrolment and average achievement is clear in the educational trajectories of the two cohorts of children from early childhood to adulthood. This reflects the importance the population and successive governments have attributed to education. However, large disparities remain, related to students' and family's characteristics. In basic education, inequality is not related so much to access to school as it is to the educational opportunities children have at school, and their results in standardised tests. Children who come from

relatively poor families, are indigenous, have a mother with less than complete secondary education, or who live in a rural family tend to have fewer opportunities and lower outcomes than their peers; the situation is worse for those who combine several of these family characteristics. Fortunately, disparities in opportunities and achievement by sex are relatively small. In tertiary education, there are still large gaps in access between groups, with privileged students having more access to university studies. Our conclusion is that the educational system may be reinforcing inequalities since it does not provide equal opportunities for all children; ideally, it should prioritise the opportunities of children and young adults who we know are more likely to have poor educational outcomes (i.e. vulnerable children). This should start at a young age, as we have found that gaps in achievement are evident by the age of 5. There are reasons to be optimistic, however, as public funding in education is increasing rapidly. In this scenario, we suggest that inequality in educational opportunities and outcomes becomes a priority.

1. Introduction

Since the late 1960s, every President in Peru has proclaimed education to be a high priority. Yet, arguably, results have been poor and unequal. This paper analyses recent trends in education in Peru to raise what we consider are the main challenges to moving forward, and provides policy suggestions. To do this, we take a dynamic view of the educational evolution of two cohorts of children from around the country that were born in around 1994 (Older Cohort) and 2001 (Younger Cohort). We use the Young Lives dataset, which allows us to follow these children at several stages of development and compare results across the two cohorts at the same ages. This is complemented by studies produced with the Young Lives dataset and others.

2. Background of the education system in Peru

Since 2001, Peru has lived in democracy, with three successive Presidents being elected. This came after a period of intense violence, associated with two terrorist groups, and high levels of corruption. These trends have continued in a way, with violence taking the form of high levels of delinquency, and corruption apparently still being strong in different government sectors.

2.1 Education policies

According to the Peruvian Constitution of 1993, education has the goal of promoting the integral development of every person. It is the state's duty to make sure that everyone has an adequate education, regardless of economic status or any physical and mental limitation. Preschool, primary and secondary education are mandatory for all, although there are no mechanisms to enforce this. In public schools, education is free, but private education is allowed. The Constitution also stipulates that the state is responsible for providing bilingual education for indigenous students. The Ministry of Education has responsibility for national policies, but regional governments have also responsibilities in their jurisdictions (especially since 2001).

More specifically, General Education Law N° 28044 (2003) states that education is a human right and a public service for every person. Quality, equity and inclusion are three pillars of this law, in reference to, for example, special needs and indigenous students.

Complementary to this, in 2002 the Law for Intercultural and Bilingual Education (N° 27818) was approved, stating that indigenous communities should have the same access and quality education as the general population. Indigenous students are expected to learn to read and write in their own language and in Spanish as a second language.

The General Education Law also highlighted the need for a National Educational Project, which was developed by the National Council of Education in 2007. This sets six strategic objectives that should lead educational development at all levels, considering the country's diversity. These objectives were planned to be achieved by 2021, and were linked with equity in opportunities, quality education, well-trained teachers, decentralised management, tertiary

education and the importance of citizenship. While the Constitution, law and education projects are general reference points, the specific mandates contained within each are often not enforced. For example, the General Education Law stated that 6 per cent of Gross Domestic Product (GDP) should be devoted to education, but this has not happened.¹

Preschool programmes for the most part start at age 3 (although there are some programmes for younger children).² In preschools, two main types of centres have been established: PRONOEI, where the teachers are mothers from the community with some training and support from professional teachers; and Jardines, regular preschools run by teachers, which can be public or private. PRONOEI are usually located in relatively isolated, poorer, rural areas, while Jardines are in more densely populated areas; thus the student populations are quite different, with poorer students attending PRONOEI. Studies from Young Lives (Díaz 2006) and others (Cueto and Díaz 1999) suggest that the achievement in primary school of children from PRONOEI is lower than that of children from Jardines. By age 6, children should be enrolled in first grade of primary school. An evaluation of students' skills to enter first grade is not allowed, as it thought that it could lead to discrimination. Primary education includes six grades, while secondary education includes five years. Thus children are expected to finish high school by the age of 17. Upon completion, they can apply to higher education in a public or private technological institute or university.

Perhaps the main characteristic of education policies between 2000 and 2015 has been an attempt from every government to innovate. This has had a positive effect, as there are many problems that need creative solutions, but it has also meant that some promising initiatives have not been carried forward over the years. For example, President García (2006-11) introduced the Teachers Public Career's Law N° 29062 (2007), which established several levels of professional development and associated increases in salaries. However, progression to these new levels was not mandatory, and teachers could opt to stay under the old regime. The current government of President Humala (2011-16) enacted a new law (N° 29944) with similar provisions in 2012, but this law forced all teachers to move to the new teacher categories. These legal changes have resulted in there being only a few teacher evaluations over the past few years, although this has improved recently. This has meant that there have been limited opportunities for teachers to enter the profession or be promoted. The new government (which began in July 2016) has plans to continue with this policy, while introducing some reforms of the law. Teachers are widely considered a key factor in the educational system (Villegas-Reimers 2003). Teachers in the public system are considered to be paid poorly in general, although salaries have been increased over the past few years and they should receive pay raises as their career progresses. Teachers' pay in private schools is not regulated.

The curriculum is another area of changes and debates. In Peru, by law there is a national curriculum, although regions are allowed to diversify it. Under President García, a new curriculum for all levels of basic education was introduced, based on promoting the learning of competencies (i.e. applied skills), a change from the old curriculum, which was criticised for promoting rote knowledge. Under President Humala, a new curriculum was planned,

1 While investment in education has increased over the past few years, its proportion of GDP has been around 3 per cent, as GDP itself has also been growing. The government introduced a significant increase in 2015 to 3.5 per cent (ESCALE 2015), with an increase to 4.5 per cent expected in 2016. However, the 6 per cent of GDP target has been questioned, with suggestions that figures should be based on the estimated budget needed to provide a quality service for all.

2 See, for example, a study by Cueto et al. (2009) on a programme formerly called Wawa Wasi, now Cuna Mas.

which refined the idea of learning competencies and linked them with standards that were connected for all school years. However, the complexity of this new plan drew criticism, and the new curriculum has been approved only recently, after several years of having both the old and new partially used. Perhaps this discussion lost sight that what matters most for student learning is what happens in the classroom. We make reference to some studies on opportunities to learn in Section 5, suggesting that these are lower for poorer children.

Another area of change has been standardised evaluations. Under President Toledo (2001-06), a plan for national and international evaluations in different areas and grades was developed. These evaluations were based on sample designs, which allowed for reporting at the regional level. However, in 2007, President García disregarded this plan and started census evaluations in Spanish and reading in second grade; complementary to this, indigenous students in bilingual schools were tested in reading in their mother tongue and Spanish as a second language in fourth grade. This plan had the advantage of providing a series of comparable annual results, plus a report for every school. Recently, an incentive programme for teachers was created, with financial awards for teachers and schools whose students achieved relatively highly on the census evaluation. While there are no local studies on this programme yet, according to some international studies and a statement from the National Council of Education (2014), it may have had detrimental side effects. These include narrowing down of the curriculum, training for answering a specific type of test, and relegating some students from taking the test (Campbell 1976; Koretz 2000; McEwan and Santibañez 2005; Popham 2001; Vegas and Umansky 2005). However, some studies have shown the positive effects of those programmes on students' achievement, such as Muralidharan and Sundararaman (2011) in Andhra Pradesh (India), where a randomised evaluation found no evidence of negative consequences of this programme. Similar results were found in Israel (Lavy 2002; 2009) using regression discontinuity, difference in difference and matching. The debate on this is likely to continue over the next few years, and we hope it will be informed by local evidence. Peru's participation in international testing has continued, for example with PISA for 15-year-olds, UNESCO's regional test for primary students, and recently the International Evaluation Association's study on Civics Education.³ Also, the government tested students from sixth grade in 2013 and from the second year of secondary in 2015. Hopefully, the provision of data from standardised evaluations will continue to expand over the next few years. Perhaps the main challenge for standardised testing continues to be how to incorporate the results into national, regional and local policies to increase learning and decrease inequality.

Finally, in regards to tertiary education, as with other levels, enrolment has increased significantly over the past few decades. In 1955 there were only six universities, one of them private; by 2013, 140 universities were operational (89 private and 51 public). Technical institutes have also increased in the last decades. By 2014, there were 790 technical institutes in Peru, with 53 per cent of them being private. Legislative Decree N° 882 approved in 1996, that allowed the creation of for-profit universities and technical institutes, could explain the expansion of private education in Peru.

In 2014 a new University Law (N°30220) was approved, which included new standards for the creation and licensing of universities, and promoted research. This law created a national superintendence to regulate functioning of universities. The current president has decided to

3 The Programme for International Student Assessment (PISA) is an international study that measures 15-year-old students' achievements in mathematics, reading and science.

maintain this law; however, there are still some politicians who oppose it, and the debate continues. The problem is that most of the time policies are discontinued without evidence in favour or against, and without giving policies and programmes time to mature.

2.2 Educational outcomes

Below we present some national and disaggregated statistics, from a variety of sources. These illustrate that, in spite of the discontinuation of policies mentioned above, some progress in the indicators is evident. At the same time, the figures show that there are significant gaps between groups of children.

Table 1 presents nationally representative data on enrolment. Primary education has the highest enrolment, but all other levels are also increasing. However, looking beyond averages it is easy to find large gaps between groups, as shown in Table 2. Gaps are relatively large for comparisons by mother tongue, poverty, area of residence and maternal education, and smaller by gender, slightly favouring girls.

Table 1. *Net attendance rates in preschool, primary, secondary and higher education*

	2002	2006	2009	2013
Preschool	52.6%	60.7%	67.6%	78.3%
Primary	90.8%	93.2%	94.2%	93.1%
Secondary	70.4%	74.0%	77.7%	81.5%
Tertiary education, technical or vocational	11.0%	10.6%	11.0%	11.4%
Tertiary education, university	11.0%	12.7%	18.2%	22.7%

Source: National Household Surveys (ENAH) 2002, 2006, 2009 and 2013.

Notes: Analysis conducted by the authors based on whether or not child is currently attending school. We used the ratio of children attending school/children for ages 3 to 5 (preschool), 6 to 11 (primary), 12 to 16 (secondary) and 17 to 21 (tertiary).

Table 2. *Net attendance rates in preschool, primary, secondary and higher education by sociodemographic characteristics (2013)*

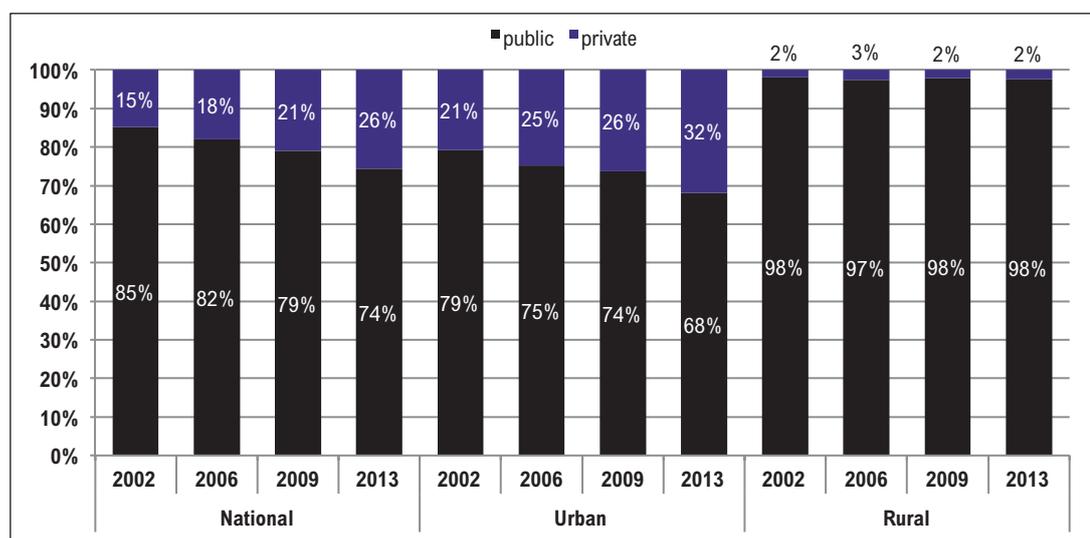
	Attendance in preschool (%)	Attendance in primary (%)	Attendance in secondary (%)	Attendance in tertiary education, technical or vocational (%)	Attendance in tertiary education, university (%)
Average	78.3	93.1	81.5	11.4	22.7
Gender					
Boys	77.5	92.6	80.8	10.6	20.6
Girls	79.3	93.7	82.2	12.2	24.8
Mother tongue					
Spanish	78.9	93.2	82.7	11.6	24.0
Indigenous	73.2	93.8	72.9	9.5	10.5
Poverty					
Not poor	82.7	93.4	85.3	12.2	27.4
Poor	70.3	92.7	75.8	9.1	4.7
Extreme poor	68.5	92.8	59.2	3.3	2.1
Area					
Urban	80.2	92.7	85.8	11.9	26.9
Rural	73.3	94.2	72.0	9.5	8.1
Maternal education					
Higher education	85.6	93.9	91.1	9.9	51.2
Secondary incomplete or complete	78.7	92.2	87.2	12.3	21.7
Primary complete or incomplete	72.5	93.8	77.5	12.4	13.8
No education or preschool	60.2	94.2	63.9	7.9	8.8

Source: National Household Surveys (ENAH) 2013.

Notes: Analysis conducted by the authors based on whether or not children attended school. We used the ratio of children attending school/existing children for ages 3 to 5 (preschool), 6 to 11 (primary), 12 to 16 (secondary) and 17 to 21 (tertiary).

While the majority of children attend public schools, an increasing percentage of students attend private schools, as shown in Figure 1.⁴ Private education in Peru occurs almost exclusively in urban areas, where more families can afford to pay for this service (which is not subsidised by the government). In Lima, the capital, enrolment in private schools is almost 50 per cent (Cuenca 2013).

