Young Lives, Interrupted: Short-term Effects of the COVID-19 Pandemic on Adolescents in Low- and Middle-Income Countries

Abstract

We examine the situation of adolescents during the COVID-19 pandemic in four low- and middle-income countries using data from a large-scale phone survey conducted in 2020. The survey was part of Young Lives, a 20-year longitudinal study of two cohorts of young people born in 1994 and 2001 in Ethiopia, India (Andhra Pradesh and Telangana), Peru and Vietnam. We focus on the Younger (19-year-old) Cohort, describing their experiences along multiple dimensions, and assessing how their lives have changed since an earlier survey in 2016. We also compare these young people with an Older Cohort (surveyed at the same age in 2013), using a cross-cohort comparison in the spirit of a difference-in-differences approach. Compared to 2016, and compared with the Older Cohort, the increase in the probability of a loss of household livelihood (income or employment) is both large and significant in all countries. However, a 2020 downturn in self-reported well-being is significant in Ethiopia, India and Peru, but not in Vietnam, the country which experienced particular success in controlling the pandemic during 2020.

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1. Introduction

Adolescence is a challenging period of life, but the COVID-19 pandemic has intensified the pressure on young people trying to complete their education and enter the labor market. Although medical research shows that the young are generally at lower risk of the direct health effects of the virus, including hospitalization and death (Snape & Viner 2020), the economic effects are likely to be long-lasting for those at the beginning of their adult life. Many jobs have been lost, and the temporary closure of schools and higher learning institutions worldwide has no historical precedent (United Nations, 2020). Online learning is only accessible to some and typically excludes those with limited access to the internet. International organizations have warned that the pandemic may have exacerbated existing inequalities and reduced the potential of an entire generation (International Labour Organization [ILO], 2020a; United Nations, 2020), now named as the 'lockdown generation' or 'Generation COVID' (ILO, 2020b; Major, Eyles, & Machin, 2020).

This study uses unique and comparable, longitudinal data from four low- and middle-income countries (LMICs) to show just how severely a cohort of adolescents have been impacted by the COVID-19 crisis. The data was obtained from a phone survey conducted between June and October 2020, in Ethiopia, India (Telangana and Andhra Pradesh), Peru, and Vietnam, interviewing nearly 10,000 young people from two cohorts, aged approximately 19 and 26. These individuals have been part of the Young Lives Longitudinal Study since 2002 and had already participated in the survey five times (in person).

The countries covered by the Young Lives study were affected very differently by the COVID-19 health crisis in 2020. Notably, Peru experienced one of the highest rates of

COVID-related deaths (per population) anywhere in the world, while Vietnam demonstrated successful containment of the virus through early intervention and effective contact tracing. However, while the four countries clearly differ in the direct health impacts of the outbreak, all were affected by the economic downturn and restrictions put in place to limit the spread of infections.

Since the crisis began, survey responses show that the young people in our sample have experienced food shortages, economic shocks, and an increase in household responsibilities. Among this group, subjective estimates of losses in household wealth are substantial, and those surveyed were very worried about the future.

The two-cohort, longitudinal structure of the data also allows us to supplement directly-reported information with a comparison between the Younger and Older cohorts, who were surveyed at a similar age in 2020 and 2013, respectively. For certain outcomes, we have three measurements over time for each cohort (at approximately ages 12, 15, and 19), allowing us to employ an approach based on a difference-in-differences estimator to assess the impact of COVID-19 on the Younger Cohort. We use this method to gauge the effect of the pandemic on i) the probability of a loss of household livelihood, and ii) self-reported well-being. This comparison shows that previous gains in well-being had largely disappeared following the virus outbreak in 2020 (with the exception of Vietnam). However, respondents in all countries had experienced a substantial increase in the probability of a loss of household livelihood.

While the pandemic is clearly an unprecedented shock, we cannot offer a fully causal interpretation of the results from the cross-cohort comparison, as other events have occurred in the years between the two cohorts reaching age 19 (between 2013 and 2020). However, we show that, in general, life was improving before the pandemic, with the

Young Cohort achieving higher levels of education than their older counterparts, having a higher perception of their household's wealth status, and (based on previous findings) were less likely to be stunted, more likely to still be in education at age 15, and working relatively fewer hours whilst of school age (see section 4). Therefore, the relative deterioration in outcomes we observe for the Younger Cohort during the pandemic seems unlikely to be attributed to adverse events affecting this group prior to the outbreak.

The paper proceeds as follows: In the next section, we outline the heterogeneous experiences of the four countries, in terms of background and the impacts of COVID-19. In section 3, we provide an overview of the dataset, while in section 4 we describe our empirical approach and methodology. In sections 5 and 6, we provide descriptive findings of the effects of the pandemic, estimate subjective treatment effects on household wealth, and report results from a cross-cohort comparison. In section 7, we discuss potential reasons for longer-term pessimism, and conclude the paper with related policy recommendations in section 8.

2. Country context and COVID-19 experiences

2.1 Background

Prior to the 2020 virus outbreak, over the two decades that the Young Lives study had collected data, all four countries had seen significant economic growth. (The World Bank, n.d.). This was matched with moderate improvements in overall labor market outcomes, including a reduction in unemployment and an increase in the share of salaried jobs (ILO, 2020c). There were also substantial improvements in the living standards of the Young Lives participants and between 2002 and 2016 there was a marked increase in the proportion of individuals living in households with access to essential services. Figure 1

illustrates the gains achieved in standards of living, through improvements in access to electricity, sanitation and clean drinking water.

[Figure 1 here]

2.2 COVID-19 experiences

The four study countries were subjected to very diverse experiences of the pandemic in 2020. Table 1 shows data on the direct health impacts of COVID-19, as of 15th October (the end date of fieldwork). The number of (cumulative) confirmed cases per million differs substantially by country, with Vietnam having been exceptionally successful at limiting the spread of the pandemic, Ethiopia and India placed towards the lower and upper ends of the global distribution of cases (respectively), and Peru one of the worst affected countries in the world. Very similar patterns are observed when considering the number of deaths attributed to COVID-19, where we note that (relative to country population) the number of deaths in Peru was more than 2,500 times higher than in Vietnam. While there is uncertainly in how accurate these numbers are, they clearly differ by an order of some magnitude.

[Table 1 here]

In terms of policy to control the spread of the virus, India, Peru, and Vietnam implemented strict national lockdowns in the first half of 2020.[1] India began a nationwide lockdown at the end of March, including the closure of schools and a ban on public gatherings. This lasted for 75 days, before a phased relaxation of restrictions began on 8th

June (Favara, Ellanki, Molina, Porter, & Scott, 2020). Educational institutions in Andhra Pradesh and Telangana remained almost entirely closed throughout 2020, however.

Peru imposed a national lockdown between 15th March and 30th June (Sánchez, Cueto, Penny, López, & Lago, 2020), with people only allowed to leave the house for essential activities. From May, the government began re-opening the economy and between July and September the country moved into a phase of local lockdowns. In a similar response to India, childcare services, schools (except some in rural areas) and higher education institutions remained closed to in-person teaching throughout 2020.

