CHAPTER 2

The long-lasting impacts of COVID-19

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KEY MESSAGES

THE LONG-LASTING IMPACTS
OF COVID-19

- Peru has been one of the countries hardest hit by the COVID-19 pandemic in the last two years. According to the Ministry of Health, between 2020 and 2021, 3.5 million Peruvians were infected with COVID-19. and more than 213,000 died from the disease. By July 2022, Peru had experienced more than 6,000 deaths per million population due to COVID-19, placing it as the country with the highest or second-highest number of deaths per capita in the world.

- To prevent the spread of the virus, the government implemented a strict lockdown at the beginning of the pandemic. The strict quarantine measures hindered people from engaging in economic and social activities. As a result, the country suffered significant social and economic losses.

- This chapter explores two understudied topics related to the impacts of COVID-19 on the population. First, it develops an incidence analysis of COVID-19 deaths to understand whether richer or poorer people were more affected. Then, it provides an analysis of the potential long-term impacts of COVID-19 on economic and social outcomes, which could serve as a roadmap among policy makers in seeking to prevent scarring effects.

- The incidence analysis of COVID-19 deaths is performed by matching national registries of excess deaths and survey data. The findings show that income did not protect Peruvians from COVID-19 deaths, while age and region of residence (departamentos) explained most of the variation in mortality rates. In most regions, urban populations ages more than 65 showed no difference in mortality rates between the lowest expenditure quintile and the highest expenditure quintile. The difference in mortality rates varied more across regions. Thus, the excess deaths in regions such as Lambayeque and Piura were twice those in Cajamarca and Huánuco and four times those in Apurimac and Huancavelica, irrespective of income levels.

- The immediate impacts of the pandemic revealed the fragility of the social gains. The COVID-19 shock erased a decade of social progress, as seen by the sharp increase in poverty. Employment was greatly affected, and, although they have almost recovered, the job quality and income levels still lag.

- The pandemic affected the process of human capital accumulation. An estimated 1.7 learning-adjusted years of schooling (LAYS) have been lost during the pandemic. In the absence of corrective policies, this generation of students will experience lower levels of human capital and lower future incomes.

- The loss in income during the pandemic caused families to experience food insecurity, which has long-term implications in malnutrition and stunting, which may translate into losses in productivity and still lower incomes.

- COVID-19 deaths will also have an effect on the families left behind by the deceased. Estimates derived from national registries show an orphan excess in Peru of 43,500 children in 2020–21 relative to 2018–19. Evidence from past epidemics shows that the death of a parent can cause serious harm to the long-term health and development of the children.

- The lower labor market outcomes experienced by youth during the pandemic will be a serious problem in the future, as greater exposure to unemployment is likely to affect long-term labor market fortunes.

- The short- and long-term effects of the pandemic call for urgent actions to prevent scarring effects, but also to better prepare for future shocks.

2.1. The incidence of COVID-19 in Peru

Peru has been one of the countries hardest hit by the COVID-19 pandemic in the last two years. According to the Ministry of Health, between 2020 and 2021, 3.5 million Peruvians were infected with COVID-19, and more than 213,000 died from the disease. By July 2022, Peru had experienced more than 6,000 deaths per million due to COVID-19, placing it as the country with the highest or second-highest deaths per capita in the world.[1] Within Latin America, it was followed by Brazil, which showed half that rate, that is, around 3,000 deaths per million were recorded due to COVID-19.

To prevent the spread of the virus, the government implemented a strict lockdown at the beginning of the pandemic. The lockdown was initially announced as a seven-day policy, but continued to be extended for a total of 54 consecutive days from mid-March to mid-May. Subsequently, there was a gradual relaxation of restrictions in all regions (departamentos) until July 2020, except in Ancash, Arequipa, Huánuco, Ica, Junín, and San Martín, where the quarantine ended in August. From there, a moderate quarantine was imposed, mainly in the form of curfews that limited the hours people could move freely. At the end of January 2021, when the third wave of COVID-19 hit the country, the strict lockdowns were again introduced for a total of 31 days. Table 1 summarizes the quarantine measures.