Figure 1. *Enrolment in basic education by type of school*

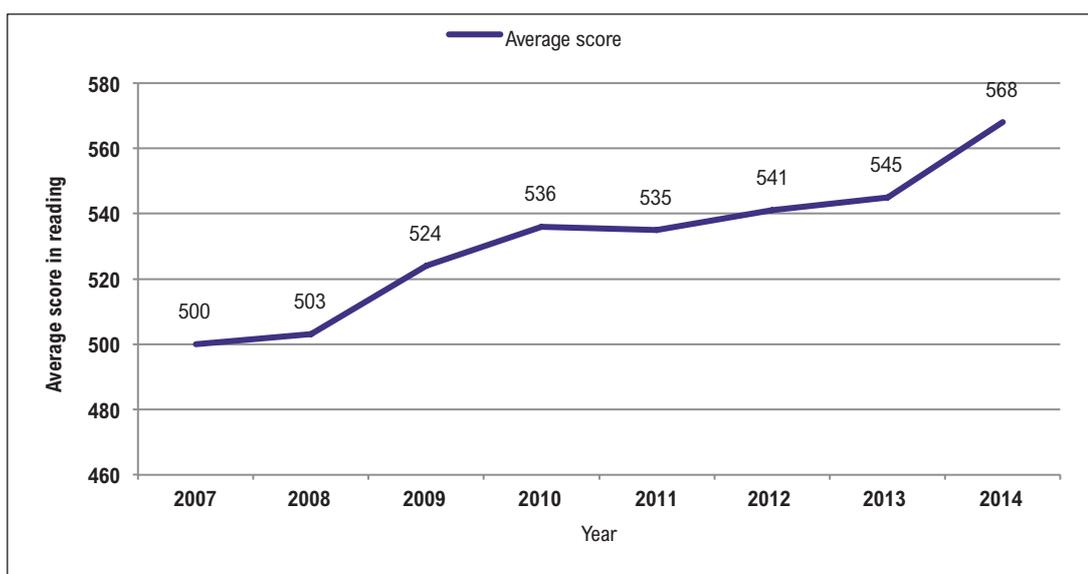


Source: School Census 2002, 2006, 2009, 2013.

Figure 2 shows the average scores for second grade children in reading (for mathematics, see Appendix B). The results show an increase over the past few years. However, for indigenous children from bilingual intercultural (EIB) schools, scores in reading are lower than those seen in Figure 2 and have not increased over the past few years as much as those from non-EIB schools (National Council of Education 2013). Figure 3 shows a positive increase for 15-year-olds enrolled in secondary in the PISA international evaluation. Nevertheless, Peru was the lowest scoring country in the last round of PISA (most participating countries are OECD members; in other words they have higher levels of economic development than Peru).

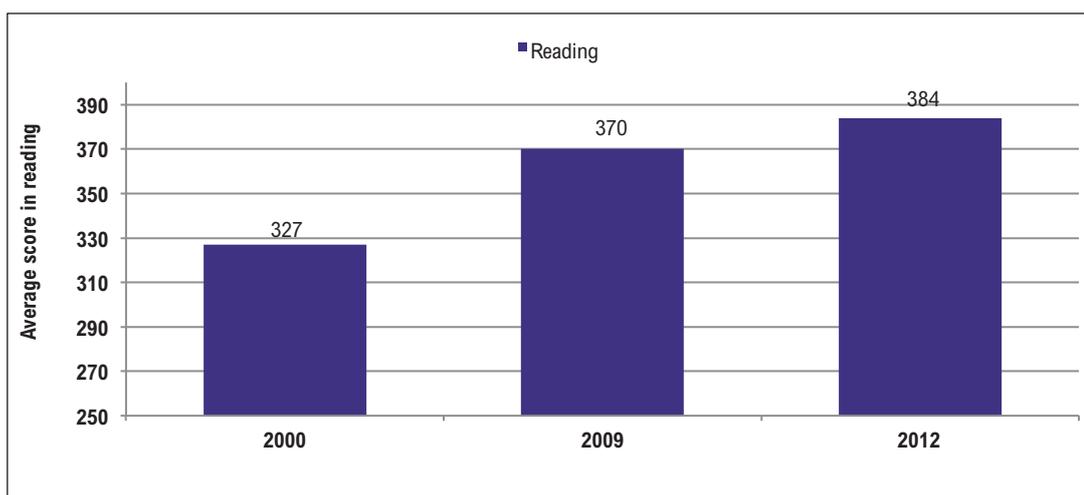
⁴ See Appendix A for enrolment by levels: preschool, primary and secondary.

Figure 2. *Average reading scores in Student Census Evaluations (second grade)*



Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

Figure 3. *Average scores in reading in PISA by year*



Source: Ministry of Education (2014)

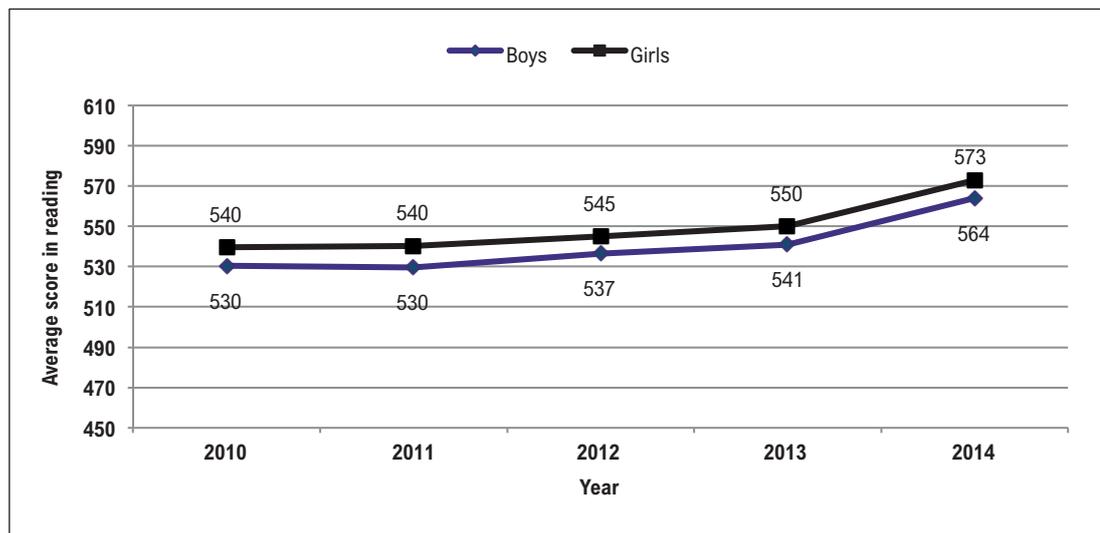
Note: Initial mean of 500 and standard deviation 100 in 2000.

However, as with enrolment, averages hide large inequalities between groups of children, as shown in Figures 4 to 7.⁵ The differences between boys and girls are relatively small (Figure 4). While students in private schools have higher achievements than their peers in public schools, the gap is diminishing over time (Figure 5); this is an interesting trend without a clear explanation. It may be that as private education has increased, the quality of this service has also increased in variability. As Leon et al. (2015) show, Lima has the highest variability in quality of private schools. Achievement has been higher for students in complete over

⁵ Similar results were found in mathematics, see Appendix C.

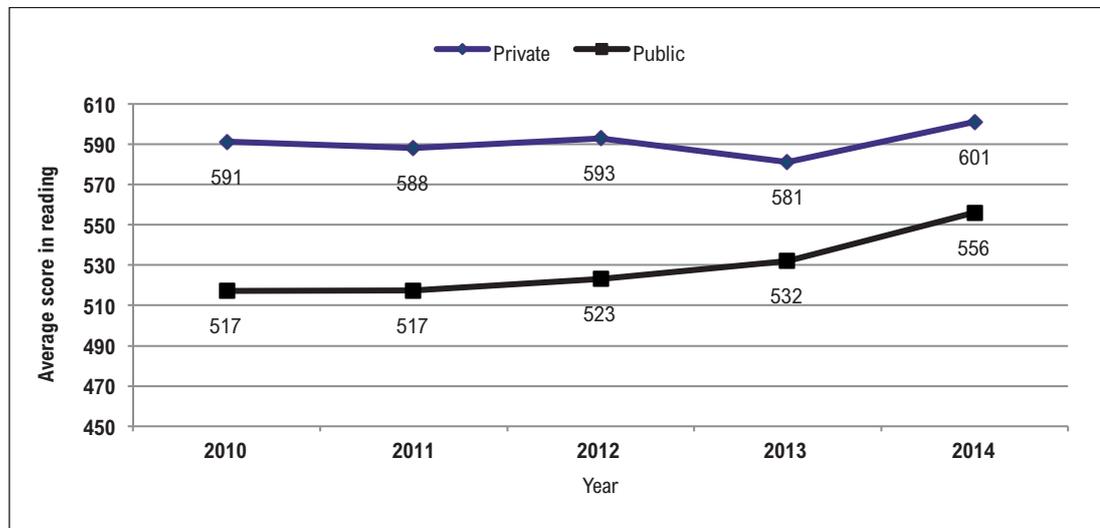
multigrade schools, and urban over rural (see Figures 6 and 7).⁶ While these gaps have diminished slightly, they are the largest observed with this dataset (unfortunately, the census evaluation does not include sociodemographic data on students beyond what is presented here; we explore variables associated with achievement with the Young Lives dataset in the following sections).

Figure 4. Average reading comprehension score in Student Census Evaluation (second grade) by gender



Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

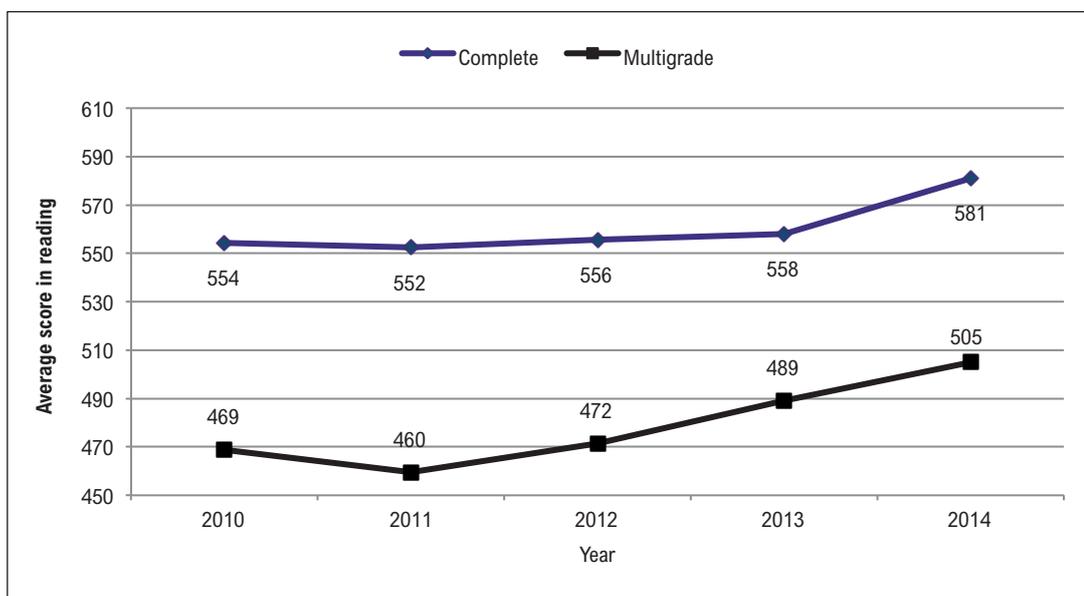
Figure 5. Average reading comprehension score in Student Census Evaluation (second grade) by private and public school



Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

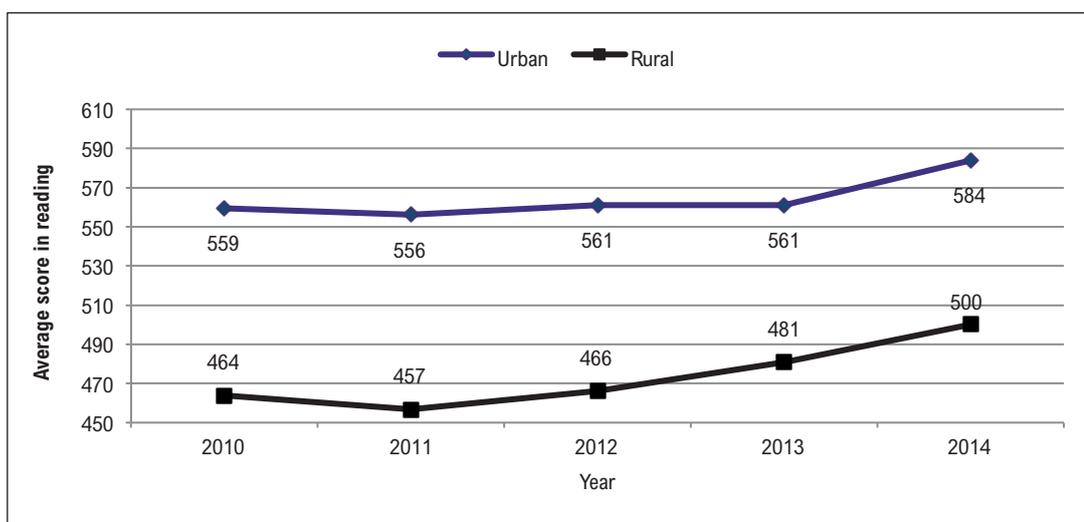
⁶ Complete schools refers to schools that have students from the same grade in every classroom, while multigrade refers to schools that combine students from different grades (2 to 6) in a single classroom. Complete schools are located mostly in urban, more populated areas, while multigrade schools are located in rural areas, where they have to combine grades to reach the minimum numbers of students required by the Ministry for Education for a teacher to take the assignment.

Figure 6. Average reading comprehension score in Student Census Evaluation (second grade) by complete or multigrade school



Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

Figure 7. Average reading comprehension score in Student Census Evaluation (second grade) by area the school is located

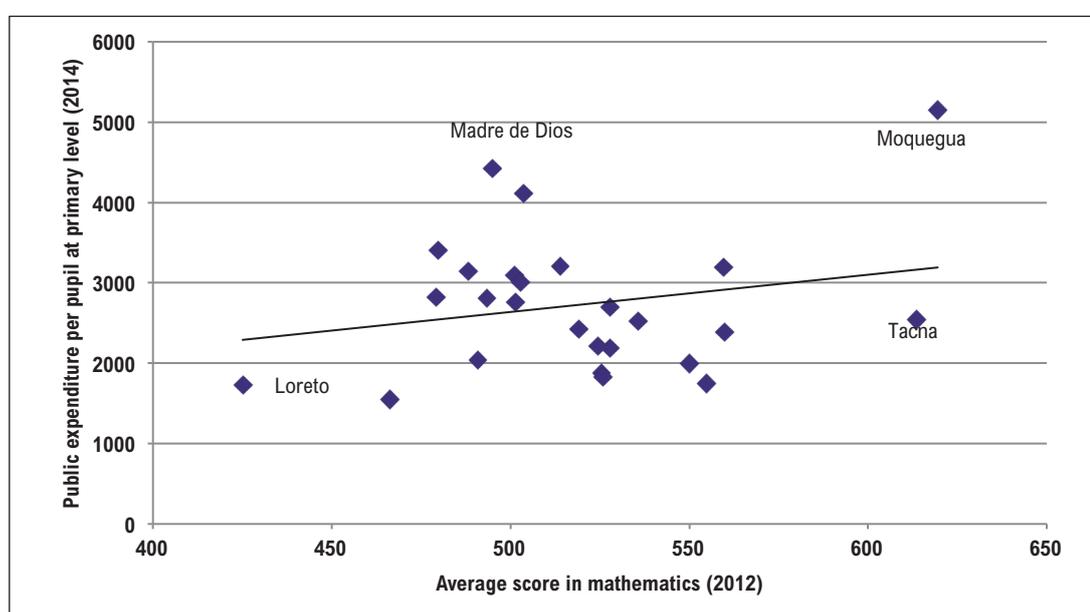


Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

While investment in education does not guarantee good results, it may help provide resources for quality pedagogical processes. Thus is relevant to analyse if it follows a pattern to reduce inequality. We would expect that data from national achievement would be used to assign budgets, with an emphasis on quality (i.e. higher investments in poorer-achieving regions). However, Figure 8 shows that there is a low but positive correlation between the results in a year (2012) and public expenditure two years later (2014); the tendency is for higher investment in regions that have the highest achievement in reading, contrary to what

an equity emphasis in investment would suggest. For mathematics, a slightly higher positive correlation was found (see Appendix D).