In Vietnam, the government implemented a series of early measures, including a 15-day national lockdown in April, and the closure of schools and non-essential businesses in early February. With the exception of localized outbreaks, this approach, coupled with extensive contact tracing, was highly effective at limiting the spread of the virus during 2020 (Scott, Duc, Hittmeyer, Favara, & Porter, 2020).

Despite some common features in the countries' responses to COVID-19, the economic consequences of the pandemic were highly varied. The Vietnamese economy recorded growth of 2.9%, while Peru's GDP contracted by 11.1% in 2020. Similarly, India's GDP fell by 8.0% from the previous year. In Ethiopia, although 6.1% growth was recorded during 2020, this represented the country's lowest growth rate since 2003 (The World Bank, n.d.).

3. Data

3.1 Data and descriptive statistics

The COVID-19 phone survey builds on the Young Lives longitudinal study, conducted in Ethiopia, India (Andhra Pradesh and Telangana), Peru and Vietnam. The study has

followed two cohorts in each of the four countries since 2002: The 'Older Cohort' of approximately 1,000 children per country (born in 1994-5), and the 'Younger Cohort' of approximately 2,000 children per country (born in 2001-2). This original sample of almost 12,000 individuals were selected to include a significant coverage of poorer areas (Escobal & Flores, 2008; Kumra, 2008; Nguyen, 2008; Outes-León & Sánchez, 2008), and both cohorts had been visited in person every three to four years, during five rounds of quantitative surveys (most recently in 2016). The first of two phone survey calls took place between June and July of 2020, and a second survey call was conducted between August and October of the same year. In 2020, the two cohorts were aged approximately 19 and 26 years old.[2]

The advantage of the Young Lives phone survey data is that it is broadly representative of poor adolescents in the four study regions and, importantly, the survey was able to reach the rural poor, even those without access to the internet or mobile phones.[3] In contrast, many surveys into the effects of COVID-19 were conducted online during 2020, limiting the representativeness of the sample, by mainly reaching educated children and those with access to internet (ILO, 2020a).[4] Furthermore, given the long-standing relationship with participants, the Young Lives survey had a higher response rate than most phone surveys, and lower attrition than many follow up surveys of longitudinal studies in more developed countries.[5]

In our analysis, we take advantage of a unique aspect of the cohort age set-up, that allows for a comparison between the Younger and Older Cohorts at the same ages, but at different points in time. For example, the Younger Cohort in 2020 (during the phone survey) were approximately the same age as the Older Cohort in Round 4 (in 2013).[6]

Among the core indicators available in the data, we employ a variable containing information on household livelihood loss, which takes the value 1 if anyone in the respondent's household had lost their job, source of income and/or family enterprise during the pandemic. Given that we have this data collected at ages 12, 15 and 19, for both cohorts, this provides an opportunity to measure the effects of the pandemic on this outcome with a cross-cohort comparison based on a difference-in-differences approach (see section 4).[7]

A measure related to self-reported well-being has also been recorded in all survey rounds. This variable uses the Cantril (1965) self-anchoring scale (also known as Cantril's Ladder), which asks the young people to visualize a ladder of nine steps, with the bottom step representing the worst life for them and the top step representing their best possible life. Respondents were asked to identify which step they presently stood on.[8] In a similar manner to the information on household livelihood loss, this measure is recorded at the relevant ages required to permit a cross-cohort comparison.

In the following analysis, we also employ a subjective measure of household wealth, based on a Likert scale approach, whereby a response of 1 represents 'destitute' and a response of 6 represents 'very rich'. We asked young people about the current wealth ranking of their household, but also asked them to give an assessment of their wealth ranking just before the pandemic began. As we have subjective information from each respondent on both their current wealth and what this was before the outbreak (an indication of what their level of wealth would have been in the absence of COVID-19), we are able to estimate a subjective treatment effect of the pandemic directly (Arcidiacono, Hotz, & Kang, 2012; Aucejo, French, Araya, & Zafar, 2020).

Table 2 presents an overview of the variables measured for both the Younger and Older Cohorts at age 19 (in 2020 for the Younger Cohort and in 2013 for the Older Cohort), and the results of a *t*-test of the equality of means between these two groups. We record the source of all variables in Appendix B.

[Table 2 here]

In all countries, we observe a significantly higher probability of a loss of household livelihood among the Younger Cohort (during the pandemic), relative to the older group at the same age. Between the two cohorts, we also observe a significant fall in self-reported well-being, in all countries other than Vietnam. In the Vietnamese sample, however, we see a large and significant increase (approximately equivalent to one additional 'step' on Cantril's ladder).

In Peru and Vietnam, Table 2 indicates an increase in the (Likert scale) measure of household wealth, between the Older Cohort at age 19 and the Younger Cohort during the pandemic. When making the same comparison in India and Ethiopia, we instead see a relative decline across the two groups in India and little change in Ethiopia. An alternative comparison, between the Older Cohort and the Younger Cohort *before* the pandemic, suggests a different interpretation, however. Here, we see that the pre-pandemic wealth of the Younger Cohort was significantly higher in all countries, relative to the older group, before a decline in household wealth (on average) among the Younger Cohort, following the outbreak of the virus.

The pre-pandemic improvement in perceptions of wealth between cohorts aligns with a general improvement in development outcomes between the two groups (see section 2.1). A further example of this is given in Table 2, where we observe a marked improvement in the average number of completed education grades between the two cohorts.[9] In all countries, the Younger Cohort at age 19 had completed at least one additional year of schooling, on average (prior to the pandemic), relative to the Older Cohort at the same age.[10]

Table 2 also indicates a slight difference in the average age of the two cohorts, owing to a longer fieldwork duration of the (more comprehensive) face-to-face survey in 2013.[11] We also see small differences in the gender composition of the older and younger groups in India and Peru. However, we do not consider these differences substantial enough to overturn the interpretation of our inter-cohort results in section 6.

4. Empirical Approach

We triangulate with three types of evidence, none of which should be considered as fully causal but taken together are strongly suggestive of the effects of the pandemic on adolescents. First, focusing on the Younger Cohort, we document direct responses to questions on the impact of the crisis. These questions relate to the economic situation and food security status of the respondent's households, as well as the potential implications for health, education, labor market outcomes, and the time use of the Young Lives participants. Second, we compare subjective household wealth rankings, in a period just before the COVID-19 outbreak and at the time of the second survey call (August-October 2020). This allows us to measure a subjective treatment effect of the pandemic on household wealth status.