Table 1. Quarentine measures and length by resolution

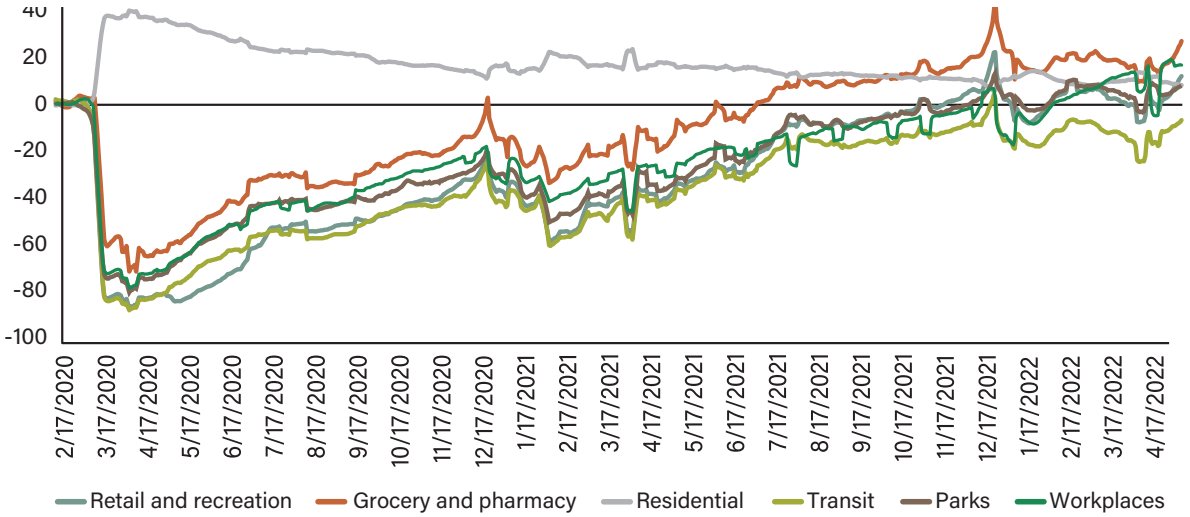
Measures	Start	Resolution	End	Resolution	Length (number of days)
Strict quarantine	3/16/2020	DS Nº044-2020	7/1/2020	DS Nº116-2020	107
Strict quarantine for some regions 1/	7/1/2020	DS Nº116-2020	8/12/2020	DS Nº139-2020	42
Moderate quarantine	8/12/2020	DS Nº139-2020	1/29/2022	DS Nº010-2022	535
Strict quarantine for some regions 1/	1/27/2021	DS Nº008-2021	2/27/2021	DS Nº036-2021	31

1/ Regions: Arequipa, Ica, Junín, Huánuco, San Martín, Madre de Dios y Áncash
2/ Regions: Lima, Provincia Constitucional del Callao, Áncash, Pasco, Huánuco, Junín, Huancavelica and Ica. From February 14th of 2021 onwards following regions were added: Utcubamba, Arequipa, Santa, Abancay, Huamanga, Cutervo, Canchis, y la Convención, Maynas, Ramón Castilla, Ilo, Puno y Tacna

Peru's strict quarantine measures removed people from economic and social activities, and mobility returned to pre-pandemic levels in mid-2022. According to Google Mobility Trends, activities in retail and recreation and the number of people at public transport stations dropped by more than 80 percent the day after the strict lockdown was imposed, compared with the median during the five weeks from January 3 to February 6, 2020. Activity in parks and workplaces fell by 72 percent, and visits to supermarkets and pharmacies fell by 60 percent after the strict lockdown was imposed. Meanwhile, the time spent at home had increased by almost 40 percent after the start of the lockdown (Figure 1). The lockdown and mobility limits were the strictest in the region. Although most mobility had returned to normal by the end of 2020, the third wave of COVID-19 (followed by the return of strict quarantine) pushed back the recovery in activities. Once again, most of the mobility in these activities took a full year to recover. The exception were grocery stores and pharmacies, which had recovered their clientele by July 2021, and public transport stations and workplaces, which had not yet done so by mid-2022.

1. According to Our World in Data, Peru ranks first among the countries with the highest number of deaths per million inhabitants. According to recent estimates in Lancet, Peru ranks second after Bolivia.

Figure 1. Changes in mobility by category (%), 2020–22



Source: Elaboration based on Google Mobility Trends, 2022.

The country also suffered significant social and economic losses because of the pandemic. Peruvian schools closed for a total of 360 school days, or the equivalent of 3.3 semesters or 1.8 academic years.[2] These numbers compare poorly with the global average of 307 days closed. The loss of learning-adjusted years of schooling (LAYS) in Peru due to COVID-19 has been estimated at 1.7 years per pupil, whereas the average loss estimated for the region is 1.5 LAYS.[3] As a result of social distancing, lockdowns, reduced mobility, and substantial educational and health impacts, domestic and foreign demand contracted. The Peruvian economy suffered one of the deepest recessions in the world, contracting 11 percent in 2020. Services and industry showed the largest drop in gross domestic product (GDP) with growth rates of negative 10.7 percent and negative 13.3 percent.

While the short-term impacts of the COVID-19 pandemic are well documented, the long-term consequences of these losses are unknown. Losses in human lives are expected to have left households without a key source of income (in the form of labor income, pensions, or cash transfers) and children without a main or secondary caregiver. Additionally, the loss of a family member can be exceptionally traumatic and have serious consequences for surviving family members.[4] Understanding the magnitude and distribution of COVID deaths across households will be helpful in assessing the potential long-term distributional implications of COVID and in designing mitigation policies.