Figure 8. Association between reading comprehension and public expenditure per pupil at primary level, by region



Source: Student National Census (2014) and ESCALE, Ministry of Education (2012)
Note: Pearson correlation= 0.11

The data presented above and additional studies (Cueto et al. 2015; Guadalupe et al. 2013) show that on average enrolment in basic education and achievement have improved over the past two decades; nevertheless, there are disparities in the education system in Peru that need to be reduced. Most analysis in Peru has followed a similar pattern to those above, analysing cross-sectional data only. However, Young Lives allows us to look at the educational evolution of two cohorts of children over 12 years. Before we present the results, we briefly explain the methods followed in this study.

3. Methodology

3.1 Data

This study analysed data from Young Lives, which follows around 12,000 children over 15 years from India, Ethiopia, Vietnam and Peru. Young Lives follows two cohorts of children, the Younger Cohort (born around 2001) and the Older Cohort (born around 1994). The study has information about families and children from four rounds of surveys, carried out in 2002, 2006, 2009 and 2013 (and one more planned for 2016). Additionally, in 2010, school survey data were collected from a subsample of 572 children from the Younger Cohort to obtain information about the school, peers, teachers and principals.⁷ In this study, we present

⁷ For more information about the School Survey, see Guerrero et al. (2012)

information about the four household surveys of both cohorts and the School Survey. One of the advantages of Young Lives is that it allows researchers to compare the results of the two cohorts when they were approximately the same age (see Table 3).

Table 3. *Young Lives design (approximate ages in years by round and cohort)*

	Round 1 (2002)	Round 2 (2006)	Round 3 (2009)	Round 4 (2013)
Older cohort	8	12	15	19
Younger Cohort	1	5	8	12

Source: Young Lives study (2002, 2006, 2009, 2013)

3.2 Tests in the Young Lives study

In order to obtain information about achievement at different ages, Young Lives administered tests in mathematics, reading comprehension and vocabulary in several rounds and to both cohorts. The main characteristics of the tests used in this paper are outlined below.⁸

3.2.1 Administered to both cohorts

Peabody Picture Vocabulary Test (PPVT): This test measures children's vocabulary where the examiner shows four pictures and asks the child to choose the picture that represents the word read by the examiner. In the Young Lives study, we used the Spanish adaptation of the test, which was developed by Dunn et al. (1986). This test has 125 items and was administered to the Younger Cohort in Rounds 2, 3 and 4; and to the Older Cohort in Rounds 2 and 3.

3.2.2 Administered to the Younger Cohort

Maths test in Round 3: This test was divided in two sections. The first section had nine items that measured basic operations, counting, knowledge of number, and number discrimination. The second section had 20 items that included addition, subtraction, multiplication and division, all with whole numbers.

Maths test in Round 4: This test had 29 items that aimed to assess skills in basic mathematics operation with numbers (addition, subtraction, percentages and fractions), using both whole numbers and decimals, as well as skills in solving mathematics problems.

Reading test in Round 4: This test had two types of item. In the first part (with six items), children had to link either a word or a sentence with one of the three images that best represented that word/sentence, measuring word and sentence comprehension. The second part had 18 items, which aimed to measure reading comprehension, where children had to answer questions about three texts.

3.2.3 Administered to the Older Cohort

Maths test in Round 3⁹: This test was divided in two sections. The first had 20 items dealing with addition, subtraction, square roots, multiplication and division, using fractions and whole

⁸ For psychometric characteristics of tests in Round 3, see Cueto and Leon (2013).

⁹ For psychometric characteristics of tests in Round 3, see Cueto and Leon (2013).

numbers. The second section had 10 items on mathematics problem-solving, measurement, basic knowledge of geometry and data interpretation; these items were taken from the TIMSS and PISA publicly released set.

Reading test in Round 3 (CLOZE): In this test children were asked to read a sentence and complete it with one or more words missing. This test measures knowledge in vocabulary and comprehension. The test had 24 items.

Maths test in Round 4: This included 29 items that measured the child's ability to perform basic mathematics operations with two or more digits of decimals, fractions and whole numbers. It also measured the ability to use and apply maths concepts from texts of real-life situations.

Reading test in Round 4: This test had two types of items, just as in the Younger Cohort. The first measured a child's ability to move from a word or a sentence to its meaning. The second included items that aimed to measure reading comprehension by retrieving information and making inferences based on three narrative texts. This test had 24 items in total.

3.3 Sample

The original sample was randomly selected, including 20 clusters around the country. Since Young Lives is a study about childhood poverty, the top 5 per cent richest districts were not included in the sample (Escobal and Flores 2008). This means that the gaps estimated below are probably larger for the whole population. Additionally, in Round 1, Older Cohort children from urban areas were oversampled. Thus, in order to compare both cohorts, we used weighted adjustments to the sample and to present the results. Table 4 shows that in Round 1 there were 2,052 children in the Younger Cohort (YC) and 714 in the Older Cohort (OC); in Round 4, 1902 children remained in the YC and 635 in the OC (attrition rates 7.3 per cent and 11.1 per cent respectively). In this study, we will use the panel data in order to analyse tendencies and changes of the panel.

Table 4. *Number of children by round and cohort*

	Round 1 (2002)	Round 2 (2006)	Round 3 (2009)	Round 4 (2013)	Panel
Younger Cohort	2052	1963	1943	1902	1864
Older Cohort	714	685	678	635	626

Source: Young Lives study (2002, 2006, 2009, 2013)

3.4 Main variables

Given the background information presented above, we will focus on inequality as the main issue under study. Table 5 shows the groups of children included in the analysis.

- 1 *Gender:* Disparities between boys and girls have been widely analysed in Peru. The data presented above show that there are no differences in enrolment in primary; also, differences in achievement seem to be relatively small. Still, gender is a relevant variable for analysis nationally and internationally, and thus will be included here.
- 2 *Indigenous home:* Coming from an indigenous family is an important predictor of educational outcomes. Several studies in Peru have shown that on average indigenous children perform lower than non-indigenous, Spanish speakers (Hernandez-Zavala et al. 2006; Cueto et al. 2011). Using the Young Lives dataset,

Arteaga and Glewwe (2014) found that at the age of 5, disparities already existed in vocabulary and math between indigenous and non-indigenous children. To create this variable we used the mother tongue of the family, assigning the value of 0 if both parents and child had Spanish as mother tongue. We assigned the value of 1 if one of the parents had an indigenous mother tongue but the child's mother tongue was Spanish, and the value of 2 if one of the parents and also the child had an indigenous mother tongue. For the inequality analysis, we present "Spanish" which refers to the first group (i.e. parents and child had Spanish as their mother tongue) and "Indigenous" (one of the parents and the child had an indigenous mother tongue).

- 3 *Maternal education:* Using Young Lives data, studies have shown that maternal education is associated with child malnutrition (Sabates 2013) and achievement (Cueto, León, et al. 2014). In this study, we divided maternal education in complete secondary or more, and incomplete secondary or less.
- 4 *Baseline wealth index:* This index is a composite score based on assets at home, access to public services and quality of the house infrastructure. We included in the analysis the index of the first round of Young Lives, and divided it in quintiles, using the top and bottom quintiles for presenting the results.

However, we realise that in many cases children accumulate many of these characteristics, which could make them more vulnerable. This may make the situation extreme for groups of children. According to the EFA Global Monitoring Report (2015), early education needs to be improved for vulnerable children. For example, using Young Lives data, several studies have found that poor children from indigenous homes, with poorly educated mothers, have lower scores and less educational opportunities (Cueto et al. 2011; Cueto, Guerrero, et al. 2014). Below we outline our procedure for creating what we term "extreme groups".

- 5 *Extreme groups:* We created a composite score based on three ordinal variables. First, maternal education took the value of 0 if the child's mother did not have any education, 1 if the mother had incomplete primary, 2 if the mother had complete primary or incomplete secondary, and 3 if she had complete secondary or more. Second, we included the baseline wealth index in quintiles. Third, we included the indigenous variable, taking the value of 0 if the child and parents had Spanish as their mother tongue, 1 if only one of the parents had an indigenous mother tongue, and 2 if the child and also one or both parents had an indigenous mother tongue. Using a factor analysis, we created an index for each cohort separately, which explained 65 per cent and 64 per cent of the variance for the Younger and Older Cohort respectively. Both indexes had factor loadings higher than 0.7. For the inequality analysis, we divided the index in quintiles and presented the top quintile (considered least vulnerable) and the bottom quintile (considered most vulnerable). These are the extreme groups presented in the analysis below. To see if these extreme groups interacted with gender we present results separately for boys and girls. Table 5 presents the number of children in each group, as per the descriptions above.

Table 5. *Number of children by group and cohort*

	Younger Cohort	Older Cohort
Gender		
Boys	938	337
Girls	926	289
Indigenous home		
Spanish	1265	414
Indigenous language	248	67
Maternal education		
Complete secondary or more	691	210
Incomplete secondary or less	1165	414
Baseline wealth index		
Top quintile	368	125
Bottom quintile	374	126
Extreme groups		
Least vulnerable	237	74
Least vulnerable (boys)	117	41
Least vulnerable (girls)	120	33
Most vulnerable	375	121
Most vulnerable (boys)	176	60
Most vulnerable (girls)	199	61

Source: Young Lives study (2002, 2006, 2009, 2013)

Based on the above, we present the results for four stages of development of children, including whenever possible comparisons across cohorts.

4. Early childhood (3-5 years)

Over the past few decades, attention to early childhood education has increased internationally, mainly because it is known that education in this stage of life has long-term effects, noticeable in primary and even secondary (Ruhm and Waldfogel 2011). Education for All (EFA) included early childhood education as the first goal, and the last EFA Global Monitoring Report showed that even though, on average, enrolment has increased there has been an uneven progress and quality still needs to be improved (UNESCO 2015). Using Young Lives data, Cueto, Leon, et al. (2014) found a gap of 0.92 standard deviations in the PPVT by the age of 5 between children with more educated mothers (incomplete secondary or more) and mothers with complete primary or less. This result reinforces the importance of acting in the first years of life. In this paper we include the first five years of life under early childhood, when children are expected to attend preschool centres.

In Peru, preschool education is also a relevant issue and it is mandatory for children aged 3 to 5. There are two types of preschool: PRONOEI (non-formal) and Jardines (formal), which are located in different areas (predominantly rural for the former and urban for the latter), and have different types of teachers (for the most part, PRONOEI have local mothers with some training and supervision, while Jardines have professional teachers). PRONOEIs are considered of lower quality than Jardines, at least as measured through the impact they have on achievement in primary schools (Díaz 2006; Cueto et al. unpublished).

Table 6 shows the attendance rate in preschool at age 5 (in 2006). The Younger Cohort has a higher rate than the Older Cohort. For the Younger Cohort we disaggregated the

information by groups.¹⁰ Children in the bottom quintile, indigenous, most vulnerable and with non-educated mothers are more likely to attend PRONOEIs or not attend preschool at all. There are very small differences between boys and girls. As expected, differences between extreme groups are often larger than for any single variable. Some children are enrolled in school, in spite of being too young (they should enrol by age 6). This probably has to do with the parents' desire for their children to get ahead from an early age.

Table 6. Attendance rate in preschool at age 5 (Younger Cohort)

	PRONOEI (%)	Public Jardin (%)	Private Jardin (%)	Did not attend (%)	School (%)	Other type of preschool (%)
Gender						
Boys	14.3	56.8	7.9	13.7	6.1	1.2
Girls	13.1	56.1	9.4	14.4	6.0	1.0
Gap (%)	1.2	0.7	-1.5	-0.8	0.1	0.3
Indigenous home						
Spanish	9.4	59.6	12.0	10.2	7.3	1.3
Indigenous language	21.5	49.4	0.3	25.1	3.4	0.3
Gap (%)	-12.0	10.2	11.7	-14.9	4.0	1.0
Maternal education						
Complete secondary or more	6.3	60.3	19.5	4.2	8.3	1.4
Incomplete secondary or less	17.3	54.5	3.4	18.8	5.0	1.0
Gap (%)	-11.1	5.8	16.1	-14.6	3.3	0.4
Baseline wealth index						
Top quintile	4.4	49.1	28.3	6.2	10.9	1.2
Bottom quintile	23.2	44.4	1.4	26.5	4.0	0.5
Gap (%)	-18.8	4.7	26.8	-20.3	6.9	0.7
Extreme groups						
Least vulnerable	3.3	51.1	30.5	2.4	11.4	1.4
Least vulnerable (boys)	2.9	51.5	30.5	3.2	11.1	0.9
Least vulnerable (girls)	3.6	50.7	30.5	1.7	11.7	1.9
Most vulnerable	24.6	46.3	0.7	24.3	3.5	0.7
Most vulnerable (boys)	25.2	46.0	0.5	23.6	4.2	0.5
Most vulnerable (girls)	24.0	46.5	1.0	24.8	2.9	0.8
Gap (%)	-21.3	4.8	29.8	-21.9	7.9	0.7
Average Younger Cohort	13.7	56.5	8.6	14.0	6.1	1.1
Average Older Cohort	10.9	51.0	2.4	29.2	5.8	0.8

Source: Young Lives study (2009)

Concerning achievement in early childhood, Table 7 shows the score in the Peabody Test (PPVT) by type of preschool attended at age 5. We present the results as percentage of correct items.¹¹ Children from homes with more educated mothers, Spanish-speakers, wealthier at age 1, and less vulnerable scored higher than their peers. There is a relatively small difference between boys and girls. As expected, children who attended private Jardin, whose users, based on Young Lives data, are more wealthy and more satisfied with the quality than users of public preschools (Woodhead et al. 2009), scored higher than those who attended public Jardin and PRONOEI. The difference between children who attended a PRONOEI and those who did not attend preschool is small, which suggests that PRONOEI

10 For disaggregated information by groups for the Older Cohort, see Appendix E.

11 These scores are not adjusted by socio-economic characteristics of children or other variables.

may not be making any difference in children's achievement. This is well aligned with previous studies that, using Young Lives data, have found that children attending formal preschools perform better than those attending PRONOEI (Díaz 2006; Cueto et al. 2016). These results in Table 7 are relevant as the age of testing coincides with the end of preschool. The PPVT has often been found to correlate with tests of intelligence and school achievement, so these results approximate the differences in skills among groups of children who are about to enter first grade.