Third, we compare the probability of a loss of household livelihood and levels of self-reported well-being, between the Younger Cohort at age 19 (in 2020) and the Older Cohort at the same age (in 2013). We allow for differences in the pre-pandemic trend between cohorts using a specification in the spirit of a difference-in-differences estimator. For the Younger Cohort, we utilize information from the Young Lives surveys in 2013 (Round 4), 2016 (Round 5) and 2020 (Phone Survey), and for the Older Cohort, we use information from the surveys in 2006 (Round 2), 2009 (Round 3) and 2013 (Round 4). In both cases, the cohort members are aged approximately 12, 15 and 19, respectively. The following model is estimated separately for each country:

$$Y_{ica} = \gamma_0 + \gamma_1 YC_i + \gamma_2 Age15_a + \gamma_3 Age19_a$$
$$+ \gamma_4(Age15_a * YC_i) + \beta(Age19_a * YC_i) + \delta_s + e_{ia} \qquad (1)$$

Where Y_{ica} is the outcome of child i in cohort c, at age a. The two outcomes considered in this approach are self-reported well-being (based on Cantril's ladder) and an indicator of whether the respondent's household experienced any loss of livelihood (a loss of employment or income by a household member). The term YC_i is a dichotomous variable referring to the Younger Cohort, while $Age15_a$ and $Age19_a$ are indicator variables for those in the respective age groups, intended to capture the underlying age trend in the outcome variable (observations recorded at age 12 represent the base category). The coefficient of interest β differentiates the Younger Cohort at age 19, during the COVID-19 pandemic. We also include cluster (sentinel site) fixed effects from the first survey visit δ_s, to reflect the sampling method of the study, and interact the Younger Cohort indictor with the variables representing age, to allow for a different underlying age trend between cohorts (discussed below).

A key assumption for the validity of the standard difference-in-differences estimator is that of parallel trends. In our context, this would imply that the change in a given outcome, from age 15 to age 19 in the Older Cohort, is a good proxy for the counterfactual change in the potential outcome in the Younger Cohort, had the pandemic never taken place. However, this fails to account for any unrelated, cohort-level improvements that differentially affect the outcomes of the Younger Cohort at the same age as the older group.

Previous research using the Young Lives data shows that the gap between the cohorts had been widening over time in many key development outcomes. Comparing the two groups, at the age of 15, there was a decline in the prevalence of stunting and a rise in school enrolment rates (Espinoza, Benny, Duc, & Hang, 2017a; Galab, Reddy, Singh, & Mukherjee, 2017; Penny, 2018; Woldehanna, Araya, & Pankhurst, 2017a; Cueto & Felipe, 2017; Espinoza, Benny, Duc, & Hang, 2017b; Singh, Reddy, Galab, & Mukherjee, 2017; Woldehanna, Araya, & Pankhurst, 2017b). In Peru and Vietnam, learning outcomes also increased in tandem with enrolment, and (in all countries other than Vietnam) time devoted to working at age 15 had decreased significantly (Espinoza-Revollo & Porter, 2018). Therefore, alongside reported gains in wealth and educational achievement (see Table 2), in general, we observed a cohort-level improvement in most aspects of life. This would imply that we would be likely to *understate* the magnitude of the pandemic's effect, were we to impose the parallel trends assumption in the strictest sense.

In recognition of this, equation (1) allows for cohort-specific age trends, through the interaction of YC_i with the age indicators.[12] The inclusion of these terms allows us to gauge whether there have been inter-cohort changes in our outcomes, *over and above* any existing differences in the underlying trends between cohorts.

There are two important caveats to interpreting the β coefficient in equation (1) causally. First, the Round 5 data were collected several years prior to the virus outbreak in 2016, and many events, other than COVID-19, have occurred since then. Therefore, we cannot completely attribute any observed differences to the pandemic alone. Again, however, we note that the Younger Cohort have consistently been better off at every age, and just prior to the pandemic, were also better off in observable characteristics (highest education grade completed and subjective household wealth status). Second, it is possible that the phone survey may not yield comparable answers to an in-person survey (even to the same questions) and experiences during the pandemic itself may have affected the way that respondents answered certain questions (for example, their ability to recall events or gauge the severity of shocks).

5. Descriptive findings from the COVID-19 Phone survey

Table 3 (below) presents an overview of the key variables collected in the phone survey for the Younger Cohort in 2020.

[Table 3 here]

In three of the four study countries, the young people in our sample had largely been spared the direct health impacts of the virus. In Peru, the country that has been hardest hit by the health effects of COVID-19, around 15% of the Younger Cohort had been tested for the virus, with close to 1-in-7 testing positive. In India, roughly 1-in-10 had received a test and 5% of this group had tested positive. Fewer than 10% had been tested in Ethiopia and Vietnam, and less than 1% of these resulted in a positive test.

Despite the low prevalence of the virus detected among the sample, fears around contracting COVID-19 were still high in three of the countries. In Peru, around half of the sample believed that they were at medium or high risk of contracting COVID-19, while this figure rises to nearly 70% for the Ethiopian sample. In India, 45% also believed that they were exposed to this level of risk. However, given the more limited spread of the virus in Vietnam, less than 1-in-5 participants consider themselves at medium or high risk of infection.

One of the most common experiences across all countries was the negative impact that the pandemic had on the economic situation of households. This is illustrated clearly in Figure 2. Even in Vietnam, where the number of cases reported was low, nearly 60% of households reported a fall in income and/or a rise in expenses. In Ethiopia, Peru, and India, these impacts were even more prevalent, with over 93% of households in India experiencing an income or expenditure shock.

[Figure 2 here]

Running out of food during the pandemic was also a serious concern in at least three of the Young Lives countries. In Ethiopia and India, Table 3 shows that around 16% of respondents reported that their household had run out of food since the beginning of the outbreak (on one or more occasions), while in Peru, this figure was around 13%. In Vietnam, however, the proportion was much lower (around 4%).

Figure 3 illustrates how the share of those running out of food compares to that reported in 2013 and 2016 (when the Younger Cohort were aged 12 and 15, respectively). In Ethiopia and India, the extent of food shortages in 2020 is clearly at odds with the

general trends observed in previous years. There is also (less clear) evidence of an unexpected increase in Peru. In both Ethiopia and India, the increase in the probability of food shortages was significant, compared to the situation in 2016 (it was not in Peru). Vietnam, however, experienced a decline in the proportion of those experiencing food shortages, relative to 2016, in line with the previous trend observed between 2013 and 2016.

[Figure 3 here]

The degree to which those in education experienced interruptions in their studies also varied by country. In Peru, by mid-October, 10% of the Younger Cohort, who were engaged in formal education before the pandemic had dropped out (or not yet enrolled), citing reasons specifically linked to COVID-19.[13] Notably, 1-in-4 of these children had not enrolled, due to being unable to pay school or college fees as a result of the quarantine/lockdown. In Ethiopia and India, the proportion who had dropped out for reasons related to the crisis was much lower (less than 1%), although 21% (Ethiopia) and 29% (India) of those in education before the pandemic were still waiting for classes to resume (following school closures in both countries). In Vietnam, again, the impact was less severe, with few students choosing to drop out for reasons attributable to the pandemic (1.7% of those previously enrolled), and no classes being suspended (at the time of the interview).

The extent of remote learning during lockdown also varied by country. In Vietnam and Peru, nearly 80% of the 19-year-olds successfully engaged with their schoolteacher (through in-person or virtual classes, or assignments). However, in India, this dropped to

4-in-10 and, in Ethiopia, only 1-in-10 managed to engage in formal learning activities during this period.