This chapter explores the incidence and long-term effects of COVID-19 deaths on the well-being of surviving households. Efforts to identify COVID-related deaths based on individual characteristics have been quite limited. Most statistics present mortality at the level of aggregate variables, such as age or sex. The main contribution of this chapter therefore lies in shedding light on the

2. The closure of schools stated in mid-March, 2020, and was announced in the Resolución Viceministerial No. 079-2020. The reopening of schools occurred in March, 2022, which was announced in the Fuente: Resolución Ministerial No. 531-2021.
3. Estimates of World Bank (2022) "Two Years After", based on Azevedo et al. (2022).
4. See Verdery et al. (2020), PNAS.

incidence of COVID-19 deaths along the income distribution by combining several datasets on the socioeconomic profiles of people who have died from COVID-19. This is important for policy makers because the results point to a need to improve social protection and the quality of services among the entire population to prepare for future shocks. Moreover, this chapter also contributes by highlighting the main challenges Peru will face in the future as a result of COVID-19 deaths and the associated economic impact. The findings can be used as a roadmap for policy makers to guide medium-term plans and investments. The rest of the chapter is organized as follows. Section 2.2 presents results on who was most affected by COVID-19, and section 2.3 and 2.4 explores the potential short and long-term impacts of COVID-19, respectively. Section 2.5 conclude with recommendations.

2.2. Who was most impacted by COVID-19 deaths?

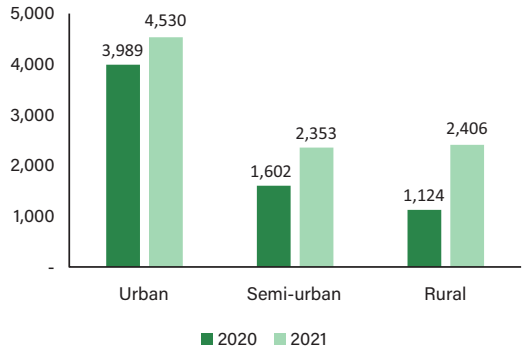
To calculate the distributional incidence of the impacts of COVID-19 (to determine whether the rich or the poor are the most impacted), it has been necessary to combine datasets from various sources. Deaths are reported in a national registry, the Sistema Informático Nacional de Defunciones (SINADEF), along with socioeconomic characteristics such as date of death, sex, place of residence, and education level. However, there is no information on the income or expenditure of the household of the deceased: crucial variables in calculating distributional incidence. The variables reported in SINADEF, along with other socioeconomic characteristics, including household income, can be found in the National Household Survey (Encuesta Nacional de Hogares, ENAHO). Following a methodology thoroughly explained in Appendix A, both datasets are combined to estimate the incidence of deaths along the household income distribution. The results follow.

COVID-19 affected disproportionately the elderly in urban areas. Death rates among the urban population more than doubled in 2020 and 2021 relative to 2019 (from 0.35 percent to 0.76 percent). As has been shown, COVID-19 spreads mainly between people who are in close contact, which explains why urban areas have a higher incidence of deaths. Mortality rates in rural and semirural areas increased by a half or a third of the rate in urban areas in 2020.[5] In semiurban areas, mortality rates went from 0.30 percent in 2019 to 0.46 percent in 2020, and, in rural areas, they went from 0.33 percent to 0.44 percent. However, by 2021, both rural and semirural areas had almost doubled the death rates as well, suggesting that the disease took longer to reach the more remote areas of the country. Still, a higher rate of mortality persisted in urban areas. In 2021, urban areas registered excess deaths of 116,00 people in a population of 25.7 million, or 4,500 excess deaths per million (Figure 2). Rural areas registered 10,000 excess deaths in 4.4 million in 2021, or 2,400 excess deaths per million (Figure 2).

5. Urban, semiurban, and rural areas are defined following the district typology of the National Statistics and Informatics institute (INEI), the Sistema de Datos Micro Regionales. Urban areas are located in the national metropolis, in regional metropolises, or areas with some type of city or populated center with more than 2,000 inhabitants. Rural areas are populated centers with 2,000 or fewer people with different degrees of access to the district capitals. And semiurban areas, an intermediate category between the two, corresponds to a type of district with a minority of the population settled in populated centers of more than 2,000 inhabitants. A detailed explanation of the typology can be found at Sistema de Datos Micro Regionales (2020), https://sdmr.inei.gob.pe/cms/multimedia/home/menuSect-2-78.