Table 7. *Score in PPVT at age 5 years by type of preschool attended (Younger Cohort)*

	PRONOEI (%)	Public Jardín (%)	Private Jardín (%)	Did not attend (%)
Average	17.2	23.9	36.9	15.9
Gender				
Boys	18.0	24.7	37.1	15.5
Girls	16.5	23.1	36.8	16.3
Gap (%)	1.6	1.6	0.3	-0.8
Indigenous home				
Spanish	19.2	25.1	37.7	17.0
Indigenous language	13.5	14.6	6.4	12.0
Gap (%)	5.7	10.5	31.3	5.0
Maternal education				
Complete secondary or more	25.6	31.0	39.4	27.6
Incomplete secondary or less	15.1	19.0	29.9	14.1
Gap (%)	10.5	12.0	9.4	13.5
Baseline wealth index				
Top quintile	36.3	35.7	40.1	27.8
Bottom quintile	12.6	15.2	21.8	11.3
Gap (%)	23.7	20.5	18.4	16.5
Extreme groups				
Least vulnerable	44.0	38.2	41.7	29.1
Least vulnerable (boys)	44.8	38.9	42.3	28.7
Least vulnerable (girls)	43.6	37.5	41.2	30.0
Most vulnerable	13.1	14.1	11.7	12.3
Most vulnerable (boys)	11.9	14.5	6.4	11.1
Most vulnerable (girls)	13.8	13.8	13.9	13.3
Gap (%)	30.9	24.1	30.0	16.9

Source: Young Lives Study (2006, 2009)

Note: Scores are presented as a percentage of correct answers over total possible score. The test had 125 items. For this analysis we only included children who took the test in Spanish in the three rounds (80 per cent of the panel sample). We did not include "other type of preschool" and "school" since percentage of children in these categories were low.

Related to the above, using the Young Lives database, Arteaga and Glewwe (2014) estimated the achievement gap in the PPVT and maths between indigenous and non-indigenous children. They found that at age 5, the gap in the PPVT was larger than in maths, however, at age 8, both gaps had increased. Furthermore, Glewwe et al. (2014) found that achievement at age 8 could be predicted by skills at age 5.

5. Middle childhood (6-12 years)

Using the Young Lives database, Rolleston and James (2011) found that early enrolment may reduce or even compensate to some extent the differences in household characteristics. The enrolment rate in primary in the Young Lives sample and also in the country (see Table 2) is almost universal and equitable (Rolleston, James and Aurino 2014). Table 8 presents the percentage of children who are overage (i.e. behind their normative grade) by ages 8 and 12. Children could be overage due to late entry, grade repetition,¹² or temporarily abandoning school. For the Younger Cohort, overage increases as children grow older, but the percentage is still lower than the Older Cohort at the same age. This is a positive indicator, which could suggest that children are learning more at school (see data on this below). However, for the Younger Cohort at age 12 there are large inequalities, linked with wealth, maternal education and ethnicity; differences between boys and girls are much smaller. The gap between extreme groups is the largest.

Table 8. *Overage¹³ at ages 8 and 12 by cohort*

	Younger Cohort		Older Cohort	
	Overage at age 8 years (2009) (%)	Overage at age 12 years (2013) (%)	Overage at age 8 years (2002) (%)	Overage at age 12 years (2006) (%)
Average	12.3	30.4	17.6	44.4
Gender				
Boys	11.7	29.4	17.4	42.5
Girls	12.9	31.4	17.8	46.5
Gap (%)	-1.2	-2.0	-0.4	-4.0
Indigenous home				
Spanish	9.4	23.9	15.1	39.7
Indigenous language	21.4	56.6	23.5	55.7
Gap (%)	-12.0	-32.7	-8.4	-16.0
Maternal education				
Complete secondary or more	5.5	12.6	8.2	23.3
Incomplete secondary or less	15.7	39.2	20.4	50.3
Gap (%)	-10.2	-26.6	-12.2	-30.0
Baseline wealth index				
Top quintile	4.5	10.7	1.7	11.9
Bottom quintile	20.7	48.1	21.0	52.0
Gap (%)	-16.2	-37.4	-19.3	-40.1
Extreme groups				
Least vulnerable	4.0	7.4	0.0	11.9
Least vulnerable (boys)	5.7	7.8		
Least vulnerable (girls)	2.3	7.0		
Most vulnerable	20.0	51.1	21.6	54.4
Most vulnerable (boys)	17.7	49.7		
Most vulnerable (girls)	21.9	52.3		
Gap (%)	-16.0	-43.7	-21.6	-42.5

Source: Young Lives Study (2002, 2006, 2009, 2013)

Note: Extreme groups by gender were not included for the Older Cohort since the number of children in each cell was very small.

¹² Officially, grade repetition is not allowed in first grade.

¹³ Proportion of children who are one or more years below the grade they should be given their age (in Peru the normal age to enter first grade is 6 years old, and there is automatic promotion in first grade).

Table 9 shows the school progression of Young Lives children by years and grades. After 2008, when almost all children had entered school, the total number of children attending primary does not vary significantly. In addition, since children from the Younger Cohort were born in 2001 and 2002, starting school in 2009 or later means they were overage. By age 12, only 1.7 per cent of children in the Younger Cohort were out of school; however, as children grow up this rate increases, as shown in Section 7.

Table 9. *Number of children attending school across years and grades (Younger Cohort)*

Grade	2006	2007	2008	2009	2010	2011	2012	2013
First grade primary	19	705	1097	85	22	3	3	2
Second grade		19	685	1102	160	48	12	7
Third grade			17	633	1043	197	69	23
Fourth grade				17	600	997	221	90
Fifth grade					15	581	962	222
Sixth grade						15	560	931
First year secondary							15	555
Second year								15
Total	19	724	1799	1837	1840	1841	1842	1845

Source: Young Lives Study (2009)

Another trend in Peruvian education is that attendance in private education is growing. This is also noticeable in our comparison between cohorts (see Table 10). Sparrow and Ponce de León (2015) found a positive effect of attending private schools on students' achievement, using the Young Lives dataset. Table 10 shows that given that attendance at private schools is fee-based, it is no surprise that there are gaps by ethnicity, maternal education and wealth, and by extreme groups. The difference between boys and girls is relatively small but favours boys; among the least vulnerable children, parents are more likely to send boys than girls to a private school. This is a topic that deserves further study.

Table 10. *Attendance rates in private schools*

	Younger Cohort at age 8 (2009) (%)	Younger Cohort at age 12 (2013) (%)	Older Cohort at age 12 (2006) (%)
Average	11.4	12.4	3.7
Gender			
Boys	12.4	13.8	3.8
Girls	10.3	11.1	3.5
Gap (%)	2.1	2.7	0.3
Indigenous home			
Spanish	16.1	16.9	5.5
Indigenous language	0.0	0.0	0.0
Gap (%)	16.1	16.9	5.5
Maternal education			
Complete secondary or more	25.7	27.3	13.8
Incomplete secondary or less	4.5	5.3	0.9
Gap (%)	21.2	22.0	12.8
Baseline wealth index			
Top quintile	37.0	37.2	20.9
Bottom quintile	1.2	2.1	0.4
Gap (%)	35.8	35.1	20.5

	Younger Cohort at age 8 (2009) (%)	Younger Cohort at age 12 (2013) (%)	Older Cohort at age 12 (2006) (%)
Extreme groups			
Least vulnerable	41.6	41.4	29.5
Least vulnerable (boys)	48.0	47.3	
Least vulnerable (girls)	35.4	35.6	
Most vulnerable	0.0	0.1	0.0
Most vulnerable (boys)	0.0	0.0	
Most vulnerable (girls)	0.0	0.2	
Gap (%)	41.6	41.3	29.5

Source: Young Lives Study (2006, 2009, 2013)

Note: For the Younger Cohort at age 8, 87.3 per cent attended a public school and 1.4 per cent did not attend school. For the Younger Cohort at age 12, 86.6 per cent attended a public school and 1.0 per cent did not attend school. For the Older Cohort at age 12, 94.0 per cent attended a public school and 2.3 per cent did not attend school. The analysis of extreme groups by gender was not included for the Older Cohort since the number of children was very small.

Language of instruction at school is relevant, given that according to Peruvian law indigenous children have the right to learn in their maternal language. Nevertheless, Cueto and Leon (2010) found that nationally only 37 per cent of indigenous students attend a bilingual intercultural (EIB) school, with the remaining attending Spanish-only schools. Table 11 shows that 61.7 per cent of Young Lives children with an indigenous language report attending a school where their maternal language is used, with the remaining children attending a school in Spanish only. This, among other factors, is probably associated with the decrease in the percentage of the younger population that speak an indigenous language in Peru. Using Young Lives data, Hynsjo and Damon (2015) found that indigenous children who attend EIB schools have higher scores in mathematics than indigenous children who attend Spanish schools, suggesting that EIB education may be a key factor for indigenous children's education. This topic would also deserve further empirical analysis.

Table 11. *Language of instruction during primary for the Younger Cohort at age 12 (2013)*

	Language at school	
	Spanish	Indigenous and Spanish
Average	85.6%	14.4%
Language at home		
Spanish	99.3%	0.7%
Indigenous language	38.3%	61.7%

Source: Young Lives Study (2009)

Note: Ninety per cent of the sample children spoke Spanish at home, with indigenous children accounting for the remaining 10 per cent.

As suggested above, students with different backgrounds are grouped in schools of certain characteristics: private schools are fee-based, and therefore attract students from families that have more resources. Urban schools in general have students with higher levels of wealth than rural schools, plus urban children are more likely to be Spanish speakers. Finally, among rural schools there are schools targeting indigenous (i.e. EIB schools) and Spanish speakers. In a fair educational system, all schools should have at least similar resources. In a system that promotes equity, public and especially rural schools should have higher resources. But in a system that increases inequality, private and urban public schools would have more resources. Unfortunately, the latter seems to be the case; results from the School Survey show that public urban schools had more workbooks, notebooks and support

staff than public rural schools (Guerrero et al. 2012). Cueto, Guerrero et al. (2014), using data from Young Lives, found that students from poorer families have less opportunities to learn, using number of mathematics exercises solved and percentage of correct exercises, than those from wealthier families. Tables 12 and 13 present information about some characteristics by type of school. In general, rural schools, especially EIB schools, have fewer or poorer resources.

Table 12. *School characteristics (2010)*

	Private (%)	Public urban (%)	Rural in Spanish (%)	Rural EIB (%)
Running water	100.0	93.3	38.7	45.0
Telephone	95.0	71.7	3.2	0.0
Auditorium	25.0	21.7	12.9	0.0
Laboratory	35.0	35.0	6.5	0.0
Court for sports	40.0	66.7	29.0	30.0
Psychologist	60.0	11.7	3.2	0.0
Auxiliary personal	75.0	21.7	3.2	5.0

Source: Young Lives School Survey (2010)

With regards to teachers' characteristics, Table 13 shows that, in general, private school teachers are more educated and better trained than rural EIB school teachers. Rural school teachers are more likely to miss school, and tend to have lower pedagogical content knowledge scores. Cueto, Leon, Sort and Miranda (unpublished), using Young Lives data, found that teachers' pedagogical content knowledge predicted achievement in mathematics, after controlling for children and family characteristics.

Table 13. *Teacher characteristics (2010)*

	Private	Public urban	Rural in Spanish	Rural EIB
Spanish mother tongue	100.0%	98.6%	88.2%	60.4%
Attended university	72.4%	59.8%	31.9%	49.5%
Years of experience	10.0	20.8	14.9	16.3
Received educational support	40.0%	30.7%	24.4%	28.9%
Pedagogical Content Knowledge score	7.17	5.89	5.68	4.22
Missed school in the last month	10.0%	18.5%	32.4%	30.7%

Source: Young Lives School Survey (2010)

Note: Pedagogical Content Knowledge score has a maximum of 10 points.

Table 14 presents information on the abilities of Young Lives children in mathematics. The score for the Younger Cohort is slightly higher than for the Older Cohort at a similar age, which is in line with the increased results we reported for younger ages. The gap between boys and girls is relatively small. The gaps by ethnicity, maternal education, and wealth are larger, and become slightly larger again for extreme groups.

Table 14. *Achievement in mathematics at age 12*

	Younger Cohort at age 12 (2013) (%)	Older Cohort at age 12 (2006) (%)
Average	73.5	70.1
Gender		
Boys	75.0	71.1
Girls	72.0	69.0
Gap (%)	3.0	2.2
Indigenous home		
Spanish	78.3	76.6
Indigenous language	57.5	58.2
Gap (%)	20.8	18.4
Maternal education		
Complete secondary or more	84.7	83.9
Incomplete secondary or less	67.9	66.5
Gap (%)	16.8	17.4
Baseline wealth index		
Top quintile	84.2	87.3
Bottom quintile	62.8	60.0
Gap (%)	21.4	27.3
Extreme groups		
Least vulnerable	88.0	88.8
Least vulnerable (boys)	89.4	87.4
Least vulnerable (girls)	86.7	90.5
Most vulnerable	59.8	59.0
Most vulnerable (boys)	61.5	60.1
Most vulnerable (girls)	58.3	57.9
Gap (%)	28.2	29.8

Source: Young Lives study (2006, 2013)

Note: The score is based on six common items in the mathematics test.

Table 15 shows the percentage of correct answers of two of the six common items in the mathematics test included in Table 14. These are design to specifically show the abilities of children at this age (children would be expected to be in sixth grade by age 12). While the increase in scores between cohorts is positive, it is obvious that many children cannot solve items that they should have mastered by this time.

Table 15. *Percentage of correct answers (common items in mathematics test)*

Younger Cohort	Older Cohort	Item
79.1%	72.5%	52 - 7
66.6%	61.4%	It takes Chris 4 minutes to wash a window. He wants to know how many minutes it will take him to wash 8 windows at this rate. He should? a. multiply 4 x 8 b. divide 8 by 4 c. subtract 4 from 8 d. add 8 and 4

Source: Young Lives study (2006, 2013)

6. Adolescence (13-16 years)

After six grades of primary school, children are expected to move on to secondary school. This should happen after they turn 12 years of age. Using data from the Young Lives study, Woodhead et al. (2012) found that in secondary education, rural boys in Peru dropped out of school more often than girls, and 61 per cent of children in the poorest quintile of the Older Cohort had repeated a grade. Similar results were found in Feeny and Crivello (2015): poor boys leave school more often than girls, due to the higher wage-earnings that they can obtain.

Table 16 presents the percentage of children who are overage by age 15 (Older Cohort only). The percent that is overage is higher than observed at age 12 (see Table 8), but the patterns are quite similar to those presented before: relatively small differences by gender compared with other variables. The difference is particularly large by baseline (age 8) wealth and extreme groups.