In all four countries, the young people reported spending more time on childcare and performing more domestic work than before the pandemic. Nearly 80% of those in Peru reported an increase in domestic work, while in Ethiopia and Peru roughly 1-in-3 reported spending more time taking care of children. This increase in household and caring responsibilities fell disproportionately on females in all countries, while young men tended to work more in the family business. (reported changes in time use can be found in Appendix C).

Prior to the pandemic, 41% of the Younger Cohort were working in Ethiopia, as were 32% of the Indian sample, 58% in Peru, and 60% in Vietnam. While many of those working would leave employment during the crisis, the pandemic also resulted in more adolescents entering the labor force. In Peru, 1-in-3 of those who were not working before the outbreak worked in the week before the second survey call, while in Ethiopia, Vietnam and India, these figures were 13%, 21% and 32%, respectively. In India, there was also a substantial increase in the probability of being in work among those who were still enrolled in full-time education. Among this group, 18% worked before the pandemic, whereas 42% worked just before the second survey call. Overall, Table 2 reports the net change in the employment status of the 19-year-old cohort was a large increase in the proportion of those working in India (from 32% to 47%), a decrease in Peru and Vietnam (falling by 5 and 12 percentage points) and little change in the employment share in Ethiopia.

Finally, it is worth noting that the COVID-19 outbreak also generated a strong sense of insecurity among the respondents. In the first call (June/July 2020), 60% of young

people in Ethiopia, 88% of the sample in India, 48% in Peru, and 65% in Vietnam felt nervous about their general circumstances at the time of interview. This sense of insecurity was reported by (broadly) equal shares of both young men and women in Ethiopia, India and Vietnam, but relatively more women than men in Peru (This gender decomposition is shown in Appendix C).

The various descriptive statistics (reported above) indicate that the COVID-19 pandemic had demonstrable impacts on the lives of 19-year-olds in the four study countries, although notably less so in Vietnam (for many outcomes). In section 6.3, we discuss how these adverse events, and others considered below, may have led to a fall in self-reported well-being for the Younger Cohort during the outbreak. In section 7, we also consider the relationship between a decline in well-being and an observed rise in the reporting of symptoms associated with mental health issues.

6. Subjective wealth effects and a cross-cohort comparison

6.1 The effects of the pandemic on household wealth

In Table 4, we present estimations of the subjective treatment effect of the pandemic on young people's perceptions of their household wealth status. The approach we use follows a growing literature that uses subjective assessments to estimate treatment effects (Arcidiacono, Hotz, Maurel, & Romano, 2020; Aucejo et al., 2020; Wiswall & Zafar, 2020). We compare a respondent's beliefs about their current wealth with their perception of what their wealth was just before the COVID-19 pandemic began (which is likely to reflect what their wealth would have been if the outbreak had not occurred). In both cases, responses are defined on a Likert scale, where 1 represents 'destitute' and 6 represents 'very rich'.

The validity of our approach depends on the key assumption that individuals have well-formed perceptions of their household's wealth, both during the pandemic and the (recalled) pre-pandemic state. Since the outcome we asked about is both relevant and germane to adolescents, they should have accurate perceptions of current household wealth status during the pandemic. In addition, given the unprecedented nature and, therefore, salience of the events taking place at the time, one would expect any recall error in our pre-pandemic measure of wealth to be negligible.

[Table 4 here]

We see that the average treatment effect (in column 3) is negative and statistically significant in all four countries. This suggests that, on average, adolescents believe that their households were significantly poorer during the pandemic, when compared to just before the outbreak. This negative effect is roughly four times larger in Peru and India than it is in Vietnam, where 95% of adolescents reported no change in their perceptions of household wealth status.

6.2 Household livelihood losses during the pandemic

Turning now to the results of the cross-cohort analysis. First, we consider shocks to household livelihood, indicated by the job loss of an adult in the household or reduced household income (for example, through the collapse of a family enterprise). One key difference between the question asked in the 2020 phone survey and previous rounds is that the recall period was much shorter for the phone survey (where we record job losses since the initial outbreak, 6-7 months ago), compared to the recall period in previous rounds (which was since the previous visit, 3-4 years ago).

Table 5 reports the coefficients estimated from equation (1), with the livelihood loss indicator as the dependent variable. Though we would expect the longer recall period to bias our results downwards (suggesting a lower bound on the magnitude of the effect), the results show that, in all countries, the Younger Cohort were still far more likely to have reported a job or income loss during the period of the pandemic, with an increase ranging from 17 percentage points in Vietnam to 63 percentage points in Peru.

[Table 5 here]

Adding further weight to this result, we also find a much higher probability of a household livelihood shock, between the Younger Cohort in 2020 and the same cohort in 2016. Again, this holds for all countries in our sample, but most notably for Peru, where we see a 64 percentage point increase in the probability of a livelihood shock in 2020 (relative to 2016). In India, the increase is also substantial, at 52 percentage points, while we see a relatively smaller increase in Ethiopia and Vietnam (28 and 26 percentage points, respectively). A graphical representation of the trends in the probability of household livelihood loss in all countries, and in both cohorts at ages 12,15 and 19, may be found in Appendix D.

Given the unprecedented events occurring during 2020, and the effective shutdown of large parts of the economy in our study countries, a higher exposure to livelihood shocks at the household-level may not be wholly unexpected. In what follows, however, we consider the extent to which such shocks - and the numerous potential mechanisms described in section 6.1 - may have impacted the self-reported well-being of the young people in our sample.

6.3 Well-being during the pandemic

As with shocks to household livelihood, a comparable question on self-reported well-being was asked in 2009, 2013, 2016 and the 2020 phone survey. First, considering the Younger Cohort only, Figure 4 indicates a decline in well-being between 2016 and 2020 in Ethiopia, India and Peru. This fall represents almost a full point on a nine-point ladder scale (from 5.7 to 4.8) in Ethiopia, and approximately half a point in the other two countries (from 5.1 to 4.5 in India, and 6.3 to 5.8 in Peru). The exception is Vietnam, where we find a change from 5.9 in 2016 to 6.4 in 2020. While this fall continues a general decline among the Younger Cohort in Peru, this is clearly not the case in Ethiopia and India.

Second, we consider the inter-cohort comparison, based on self-reported well-being recorded for the Younger and Older cohorts at the same age. Prior to the pandemic, the Younger Cohort had reported higher well-being than the Older Cohort at ages 12 and 15 in all countries (although the 95% confidence intervals overlap for the Peruvian cohorts at age 15). In contrast, Figure 4 depicts a fall in the relative well-being of the Younger Cohort, at age 19, in Ethiopia, India and Peru. This results in a reversal of the relative position of the two cohorts in all three countries (again, in Peru, the confidence intervals overlap). The exception is Vietnam, where the gap between the Younger and Older Cohorts continues to increase.

[Figure 4 here]

We test whether the reversal in well-being shown in Figure 4 is statistically significant using a cross-cohort comparison (as described in section 4). The results are shown in Table 6.