Table 16. *Overage at age 15 (2009)*

	Older Cohort (%)
Average	49.6
Gender	
Boys	46.3
Girls	53.2
Gap (%)	-6.8
Indigenous home	
Spanish	43.2
Indigenous language	63.9
Gap (%)	-20.7
Maternal education	
Complete secondary or more	24.4
Incomplete secondary or less	56.9
Gap (%)	-32.5
Baseline wealth index	
Top quintile	13.0
Bottom quintile	58.0
Gap (%)	-44.9
Extreme groups	
Least vulnerable	10.0
Most vulnerable	64.3
Gap (%)	-54.3

Source: Young Lives study (2009)

Note: Extreme groups by gender were not included since the number of children was very small.

In regards to school enrolment, using data from Young Lives, Dornan and Pells (2014) found that girls are more likely to be enrolled in schools than boys at age 15. However, enrolment in private schools shows an opposite pattern; nevertheless, the difference by gender is

relatively small in comparison to other groups. Additionally, on average, enrolment rates in private school are slightly larger than those observed at age 12 (see Table 10).¹⁴

Table 17. *Enrolment rates in private school at age 15 years (2009)*

	Older Cohort (%)
Average	5.5
Gender	
Boys	5.9
Girls	5.0
Gap (%)	0.9
Indigenous home	
Spanish	8.5
Indigenous language	0.0
Gap (%)	8.5
Maternal education	
Complete secondary or more	17.4
Incomplete secondary or less	2.3
Gap (%)	15.1
Baseline wealth index	
Top quintile	27.7
Bottom quintile	1.9
Gap (%)	25.8
Extreme groups	
Least vulnerable	37.9
Most vulnerable	0.2
Gap (%)	37.7

Source: Young Lives study (2009)

Note: For the Older Cohort at age 15, 85.4 per cent attended a public school and 9.1 per cent were out of school.

Table 18 shows that by age 15, 91 per cent of the sample had finished primary education: 55.7 per cent on time and almost 36 per cent overage. In addition, 6.2 per cent of adolescences had not finished primary school and 2.3 per cent had dropped out of school. Differences are larger by wealth index and extreme groups and smaller by gender. Children with more educated mothers, from a Spanish-speaking home, richer and less vulnerable, are more likely to finish primary on age.

¹⁴ This variable was calculated based on a question of whether or not child in the Young Lives sample was attending school at the time of the survey.

Table 18. *Completed primary education by age 15 (Older Cohort)*

	Finished primary on age (%)	Finished primary average (%)	Still in primary (%)	Dropped out (%)
Average	55.7	35.7	6.2	2.3
Gender				
Boys	59.8	31.4	6.9	1.9
Girls	51.5	40.3	5.6	2.7
Gap (%)	8.4	-8.8	1.3	-0.8
Indigenous home				
Spanish	62.7	32.3	3.5	1.6
Indigenous language	40.8	41.9	12.8	4.5
Gap (%)	21.8	-9.6	-9.3	-3.0
Maternal education				
Complete secondary or more	81.5	17.0	0.3	1.2
Incomplete secondary or less	49.0	40.5	7.9	2.6
Gap (%)	32.5	-23.5	-7.7	-1.4
Baseline wealth index				
Top quintile	91.3	8.2	0.0	0.6
Bottom quintile	46.1	39.1	8.8	6.0
Gap (%)	45.2	-31.0	-8.8	-5.4
Extreme groups				
Least vulnerable	95.1	4.9	0.0	0.0
Most vulnerable	42.1	42.6	11.9	3.4
Gap (%)	53.0	-37.7	-11.9	-3.4

Source: Young Lives study (2009).

Note: We considered a child to have dropped out if he or she had not finished primary and was not studying in 2009.

For the Older Cohort we do not have detailed information about school characteristics in secondary, as we do for the Younger Cohort. However, we have information on levels of achievement. Table 19 presents the results for mathematics and reading.¹⁵ The pattern is similar to that observed for middle childhood, with relatively small differences by gender and larger by the other forms of grouping.

¹⁵ For reading, we used a technique called CLOZE, where children have to complete sentences with missing words in a way that they will be meaningful.

Table 19. *Achievement in mathematics and reading (CLOZE) of the Older Cohort at age 15 (2009)*

	CLOZE (%)	Mathematics (%)
Average	54.1	40.7
Gender		
Boys	54.8	41.3
Girls	53.5	40.0
Gap (%)	1.3	1.3
Indigenous home		
Spanish	63.4	44.2
Indigenous language	36.7	34.9
Gap (%)	26.7	9.2
Maternal education		
Complete secondary or more	71.6	52.1
Incomplete secondary or less	49.5	37.7
Gap (%)	22.1	14.3
Baseline wealth index		
Top quintile	73.2	54.7
Bottom quintile	45.1	35.2
Gap (%)	28.1	19.5
Extreme groups		
Least vulnerable	77.1	58.3
Least vulnerable (boys)	73.3	56.7
Least vulnerable (girls)	81.4	60.2
Most vulnerable	39.6	35.0
Most vulnerable (boys)	42.4	36.2
Most vulnerable (girls)	36.7	33.7
Gap (%)	37.5	23.4

Source: Young Lives study (2009)

Note: Scores are presented as a percentage of correct answers over total possible score. The mathematics test had 30 items, and reading 24 items. Pearson correlation among the two tests was 0.62.

7. Early adulthood (17-20 years)

In this section we present data on Young Lives children from the Older Cohort at an age when they are expected to have finalised secondary school. Table 20 shows that only around 42.8 per cent had finished school by the expected age (17 years old). Finishing school in time is more likely for Spanish-speaking children, whose mothers are more educated or who grew up in wealthier homes. More dramatically, around 18 per cent of the sample had dropped out of school. The differences are larger in the comparison by baseline wealth and extreme groups, and smaller by sex and ethnicity.

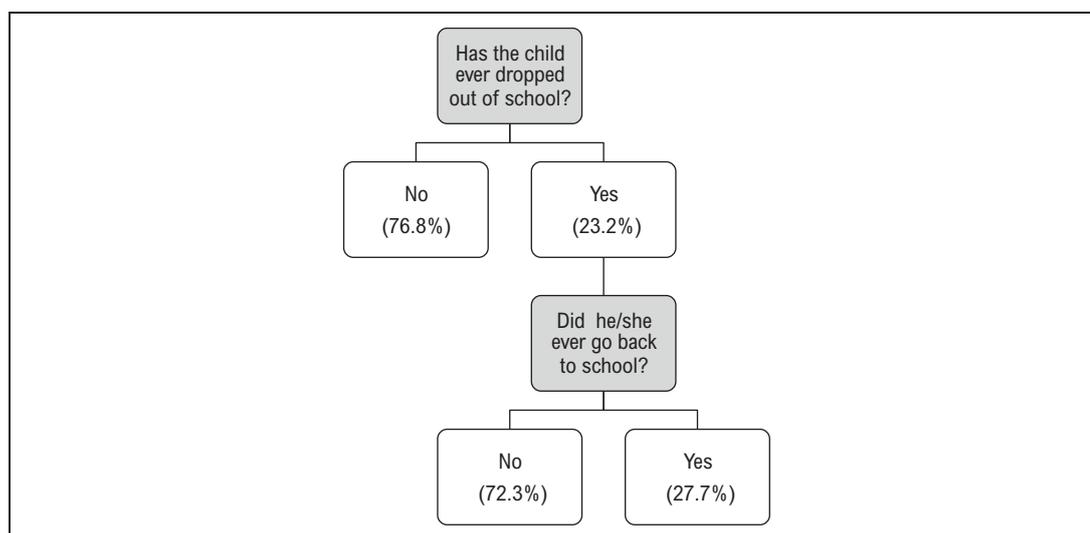
Table 20. *Education at age 19 (2013)*

	Finished school on age	Finished school overage	Still in school	Dropped out
Average	42.8	27.2	12.0	18.1
Gender				
Boys	46.1	23.1	12.7	18.0
Girls	39.2	31.4	11.2	18.1
Gap (%)	6.9	-8.3	1.5	-0.1
Indigenous home				
Spanish	50.3	22.8	9.3	17.6
Indigenous language	26.3	30.7	20.0	23.0
Gap (%)	24.0	-7.9	-10.7	-5.4
Maternal education				
Complete secondary or more	67.6	20.4	5.1	7.0
Incomplete secondary or less	36.2	28.9	14.0	20.9
Gap (%)	31.3	-8.5	-8.9	-13.9
Baseline wealth index				
Top quintile	80.3	14.1	3.9	1.7
Bottom quintile	34.3	28.2	14.3	23.2
Gap (%)	46.0	-14.1	-10.4	-21.5
Extreme groups				
Least vulnerable	85.2	12.9	2.0	0.0
Most vulnerable	28.3	32.8	18.2	20.7
Gap (%)	56.8	-19.9	-16.2	-20.7

Source: Young Lives study (2013)

Note: We considered a child to have dropped out if he or she has not finished school and is not studying in 2013.

As shown in Table 20, dropping out of school becomes a relevant topic for policy and research during late adolescence. Figure 9 shows that 23.2 per cent of students of the Older Cohort had dropped out of school in at least one year during their education; of these, 27.7 per cent went back to school, and 72.6 per cent did not return to complete their basic education.

Figure 9. *Dropped out of school – Older Cohort*

Source: Young Lives study (2013)

More than 70 per cent of those who had dropped out of school did so during secondary education. As mentioned by Feeny and Crivello (2015), as children become older, they receive job offers and the opportunity costs of schooling increases.

Table 21. *Grade in which child dropped out of school*

Primary education	
2nd grade	3.22%
3rd grade	3.33%
4th grade	5.57%
5th grade	2.82%
6th grade	14.35%
Secondary education	
1st grade	14.91%
2nd grade	19.61%
3rd grade	17.76%
4th grade	18.42%
Total	100%

Source: Young Lives study (2013)

By age 19, around 34.5 per cent of children had enrolled in a higher education institution, university or technical institute. As shown in Table 22 however, there are differences on who goes to what type of institution. Spanish-speakers, children of more educated mothers, and those with a higher wealth index at baseline were more likely to attend a university.

Table 22. *Type of tertiary education at age 19 (2013)*

	University (%)	Institute (technical or vocational) (%)
Average	15.7	18.8
Gender		
Boys	18.1	19.1
Girls	13.1	18.5
Gap (%)	5.0	0.6
Indigenous home		
Spanish	18.1	23.8
Indigenous language	9.3	10.9
Gap (%)	8.8	12.9
Maternal education		
Complete secondary or more	34.6	21.8
Incomplete secondary or less	10.7	18.1
Gap (%)	23.9	3.7
Baseline wealth index		
Top quintile	45.2	23.6
Bottom quintile	7.5	16.3
Gap (%)	37.7	7.3
Extreme groups		
Least vulnerable	51.6	24.7
Most vulnerable	7.3	12.2
Gap (%)	44.4	12.5

Source: Young Lives study (2013)

Table 23 presents the results of a reading and a mathematics test. As found at younger ages, the differences between boys and girls are relatively small. There is a large difference associated with baseline wealth, with the largest difference being seen when extreme groups are compared.

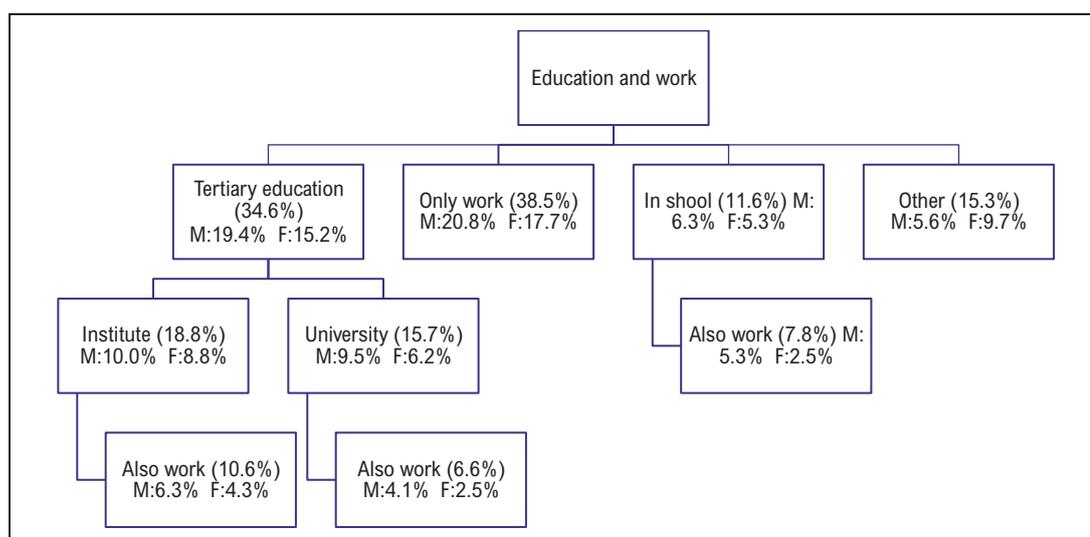
Table 23. *Achievement in mathematics and reading of the Older Cohort at age 19 (2013)*

	Mathematics	Reading
Average	54.4	63.2
Gender		
Boys	57.6	65.1
Girls	50.8	61.2
Gap (%)	6.8	3.9
Indigenous home		
Spanish	58.0	66.3
Indigenous language	46.3	57.4
Gap (%)	11.7	8.9
Maternal education		
Complete secondary or more	64.3	72.3
Incomplete secondary or less	51.6	60.6
Gap (%)	12.8	11.7
Baseline wealth index		
Top quintile	68.0	74.1
Bottom quintile	47.8	58.8
Gap %()	20.2	15.3
Extreme groups		
Least vulnerable	69.3	75.1
Least vulnerable (boys)	67.4	72.3
Least vulnerable (girls)	71.5	78.4
Most vulnerable	46.9	57.2
Most vulnerable (boys)	51.0	59.6
Most vulnerable (girls)	42.6	54.6
Gap (%)	22.4	17.9

Source: Young Lives study (2013)

Note: Scores are presented as a percentage of correct answers over total possible score. Mathematics test has 29 items; Reading 24 items. Pearson correlation between the two tests was 0.70.

In regards to occupation, Figure 10 shows that at age 19, more than 38 per cent of the sample only worked; almost 12 per cent were still attending school and more than 34 per cent were studying in universities or institutes. Finally, 15 per cent were not studying or working (“other”), the majority being young women. As Dornan and Pells (2014) mention, this rate is higher for women because they are looking after young children.

Figure 10. Occupational situation at age 19 (2013)


Source: Young Lives study (2013)
Note: F refers to female. M refers to male.

Fenny and Crivello (2015) showed that among the Older Cohort, the best age to get married and have children was 27 for men and 26 for women. However, as Dornan and Pells (2014) demonstrated, by age 19 almost 25 per cent of women were married or cohabiting. From the total sample, 24 per cent of women from the Older Cohort already had a child, and 6 per cent of men were fathers. Table 24 shows what young parents were doing at age 19. In the case of women, almost half (45 per cent) of young mothers did not work outside their home or study, and stayed at home taking care of their children. For men, 86 per cent of young fathers only worked and just 8.4 per cent neither studied nor worked.

Table 24. Occupation of young people who have children at age 19 (2013)

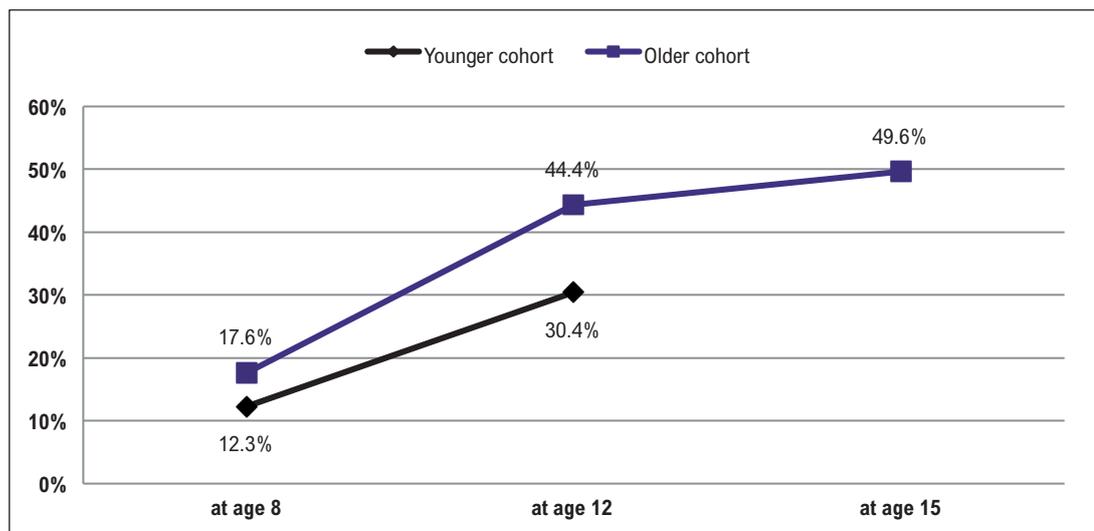
	Female (%)	Male (%)
Only work	41.6%	86.1%
Still in school	9.0%	3.7%
Tertiary education	4.2%	1.8%
Work at home exclusively	45.2%	8.4%
Total	100.0%	100.0%

Source: Young Lives study (2013)

8. Educational outcomes: gaps over time

Young Lives allows us to compare gaps over time within a cohort and across cohorts. In this section, we present information on the evolution of gaps over time. Figure 11 presents information on overage, which clearly increases during primary school years, but then tends to slow down. However, as mentioned above, during secondary school dropout rates increase. The percentage of children with overage is lower for the Younger Cohort, which is a positive sign.

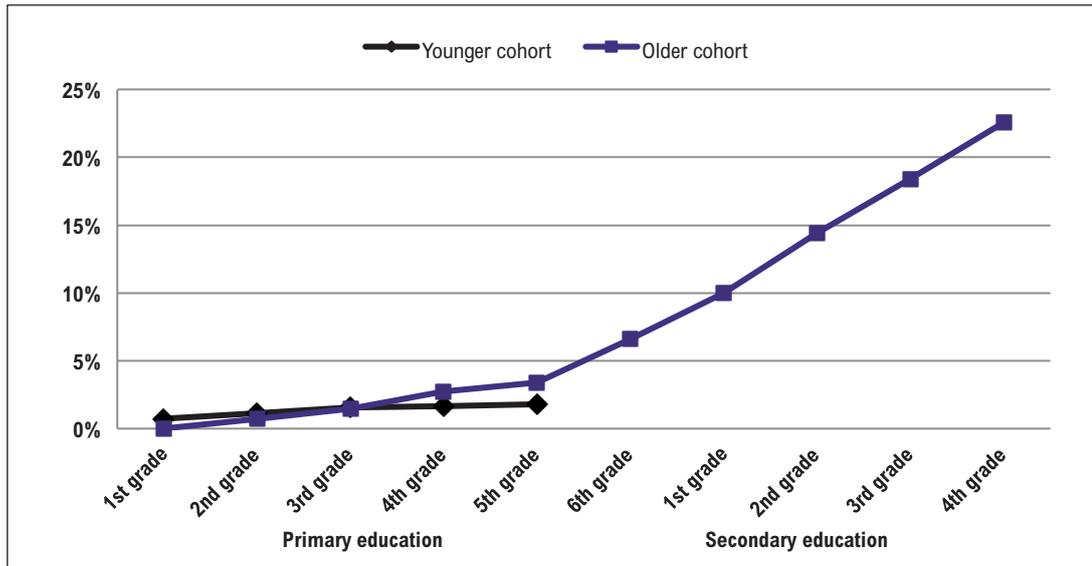
Figure 11. *Overage by age and cohort*



Source: Young Lives study (2002, 2006, 2009, 2013)

Figure 12 shows cumulative dropout rate by grade and cohort. In the Younger Cohort only 1.7 per cent of the sample had left school in at least one year. In the Older Cohort, 23 per cent had dropped out and most of them during secondary education.

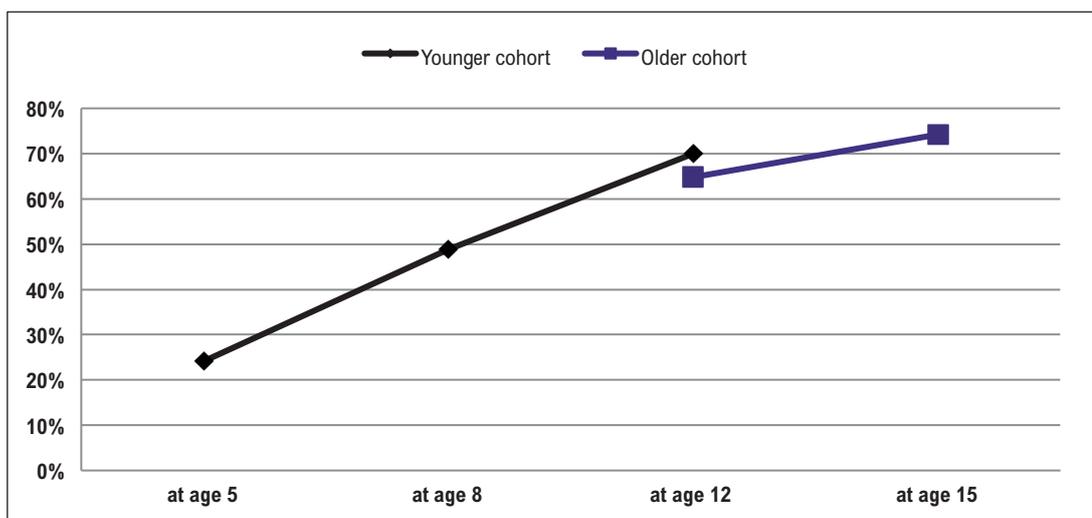
Figure 12. Cumulative dropout rates by cohort and grade



Source: Young Lives study (2002, 2006, 2009, 2013)

Another indicator we can compare over time is the PPVT, which is a measure of receptive vocabulary that has been found to be correlated in other studies with achievement in school and with tests of intellectual development. The Younger Cohort has a higher score than the Older Cohort at the age of 12. This is a similar trend to that presented above for increases in achievement in reading and mathematics for second graders in national evaluations, and in reading for 15-year-olds, as measured in PISA. Appendix F has the PPVT scores disaggregated by groups.

Figure 13. PPVT score by age and cohort



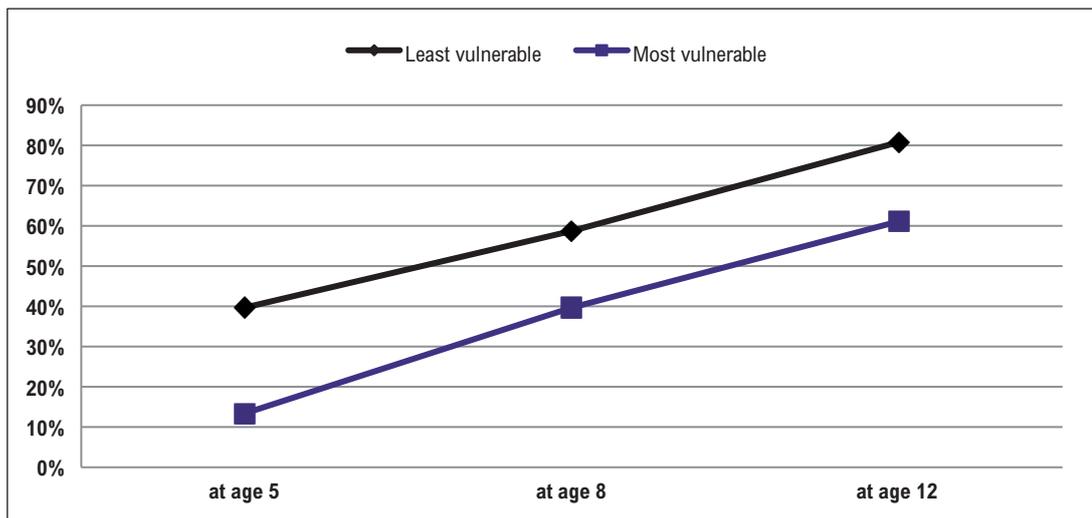
Source: Young Lives study (2002, 2006, 2009, 2013)

Note: Scores are presented as a percentage of correct answers over total possible score.

However, in this same test it is clear that a large gap between the extreme groups is evident by age 5 (see Figure 14). This difference is reduced by age 8 and then maintained at age 12. This suggests the need for preventive measures during preschool years. What we have

found consistently is that the vocabulary skills at age 5 are highly predictive of skills in reading and mathematics seven years later (see Figure 15). This association has been observed in other studies, called the *Mathew Effect*: the main idea, as applied to education, is that children with higher skills will tend to learn at higher levels than children with lower skills; therefore, early education can predict current and future educative activities such as achievement (Walberg and Tsai 1983).

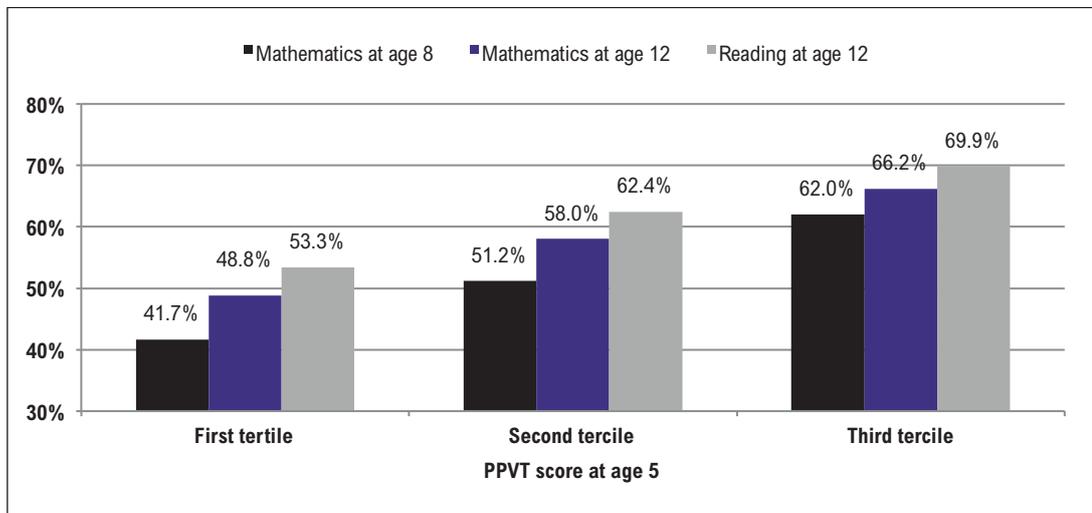
Figure 14. *PPVT score by age for the Younger Cohort*



Source: Young Lives study (2006, 2009, 2013)

Note: Scores are presented as a percentage of correct answers over the total possible score.

Figure 15. *PPVT score at age 5 (divided in terciles) and achievement in reading and mathematics at older ages (Younger Cohort)¹⁶*



Source: Young Lives study (2006, 2009, 2013)

Note: Scores are presented as a percentage of correct answers over total possible score.

¹⁶ The scatter between tests are presented in Appendix G.

9. Achievements and challenges in education

In this paper, we have presented the main characteristics of the Peruvian educational system, as well as some national figures on enrolment, overage, dropout rates and achievement in standardised tests. We then presented data for the two cohorts of Young Lives. The advantage of this dataset is two-fold: it allows us to understand the evolution of children over time, and to compare indicators across two cohorts of children from the same communities at the same age but at different points in time. In doing this analysis our emphasis has been on understanding how educational opportunities and outcomes are linked with the socio-economic characteristics of children and their families. Regarding these, we have focused on gender, ethnicity, maternal education, and poverty, and also in combining these to form two groups of more or less disadvantaged children. This analysis has also benefited from the inclusion of other studies, to paint a picture of the Peruvian educational system and the challenges ahead. Below we present some of the main ideas that come out of our analysis, and suggest some policy implications.

1. **Over the past two decades, several indicators in Peru's education have improved:** progress is evident in enrolment, which is almost universal in primary education. Overage, completion of primary and secondary education, as well as scores in standardised tests have also improved on average. Achievement data comes from national tests in primary, international tests in primary (UNESCO) and secondary (PISA), as well as our own results in tests of receptive vocabulary. We found that in general the Younger Cohort showed higher educational indicators than the Older Cohort when they were the same age. However, in many cases, averages could still be considered low; for example in the last PISA evaluation, among 65 countries, many of them members of OECD, Peru ranked last.
2. **There are large gaps in achievement between groups of students:** students that were born in relatively poor homes, with mothers who had less than complete secondary education, or came from an indigenous family, had lower scores; the gap was in many cases larger when children had more than one of these characteristics. These are considered vulnerable children, based on our definition of extreme groups. The difference between boys and girls was in most cases relatively small.
3. **Gaps in achievement are evident by age 5, which reinforces the importance of investing in preschool education:** while enrolment in preschool has increased, children who attend non-formal preschools (PRONOEI) show lower results than children who attend formal preschools (Jardines). This has important implications for equity, as in general poorer students attend PRONOEI (or do not go to preschool at all).
4. **Educational opportunities and investment in basic education are unfairly distributed:** we found that more vulnerable children attend schools that have lower resources, with teachers that have lower pedagogical skills and receive less training and support. Many indigenous children attend schools where Spanish is the only language of instruction, thus impacting on their right to learn in their mother tongue. Finally, investments in education don't follow a pattern of prioritising regions where achievement is lower.

5. **Private, fee-paying, education enrolment is increasing at all levels, posing further challenges to achieve a fair educational system:** our data and others show that private education is increasing, but mostly in urban areas (which generally have less vulnerable students). However, national evaluations show that the gap between private and public education students is diminishing. A likely explanation of this is that the expansion of private education has also increased the diversity in its quality, making it similar to public education. This is an area where little research is available, and would benefit from further study and monitoring with an equity perspective.
6. **Drop out is an important problem for secondary education:** in our sample, around 20 per cent of children had dropped out of school by age 19. The factors linked with this would seem to be related mostly with poverty and job opportunities.
7. **Access to tertiary education is highly segregated:** in Peru, there are two types of post-secondary studies: university and technical institutes. Access to them, particularly to universities, is closely associated with wealth. This poses a serious challenge for equity in the composition of the next generation of professionals. Recently the government created a programme to equalise opportunities for tertiary studies, called Beca (Scholarship) 18. Young Lives is currently conducting a study into this potentially important programme.