[Table 6 here]

Controlling for differential pre-existing trends, there is a large and significant fall in relative well-being of the Younger Cohort at age 19, in Ethiopia, India and Peru (compared to the Older Cohort at the same age). In Vietnam, we, instead, observe a relative improvement for the younger group, compared to their older counterparts. While we may only speculate on the precise mechanisms behind the decline in well-being observed in three of the study countries, the descriptive findings presented in section 5 already point to a number of potential channels. This list would include high reports of economic shocks, interruptions in education, an increase in food shortages, and fears of infection.

7. Potential long-term consequences

The results above show a worsening of the development outcomes of a cohort of young people affected by a global pandemic at a crucial time in their life. This follows an overall improvement in life conditions in the past two decades. These results are (by definition) short-term, and future rounds of the Young Lives survey will examine how permanent the impacts of the COVID-19 pandemic have been. However, we consider two potential pathways suggesting that consequences may be long-lasting: The correlation between well-being and mental health, and the effects of the interruption of education on later life outcomes.

7.1 Well-being, mental health and poverty

A crisis leading to a sharp drop in well-being may also have consequences for mental health, and a body of evidence documents a vicious cycle between mental health conditions and poverty (Haushofer & Fehr, 2014). For example, Ridley, Rao, Schilbach and Patel (2020) examine this bi-causal relationship and review the extensive evidence that mental health issues have long-term consequences, especially for future employment. The 2020 phone survey measured mental health in the Young Lives participants for the first time, using two validated instruments, the Generalized Anxiety Disorder-7 (GAD-7) questionnaire and the Patient Health Questionnaire-8 (PHQ-8) for depression (Kroenke et al., 2009; Spitzer, Kroenke, Williams, & Lowe, 2006).

Comparing the change in well-being between 2016 and 2020 for individuals with symptoms consistent with i) depression and ii) anxiety, relative to those with no reported symptom, we find a significantly larger fall in well-being (for both conditions) in all countries except Ethiopia. Measured as steps on the ladder (see section 3.1), well-being falls by an additional 0.3 steps in India and Peru, and 0.7 steps in Vietnam, for those with symptoms of at least mild depression (compared to those with no reported symptoms). For those with symptoms of at least mild anxiety, relative to those without, the additional decline in well-being is of a similar magnitude across the three countries. While, clearly, these figures are associations and not causal, we consider them to be suggestive.

7.2 The consequences of interrupted education

We can examine the potential longer-term consequences of interrupted education by looking at the trajectories of those Older Cohort participants who had dropped out of school by age 19. Previous research has shown that, among the Older Cohort, children

from disadvantaged backgrounds were disproportionately more likely to drop out of school than their peers (Cueto, Singh, Woldehanna & Duc, 2016). This trend appears to have been exacerbated by the pandemic, with adolescents being forced to drop out due to fee payment difficulties (especially in Peru) and poorer students less likely to engage in online learning (Favara et al., 2020; Porter, Woldehanna, Freund, Favara, & Scott, 2020; Sánchez et al., 2020).

A widening of the poverty gap in education has important consequences for the lives of affected adolescents. For example, previous Young Lives research indicates that young girls who dropped out of school were more likely to get married early, or have a child during adolescence, than those who were still studying (Favara, Chang, & Sánchez, 2018). This suggests that the potential increase in school dropout rates, due to COVID-19, may have long-lasting consequences, potentially affect the earnings potential and socio-economic status of the participants for many years to come.

8. Conclusion

This paper examines the effects of the COVID-19 pandemic and related economic crisis on the lives of adolescents in four low- and middle-Income countries. To do so, we employ three complementary strategies: Descriptive findings; subjective treatment effects; and cross-cohort comparisons. We compare the short-term impacts of the crisis, on key outcome variables, between a Younger Cohort, aged 19 in 2020, and an Older Cohort, surveyed at the same age in 2013. While the cross-cohort estimates cannot be considered as causal, due (in part) to the large time gap in the comparison group, it is clear that an advantage previously held by the Younger Cohort, across several dimensions of development and well-being, has narrowed and, in some cases, reversed in 2020.

We document adversity experienced by households across countries (a fall in income, rise in expenses, and a greater risk of food shortages), a consequent drop in perceived wealth levels, and a decline in well-being in three of the four countries. Young people have reported that they have been affected, in particular, with regard to their educational engagement, work and responsibilities. However, some of these impacts have been smaller or not statistically significant in Vietnam, the country that was least affected by the pandemic. Furthermore, we present evidence that the observed drop in well-being may be linked to changes in mental health status (depression and anxiety).

Mass vaccination levels in low-and-middle-income countries are not expected to be achieved by 2021 (or even early 2022). Young people in these countries are in an especially vulnerable position, as new waves of COVID-19 cases might imply the return of stay-at-home requirements (as has been the case in all four countries during 2021). COVID-19 recovery packages should adopt a broad approach to ensure targeted social protection programs are effectively aligned with efforts to support young people in completing (quality) education, accessing decent jobs and developing skills. Recovery packages should also provide vital support services, and prevent and address mental health issues.

Ford, Cueto, Pankhurst, Singh and Thang (2021) argue that adequate funding must be allocated to education in COVID-19 recovery programs, to ensure that quality distance learning reaches all students, if and when face-to-face teaching is suspended. This should include targeted additional tuition and better access to learning materials, particularly for students unable to access the internet. The current lack of data on the prevalence of mental health issues among adolescents in low- and middle-income countries also highlights the urgent need for further research in this area.

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Table 1. Confirmed COVID-19 cases and deaths per million as of 15th October 2020

Country	Cumulative COVID-19 cases per million people	Cumulative COVID-19 deaths per million people
Peru	25,772	2,534
India	5,290	80
Ethiopia	740	11
Vietnam	11	<1

Source: https://ourworldindata.org. 15th October 2020 is the end-date of fieldwork.

Table 2. Descriptive statistics of the Younger and Older Cohorts at age 19

	Ethiopia				India			
	Younger Cohort		Older Cohort		Younger Cohort		Older Cohort	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Livelihood loss in household	0.33	0.47	0.09***	0.28	0.54	0.50	0.02***	0.14
Well-being	4.79	1.58	5.18***	1.55	4.54	1.73	4.97***	1.45
Subjective wealth (YC=during pandemic)	3.47	0.80	3.48	0.86	3.39	0.72	3.48***	0.91
Subjective wealth (YC=pre-pandemic)	3.62	0.79	3.48***	0.86	3.59	0.72	3.48***	0.91
Highest education grade (YC=pre-pandemic)	9.22	2.76	8.13***	2.91	12.05	2.42	10.41***	2.71
Age (years)	18.35	0.48	19.06***	0.33	18.40	0.49	18.99***	0.35
Female	0.47	0.50	0.46	0.50	0.46	0.50	0.51***	0.50
Observations	1,665		908		1,868		953	