The above situation is one of educational progress, on average, but with high inequality. What we mean by this is that there is a high correlation among the socio-economic background of students and their families, their educational opportunities at all levels, and later outcomes. Reversing this needs consistent policies, programmes and public investment targeting educationally vulnerable children from an early age. The educational system may be reinforcing inequalities since it does not provide equal opportunities for all; ideally, it should prioritise the opportunities of children and young adults who we know are more likely to have poor educational outcomes.

On the policy side, as described in the first section, many initiatives have been discontinued without empirical evidence to support the decision. This has probably limited the potential of education to improve the lives of all children. With the new president elected in 2016, there is an opportunity to continue and refine programmes and policies that have high potential for impact, especially when there is evidence to support them, and create conditions for an improved education system that will simultaneously increase quality and reduce gaps in opportunities and outcomes. In other words, we need to reduce inequalities while moving the averages up. Inequality in education is an issue that needs to be brought to the forefront of policy discussions. One way to do this would be to develop indicators of inequality and to monitor them, suggesting targets for average increases as well as inequality reductions.

There are reasons to be optimistic however, as public funding in education is increasing rapidly. During the administration of President Humala (2011-16), the public budget for education increased from 2.9 per cent of GDP in 2012, to 3.11 per cent in 2014, 3.54 per cent in 2015, and 3.85 per cent in 2016.¹⁷ In this scenario, we suggest that inequality in educational opportunities and outcomes becomes a priority.

17 Data from http://mef.gob.pe/index.php?option=com_content&view=article&id=2327&Itemid=101158&lang=es.

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Appendices

Appendix A

Figure A1. *Enrolment in preschool by type of school*

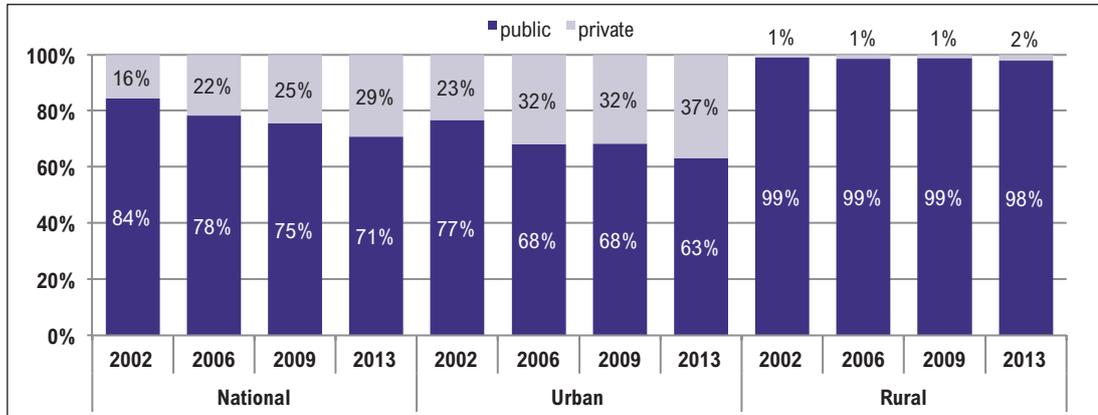


Figure A2. *Enrolment in primary by type of school*

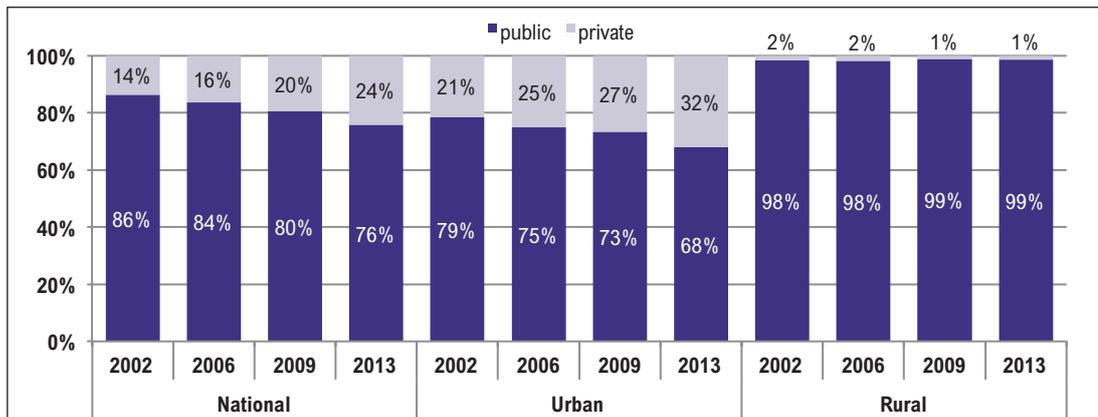
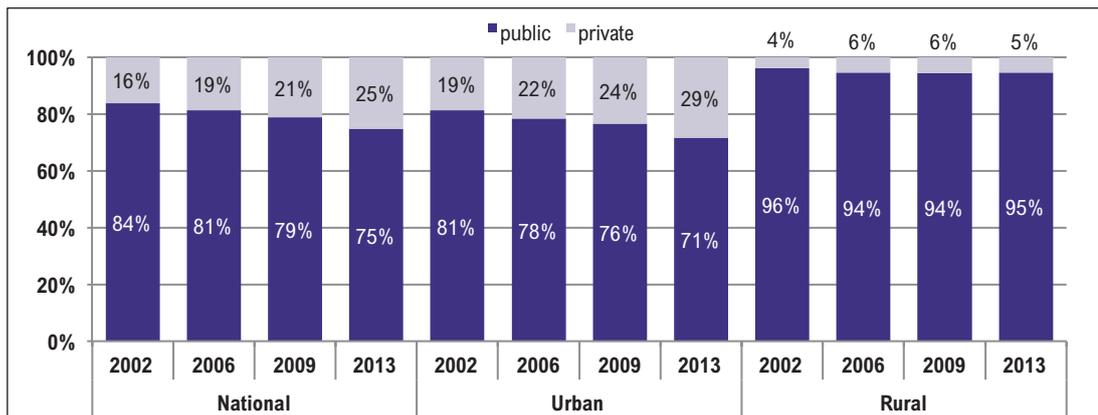
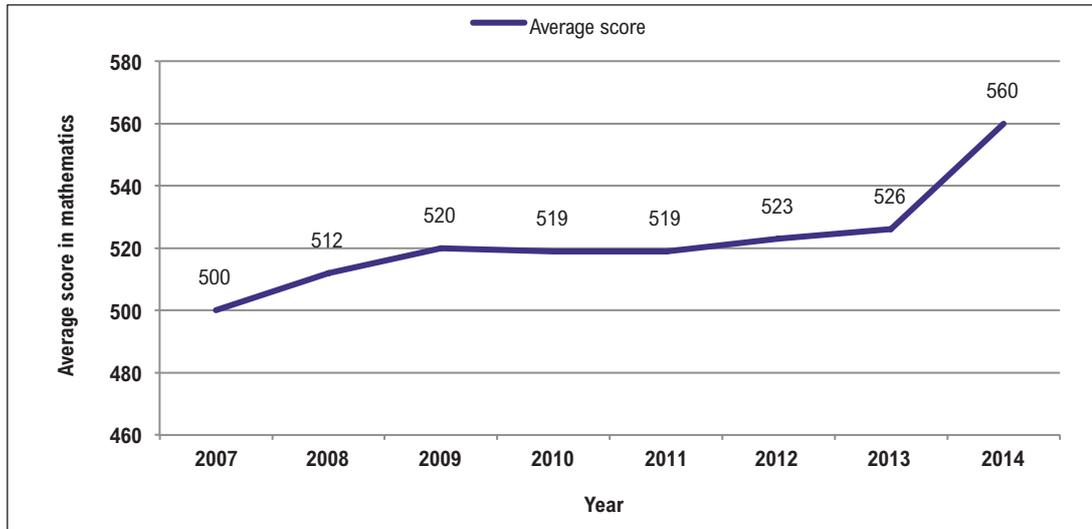


Figure A3. *Enrolment in secondary by type of school*



Appendix B

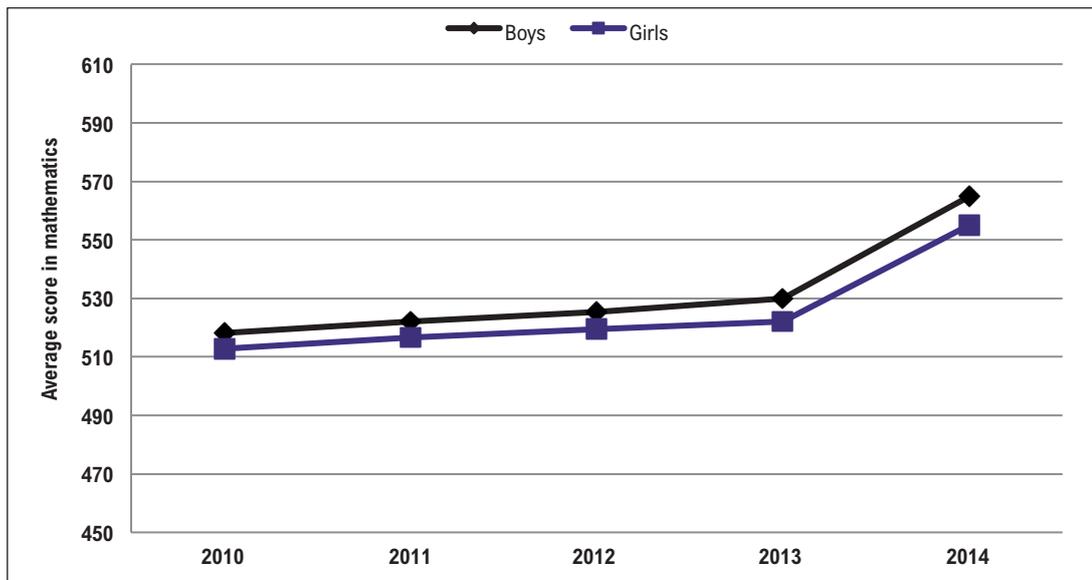
Figure B1. Average mathematics scores in Student Census Evaluations (second grade)



Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

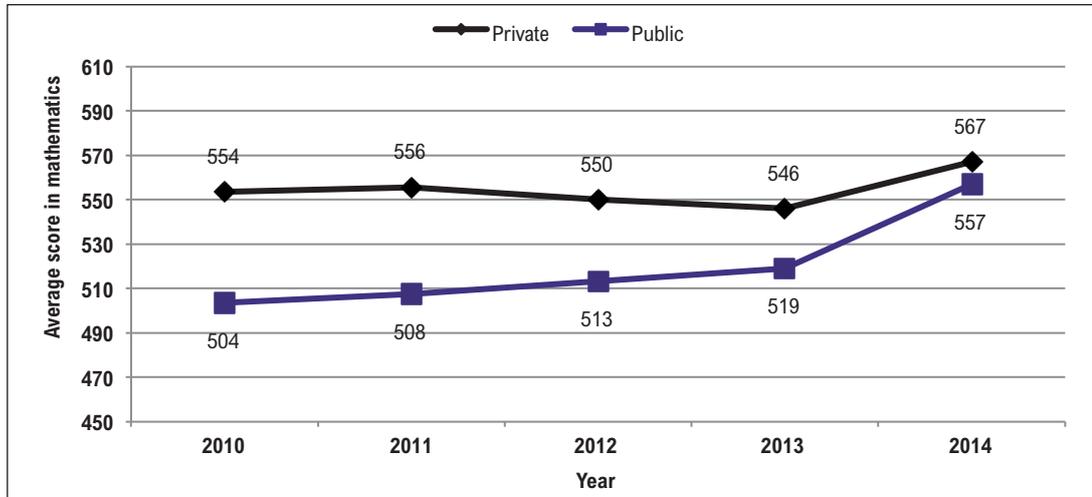
Appendix C

Figure C1. Average mathematics score in Student Census Evaluation (second grade) by gender



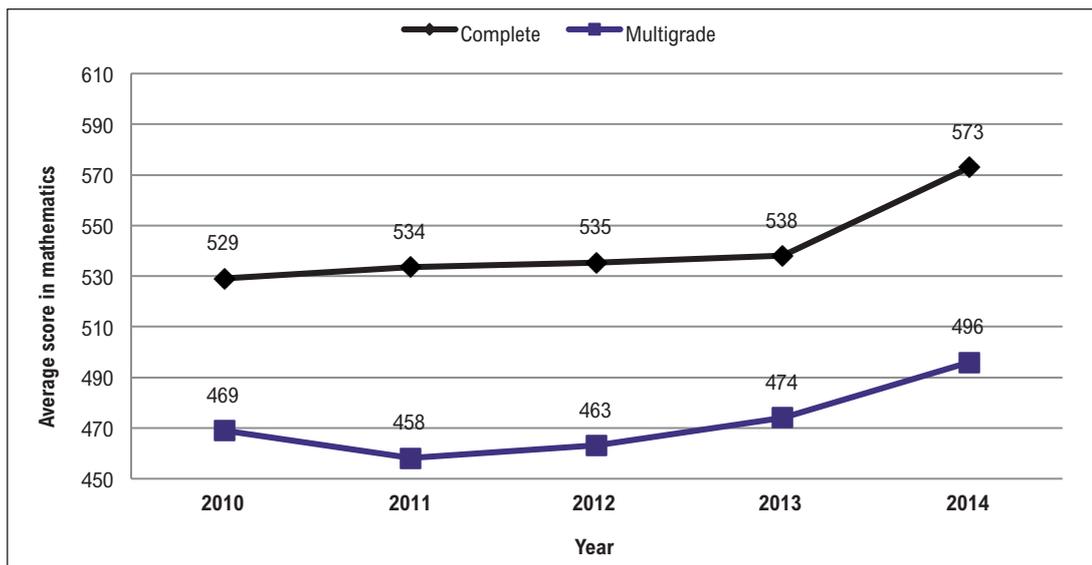
Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

Figure C2. Average mathematics score in Student Census Evaluation (second grade) by private and public school



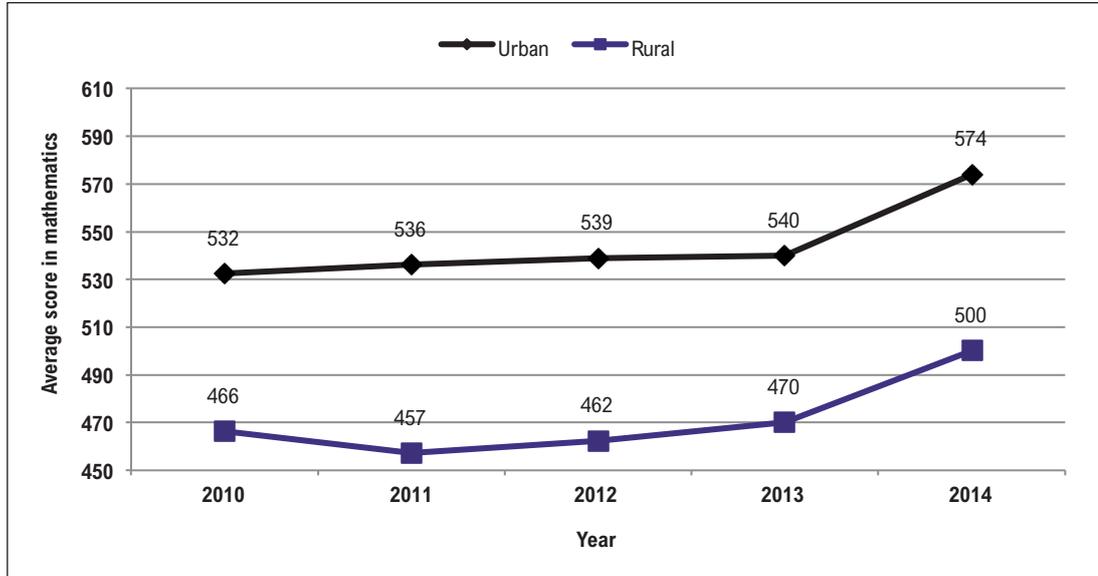
Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

Figure C3. Average mathematics score in Student Census Evaluation (second grade) by complete or multigrade school



Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

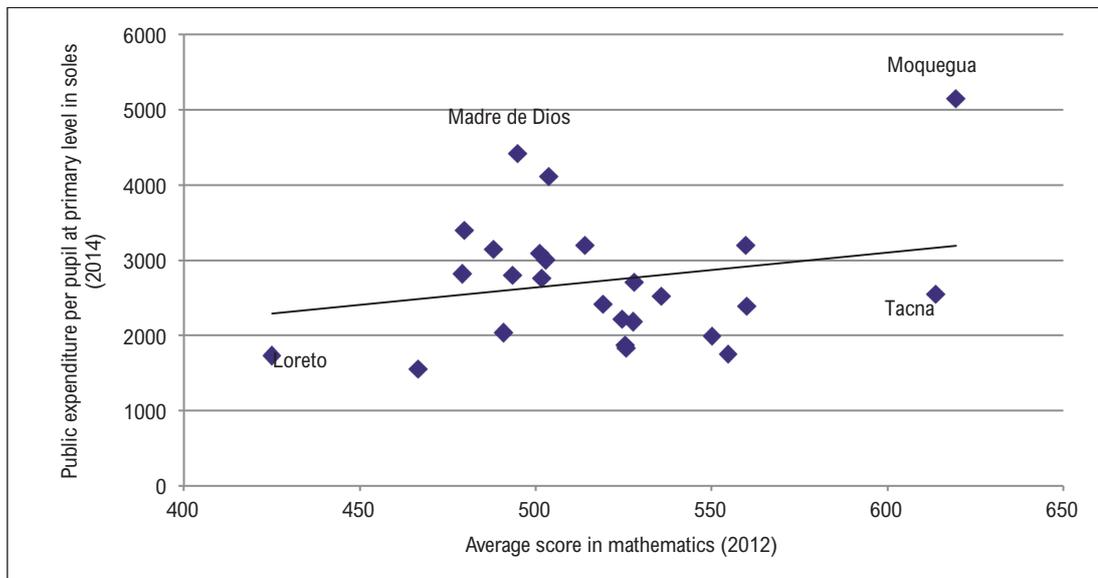
Figure C4. Average mathematics score in Student Census Evaluation (second grade) by urban and rural area



Source: Student Census Evaluation; initial mean of 500 and standard deviation 50 in 2007.

Appendix D

Figure D1. Association between mathematics and public expenditure per pupil (in soles) at primary level, by region



Appendix E

Table E1. *Attendance rate to preschool at age 5 (Older Cohort)*

	PRONOEI (%)	Public CEI (%)	Private CEI (%)	Did not attend school (%)	In school (%)	Other type of preschool (%)
Average	10.9	51.0	2.4	29.2	5.8	0.8
Gender						
Boys	11.5	50.7	3.1	26.5	7.2	1.0
Girls	10.3	51.2	1.6	32.0	4.2	0.7
Gap (%)	1.2	-0.5	1.5	-5.5	3.0	0.3
Indigenous home						
Spanish	7.5	57.4	3.7	21.8	8.6	1.0
Indigenous language	17.6	42.1	0.0	39.3	0.2	0.8
Gap (%)	-10.0	15.3	3.7	-17.5	8.3	0.2
Maternal education						
Complete secondary or more	2.6	67.8	7.6	9.1	11.1	1.9
Incomplete secondary or less	13.2	46.7	1.0	34.2	4.4	0.5
Gap (%)	-10.6	21.1	6.6	-25.2	6.7	1.4
Baseline wealth index						
Top quintile	3.2	72.4	12.7	4.5	6.7	0.6
Bottom quintile	15.2	38.1	0.0	41.2	5.5	0.0
Gap (%)	-12.0	34.3	12.7	-36.7	1.1	0.6
Extreme groups						
Least vulnerable	3.1	70.6	16.7	2.2	6.4	1.0
Most vulnerable	17.1	39.9	0.2	40.3	1.9	0.6
Gap (%)	-14.1	30.8	16.5	-38.1	4.5	0.4

Note: Extreme groups by gender were not included since the number of children was very small.

Appendix F

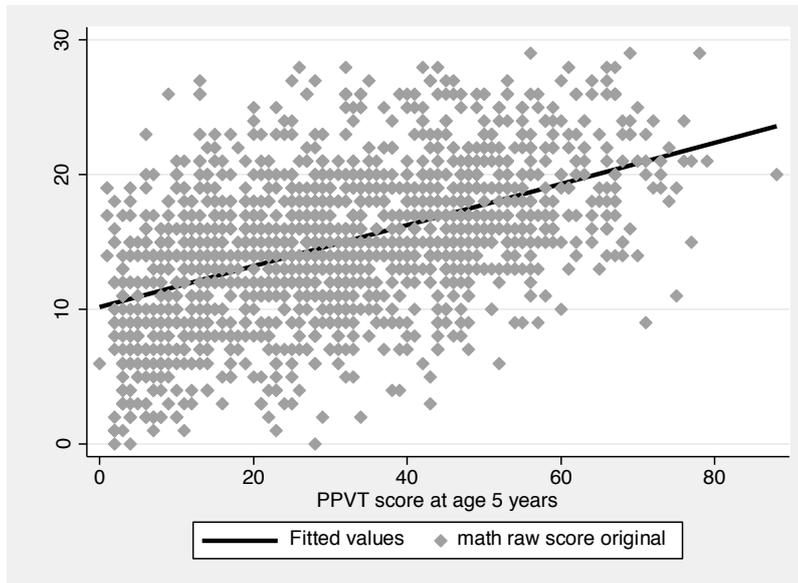
Table F1. *PPVT score over time*

	Younger Cohort at age 5 (2006) (%)	Younger Cohort at age 8 (2009) (%)	Younger Cohort at age 12 (2013) (%)	Older Cohort at age 12 (2006) (%)	Older Cohort at age 15 (2009) (%)
Average	24.1	48.7	69.9	64.8	74.1
Gender					
Boys	24.5	49.2	71.2	65.4	74.5
Girls	23.6	48.3	68.7	64.2	73.7
Gap (%)	0.8	1.0	2.5	1.2	0.7
Indigenous home					
Spanish	25.9	50.1	71.3	67.3	76.2
Indigenous language	13.6	41.6	59.3	56.1	65.4
Gap (%)	12.3	8.5	12.0	11.2	10.7
Maternal education					
Complete secondary or more	32.7	55.3	76.7	75.0	83.7
Incomplete secondary or less	18.4	44.5	65.6	61.5	70.9
Gap (%)	14.3	10.8	11.1	13.5	12.8
Baseline wealth index					
Top quintile	37.0	56.6	78.1	76.9	85.8
Bottom quintile	14.0	40.3	62.9	55.8	67.9
Gap (%)	23.0	16.4	15.2	21.1	17.9
Extreme groups					
Least vulnerable	39.7	58.8	80.8	79.3	89.3
Least vulnerable (boys)	40.1	58.9	82.1	79.8	88.9
Least vulnerable (girls)	39.4	58.6	79.5	78.7	89.7
Most vulnerable	13.4	39.7	61.0	56.3	66.9
Most vulnerable (boys)	12.7	38.8	61.1	58.3	67.1
Most vulnerable (girls)	14.0	40.3	61.0	53.5	66.6
Gap (%)	26.3	19.1	19.8	23.0	22.4

Note: Scores are presented as percentages to facilitate understanding. The test has 125 items. For this analysis we only included children who took the test in Spanish and in all rounds (80% for YC; 92% for OC).

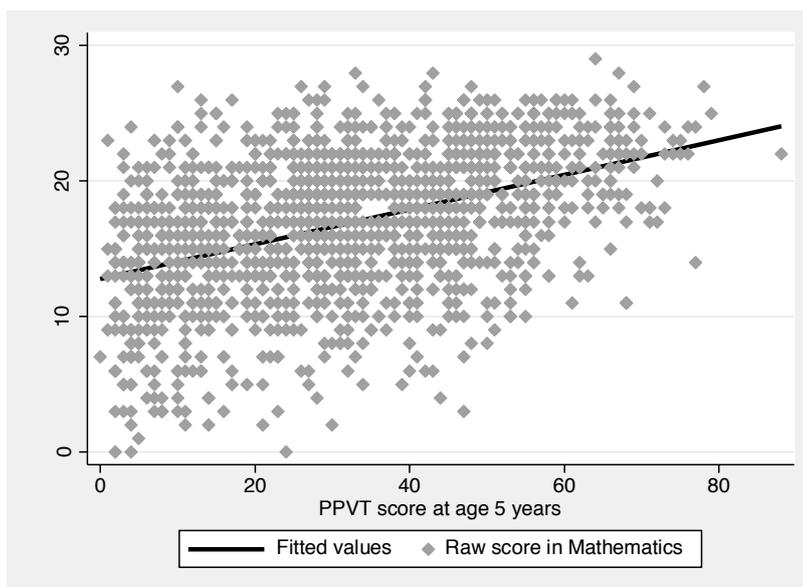
Appendix G. Scatter between PPVT at age 5 and other tests

Figure G1. *PPVT at age 5 and mathematics score at age 8 ($r=0.49$)*



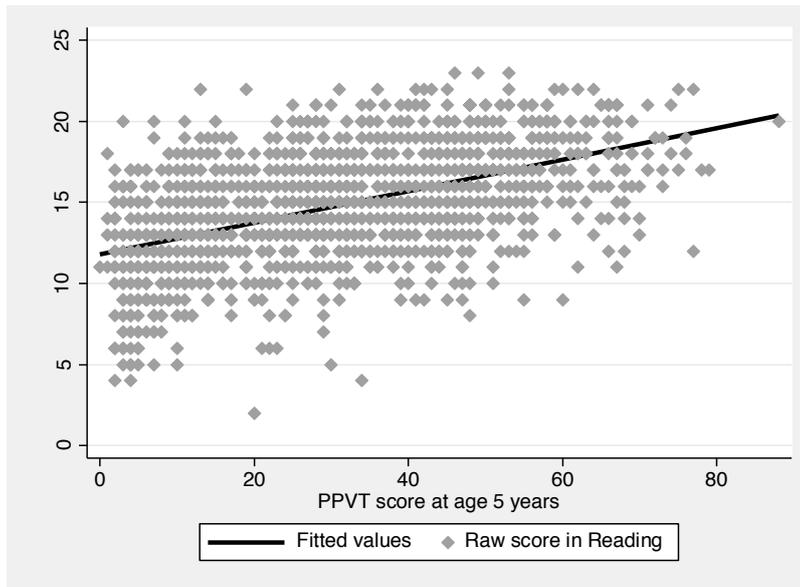
Source: Young Lives study (2006, 2009)

Figure G2. *PPVT at age 5 and mathematics score at age 12 ($r=0.44$)*



Source: Young Lives study (2006, 2013)

Figure G3. *PPVT at age 5 and reading score at age 12 ($r=0.51$)*



Source: Young Lives study (2006, 2013)

Education Trajectories: From Early Childhood to Early Adulthood in Peru

Over the past few decades, every President in Peru has proclaimed education as a priority; yet, in spite of recent progress across several indicators, educational outcomes are still on average low, and gaps between students large and closely linked with their individual and family background. This working paper looks at the education trajectories of children in different stages of life, using data from Young Lives. According to the Peruvian Constitution and General Education Law, education is considered a human right, and all students should have access to a quality service. However, results from this study and others suggest that while there have been important advances over the past two decades, there is still a long way to go for this to become a reality for everyone.

Progress in enrolment and average achievement is clear in the educational trajectories of the two cohorts of children from early childhood to adulthood. This reflects the importance the population and successive governments have attributed to education. However, large disparities remain, related to students' and family's characteristics. In basic education, inequality is not related so much to access to school as it is to the educational opportunities children have at school, and their results in standardised tests. Children who come from relatively poor families, are indigenous, have a mother with less than complete secondary education, or who live in a rural family tend to have fewer opportunities and lower outcomes than their peers; the situation is worse for those who combine several of these family characteristics. Fortunately, disparities in opportunities and achievement by sex are relatively small. In tertiary education, there are still large gaps in access between groups, with privileged students having more access to university studies.

The paper concludes that the educational system may be reinforcing inequalities since it does not provide equal opportunities for all children; ideally, it should prioritise the opportunities of children and young adults who we know are more likely to have poor educational outcomes (i.e. vulnerable children). This should start at a young age, as gaps in achievement are evident by age 5. There are reasons to be optimistic, however, as public funding in education is increasing rapidly. In this scenario, inequality in educational opportunities and outcomes becomes a priority.



An International Study of Childhood Poverty

About Young Lives

Young Lives is an international study of childhood poverty, involving 12,000 children in 4 countries over 15 years. It is led by a team in the Department of International Development at the University of Oxford in association with research and policy partners in the 4 study countries: Ethiopia, India, Peru and Vietnam.

Through researching different aspects of children's lives, we seek to improve policies and programmes for children.

Young Lives Partners

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

- *Ethiopian Development Research Institute, Ethiopia*
- *Pankhurst Development Research and Consulting plc, Ethiopia*
- *Centre for Economic and Social Studies, Hyderabad, India*
- *Save the Children India*
- *Sri Padmavathi Mahila Visvavidyalayam (Women's University), Andhra Pradesh, India*
- *Grupo de Análisis para el Desarrollo (GRADE), Peru*
- *Instituto de Investigación Nutricional, Peru*
- *Centre for Analysis and Forecasting, Vietnamese Academy of Social Sciences, Vietnam*
- *General Statistics Office, Vietnam*
- *Oxford Department of International Development, University of Oxford, UK*

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