	Peru				Vietnam			
	Younger Cohort		Older Cohort		Younger Cohort		Older Cohort	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Livelihood loss in household	0.73	0.44	0.07***	0.01	0.26	0.44	0.05***	0.22
Well-being	5.79	1.73	5.97**	1.57	6.35	1.58	5.36***	1.46
Subjective wealth (YC=during pandemic)	3.61	0.57	3.39***	0.72	3.86	0.51	3.56***	0.85
Subjective wealth (YC=pre-pandemic)	3.81	0.58	3.39***	0.72	3.91	0.45	3.56***	0.85
Highest education grade (YC=pre-pandemic)	11.94	1.84	10.89***	3.26	11.98	2.41	10.50***	2.49
Age (years)	18.42	0.49	18.93***	0.40	18.42	0.50	19.27***	0.35
Female	0.50	0.50	0.46**	0.50	0.50	0.50	0.52	0.50
Observations	1,561		635		1,691		887	

Notes: YC refers to the Younger Cohort. Younger Cohort data come from the Listening to Young Lives at Work Second Call (2020). Older Cohort data come from Young Lives Survey Round 4 (2013). Subjective wealth at age 19 was measured twice for the Younger Cohort, once during the pandemic and once as a recall measure referring to the period directly before the pandemic. The question on household livelihood loss has a reference period of 'since the last visit' for the Older Cohort and 'since the pandemic' for the Younger Cohort. Stars relate to *t*-tests of equality of variable means between the Younger and Older Cohort. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 3. Descriptive statistics – The impact of COVID-19 on the Younger Cohort

	Ethiopia		*India*		*Peru*		*Vietnam*	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Tested for COVID-19	0.07	0.25	0.10	0.29	0.15	0.36	0.05	0.22
Proportion tested positive	0.01	0.09	0.04	0.21	0.14	0.35	0.00	0.00
Belief: No risk of COVID-19	0.09	0.29	0.23	0.42	0.13	0.33	0.40	0.49
Belief: Low risk of COVID-19	0.23	0.42	0.33	0.47	0.35	0.48	0.41	0.49
Belief: Medium risk of COVID-19	0.42	0.49	0.35	0.48	0.42	0.49	0.17	0.38
Belief: High risk of COVID-19	0.25	0.44	0.10	0.30	0.10	0.30	0.02	0.13
Household income decreased	0.57	0.50	0.82	0.38	0.77	0.42	0.57	0.50
Household expenses increased	0.72	0.45	0.83	0.38	0.64	0.48	0.11	0.31
Household ran out of food	0.17	0.37	0.16	0.37	0.13	0.34	0.04	0.20
Attending or planning to attend classes	0.78	0.41	0.66	0.47	0.82	0.38	0.92	0.27
Enrolled but classes suspended	0.21	0.40	0.29	0.45	0.01	0.10	0.00	0.00
Not enrolled and not planning to enroll	0.01	0.11	0.05	0.22	0.16	0.37	0.08	0.27
Contact with teacher during lockdown	0.13	0.33	0.42	0.49	0.80	0.40	0.76	0.42
Working before the pandemic	0.41	0.49	0.32	0.47	0.58	0.49	0.60	0.49
Working in the week before survey call 2	0.40	0.49	0.47	0.50	0.53	0.50	0.48	0.50
Spent more time on childcare	0.32	0.47	0.09	0.29	0.33	0.47	0.11	0.31
Spent more time on household chores	0.52	0.50	0.47	0.50	0.78	0.42	0.52	0.50
Spent more time working in business	0.15	0.35	0.04	0.20	0.15	0.36	0.15	0.36
Nervous about current circumstances	0.60	0.49	0.88	0.32	0.48	0.50	0.65	0.48
Symptoms of at least mild anxiety	0.15	0.46	0.10	0.30	0.40	0.49	0.10	0.30
Symptoms of at least mild depression	0.15	0.36	0.09	0.29	0.32	0.47	0.11	0.31
Observations	1,665		1,868		1,552		1,691	

Notes: Data come from the Listening to Young Lives at Work first and second phone calls. Analysis is on the Younger Cohort aged 19. Variables about COVID-19 risk are self-reported, subjective assessments. Analysis on attending classes, enrolled but classes suspended, not enrolled and contact with teacher are for the sample who attended school at some point in 2020 only. Planning to attend classes relates to those individuals who were surveyed before the school year began in Ethiopia, India and Vietnam.

Table 4. Subjective treatment effects of the pandemic on household wealth

	Before Covid-19 (1)	During Covid-19 (2)	Δ (3)	Prop. Δ> 0 (4)	Prop. Δ= 0 (5)
Ethiopia	3.62	3.47	-0.15***	0.03	0.79
India	3.59	3.39	-0.20***	0.01	0.78
Peru	3.81	3.61	-0.20***	0.03	0.77
Vietnam	3.91	3.86	-0.05***	0.01	0.95

Notes: The subjective wealth measure uses a Likert scale, with 1 representing 'destitute' and 6 representing 'very rich'. Δ: change (during Covid-19-before Covid-19). Prop. Δ>0: proportion of adolescents for whom the individual level Δ is positive. Prop. Δ=0: proportion of adolescents for whom the individual level Δ is zero.

Table 5. Cross-cohort comparison of household livelihood loss

|	*Ethiopia*	*India*	*Peru*	*Vietnam*
Younger Cohort * Age 19	0.260***	0.514***	0.625***	0.174***
	(0.018)	(0.013)	(0.017)	(0.014)
Age 19	-0.010	0.011**	0.044***	0.030***
	(0.013)	(0.005)	(0.012)	(0.009)
Younger Cohort * Age 15	-0.046***	0.003	0.025**	-0.070***
	(0.016)	(0.007)	(0.012)	(0.011)
Age 15	0.014	0.003	0.005	0.031***
	(0.014)	(0.005)	(0.009)	(0.009)
Younger Cohort	-0.022*	0.010**	0.042***	0.037***
	(0.011)	(0.004)	(0.008)	(0.007)
Constant	0.135***	0.026**	0.027*	-0.008
	(0.021)	(0.012)	(0.015)	(0.012)
Cluster Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,141	8,554	8,013	8,323
Number of individuals	2,862	2,915	2,640	2,964

Notes: Robust standard error in parenthesis. * denotes significant at 10%, ** significant at 5% and *** significant at 1%.

Table 6. Cross-cohort comparison of self-reported well-being

|	*Ethiopia*	*India*	*Peru*	*Vietnam*
Younger Cohort * Age 19	-1.816***	-1.399***	-0.689***	0.340***
	(0.097)	(0.087)	(0.116)	(0.088)
Age 19	0.913	1.335***	-0.012	0.562***
	(0.077)	(0.070)	(0.099)	(0.071)
Younger Cohort * Age 15	-0.458***	-0.674***	-0.365***	-0.009
	(0.097)	(0.090)	(0.115)	(0.088)
Age 15	0.513***	1.125***	0.127	0.507***
	(0.080)	(0.077)	(0.101)	(0.073)
Younger Cohort	1.418***	0.970***	0.511***	0.638***
	(0.071)	(0.062)	(0.089)	(0.064)
Constant	3.931***	4.135***	6.361***	4.722***
	(0.096)	(0.094)	(0.110)	(0.088)
Cluster Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,190	8,552	7,245	8,380
Number of individuals	2,862	2,915	2,640	2,964

Notes: Robust standard error in parenthesis. * denotes significant at 10%, ** significant at 5% and *** significant at 1%.

**Figure 1.** Improvement in access to services
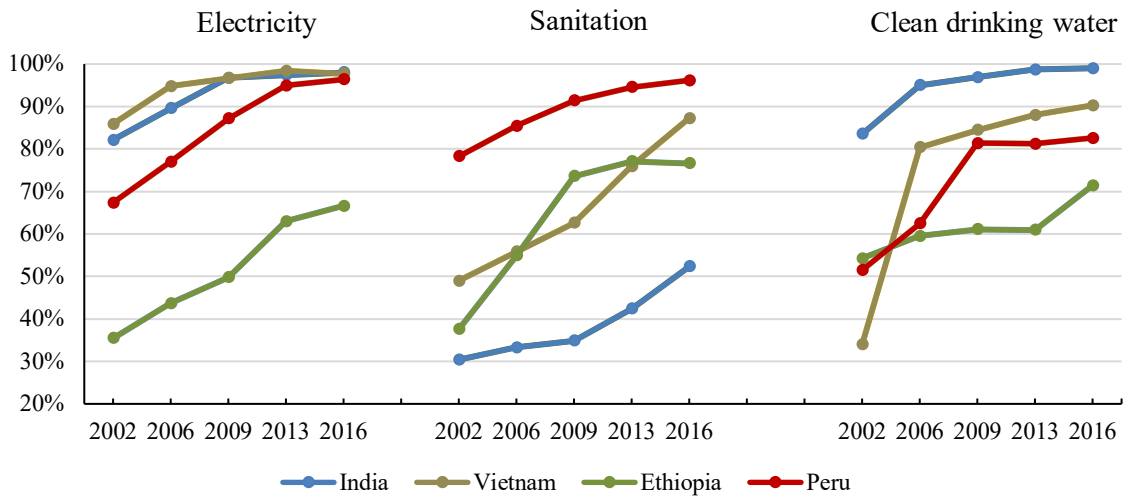
Notes: Data come from the Young Lives longitudinal study in person rounds. Analysis is on both Younger Cohort and Older Cohorts.

Figure 2. Economic shocks since the outbreak of COVID-19 (Younger Cohort only)
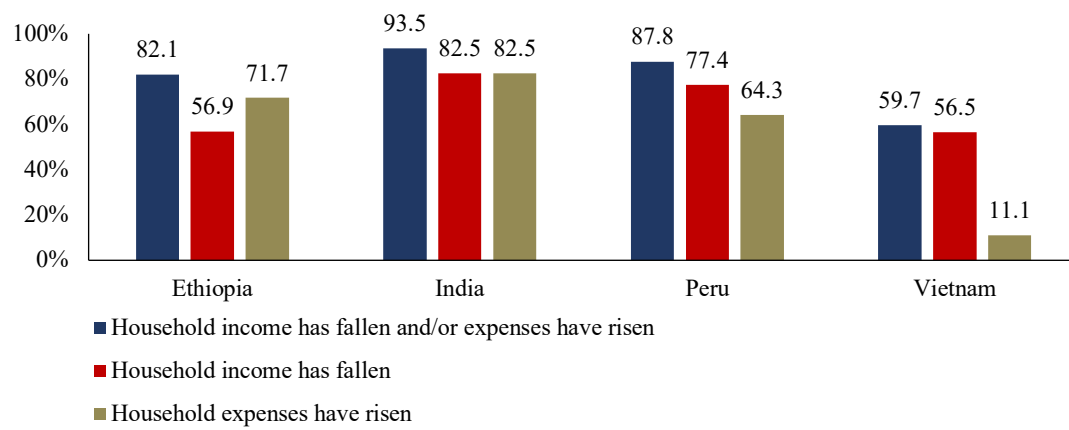

Notes: Data come from the Listening to Young Lives at Work Second Call. Figures represent the Younger Cohort only.

Figure 3. Proportion of households running out of food in the past 12 months at ages 12, 15 and 19 (Younger Cohort only)
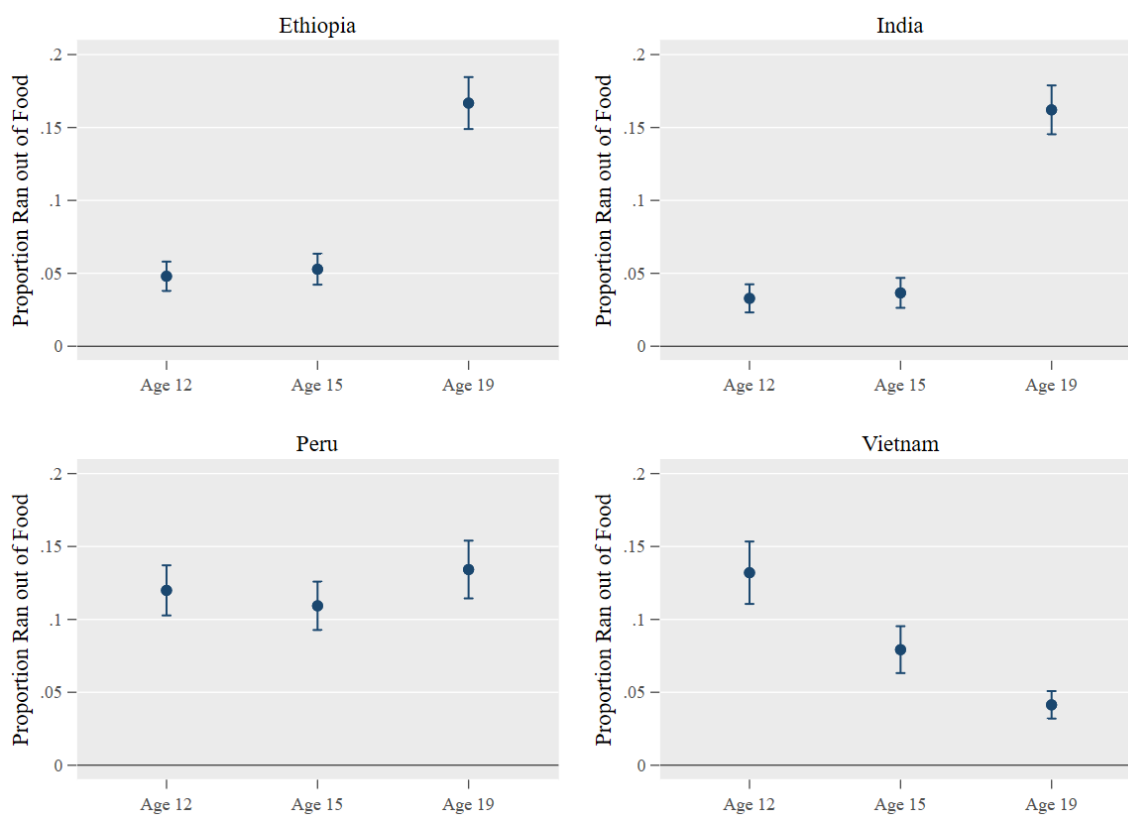
Notes: Age 12 and Age 15 data come from Young Lives survey Round 4 (2013) and Round 5 (2016) respectively. Age 19 data come from the Listening to Young Lives at Work Second Call. Analysis is on the Younger Cohort only. Vertical lines represent a 95% confidence interval.

Figure 4. Self-reported well-being at ages 12, 15 and 19
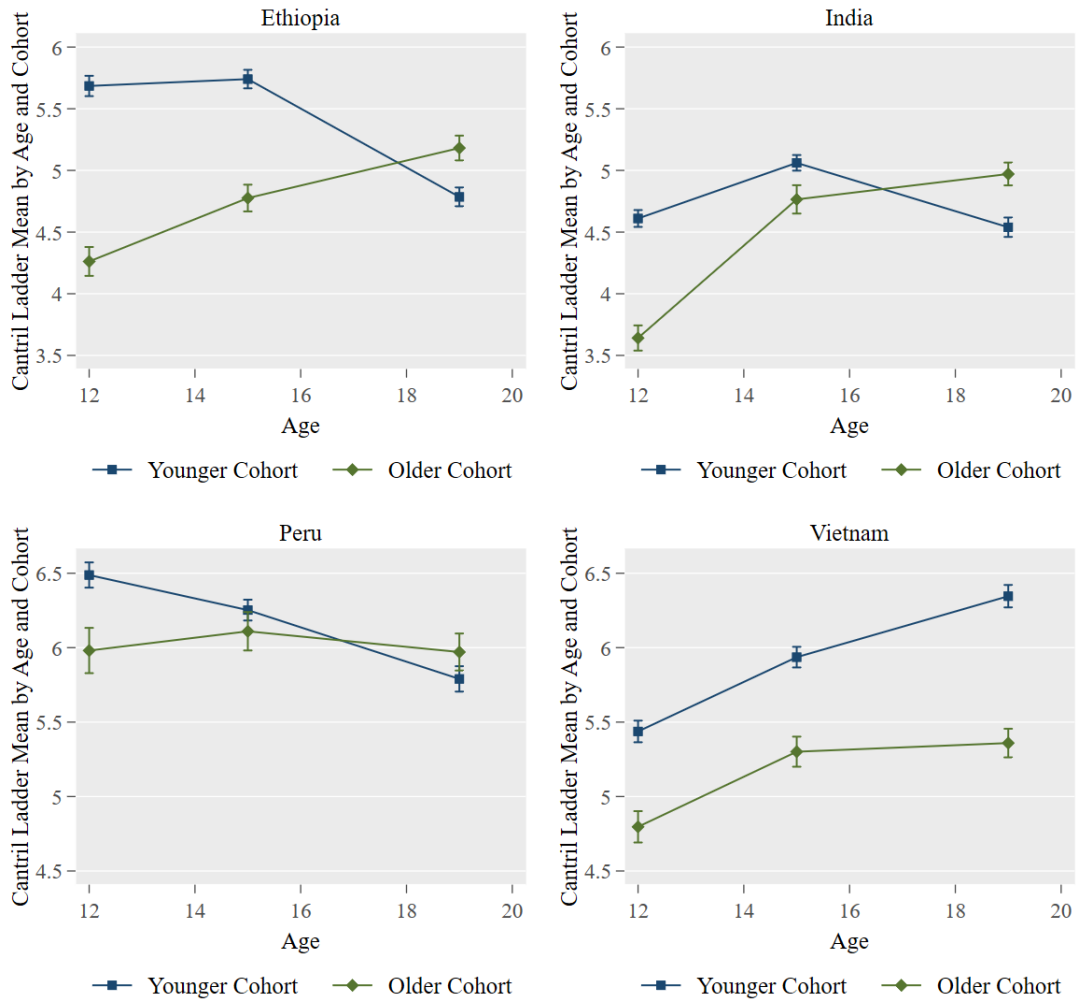
Notes: Vertical bars represent 95 per cent confidence intervals around mean values.

[1] Ethiopia did not impose a national lockdown. However, following the first reported cases in March 2020, the government closed schools and banned public meetings (Porter et al., 2020).

[2] Appendix Table A.1 reports attrition rates for the Young Lives sample from Rounds 2-5 of the longitudinal survey and the 2020 phone survey. Table A.2 reports the share of non-responses in variables obtained from the phone survey.

[3] Reaching this group was achieved via local guides living in the sample villages, an approach which was especially important in Ethiopia, where the poorest groups often live in isolated rural areas.

[4] Various phone surveys have also been conducted to assess the impact of the pandemic in LMICs (e.g., Josephson, Kilic, & Michler, 2020; Khamis et al., 2021). However, participation rates have often been low, and very few were conducted on longitudinal studies.

[5] Across all countries, 93% of the sample tracked in 2019/2020 participated in the Young Lives phone survey, a very low rate of attrition compared to similar follow-up phone surveys on longitudinal studies. For example, the UK Millennium Cohort study began at a similar time to Young Lives with 18,818 participants, though only 2,645 participated in the COVID-19 survey (see https://cls.ucl.ac.uk/covid-19-survey/content-and-data/).

[6] The Older Cohort (aged 26 in 2020) were also asked the same questions during the phone survey, but we focus on the Younger Cohort, to allow for inter-cohort comparison at the same age (where possible).

[7] Although the household livelihood questions asked were the same in the phone survey and the standard (in person) rounds, the recall period, over which individuals were asked to consider their response, was not. We discuss the implications of this in section 6.2.

[8] This approach has been used in several studies in developing countries (Clark, 2018; Kahneman & Deaton, 2010).

[9] We measure highest education grade based on the highest grade achieved by the second survey call in 2020, and whether the respondent was currently enrolled in education (and at what grade).

[10] Any concerns over the timing of the two surveys, in relation to the school year, are allayed by noting that, the Younger Cohort were, in fact, slightly younger, on average, than their older counterparts, when surveyed at (approximately) 19 years old (Table 2), and that the grade completion for the Younger Cohort refers to the period before the pandemic (where this group would be relatively younger still).

[11] Although the majority of information used in this analysis comes from the second phone survey call (August-October 2020), the Younger Cohort's age was recorded in the first call, in June-July 2020. The longer, more detailed, 2013 (Round 4) survey interviewed the Older Cohort over a far longer period, between June 2013 and March 2014.

[12] It would also be possible to model the underlying age trends in the outcomes variable via a linear (continuous) age variable. However, as the change in age is not equivalent between 12, 15 and 19, the more flexible approach employed in model (1) is better suited to the nature of our data.

[13] This group reported one of the following reasons for leaving education: Due to the quarantine, either i) my study centre cancelled classes, ii) my study centre offers virtual classes, but I do not have the proper equipment, iii) I cannot pay the educational expenses (tuition, monthly payment), iv) I needed to look for a job. We also include responses for "other reason (related to COVID or quarantine)".