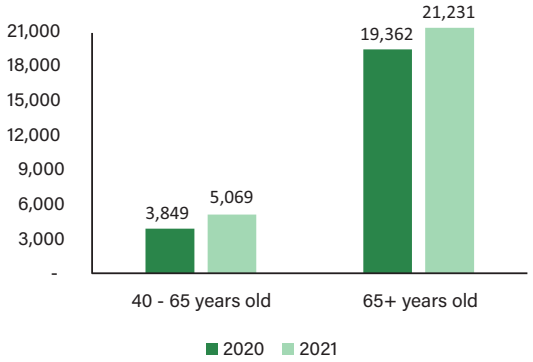
Peruvians ages 40–65 were three times more likely to die during the pandemic than in a normal year, and Peruvians ages more than 65 were two times more likely to die during the pandemic. In 2019, the mortality rate among those ages 40–65 was 0.26 percent, while the mortality rate among elderly individuals was 1.95 percent. In 2021, the mortality rate among those ages 40–65 rose to 0.77 percent, and among those ages 65 or more rose to 4.07 percent. To contextualize these numbers, 24,000 deaths were reported in the 40–65 age-group before the pandemic, while, in 2021, close to 72,000 deaths were reported in the same group. This implies 48,000 excess deaths in a population of 9.3 million or 5,000 excess deaths per million (Figure 3). Among the 65+ age-group, 72,000 deaths were reported annually, before the pandemic, but, in 2021, there were a total of 151,000 deaths reported. This implies 79,000 excess deaths in a population of 3.7 million or 21,000 excess deaths per million (Figure 3).

Figure 2. Excess deaths per million, by area



Source: Elaboration based on SINADEF and ENAHO data.
Note: Area definitions are derived from the classification of the National Statistics and Informatics institute (INEI) of urban (A), rural (B), and semiurban (AB) areas at the district level. Urban districts are located in the national metropolis, in regional metropolises, or areas with some type of city or populated center with more than 2,000 inhabitants; rural districts are populated centers with 2,000 or fewer people with different degrees of access to the district capitals; and semiurban areas, an intermediate category between the two, correspond to a type of district with a minority of the local population settled in populated centers of more than 2,000 inhabitants. A detailed explanation of the definition can be found in Sistema de Datos Micro Regionales (2020).

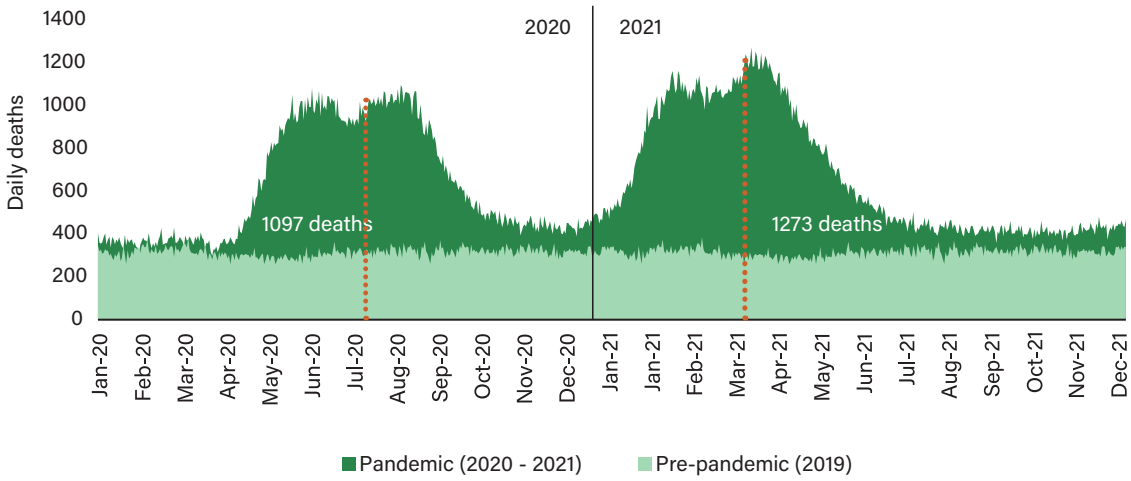
Figure 3. Excess deaths per million, by age-group



Source: Elaboration based on SINADEF and ENAHO data.

According to these numbers, in Peru, the second year of the pandemic (2021)—which coincided with the third wave of COVID-19 cases—was deadlier than the first. In 2021, 22,000 more Peruvians died relative to the number in 2020. At the peak of the pandemic, 1,273 deaths were reported in one day, the highest number in the world. This level of devastation during the second year of the pandemic was not the norm in all regions. Daily excess deaths in 2020 and 2021 can be seen in Figure 4, where daily deaths in 2020 and 2021 (red lines) are compared to daily deaths in 2019 (blue lines). The difference between the red and the blue lines is a measure of excess deaths per day. Note that the beginning of 2020 does not report differences in daily death compared with 2019, as the virus had not yet arrived to Peru. The first COVID-19 death was reported in March 2020.

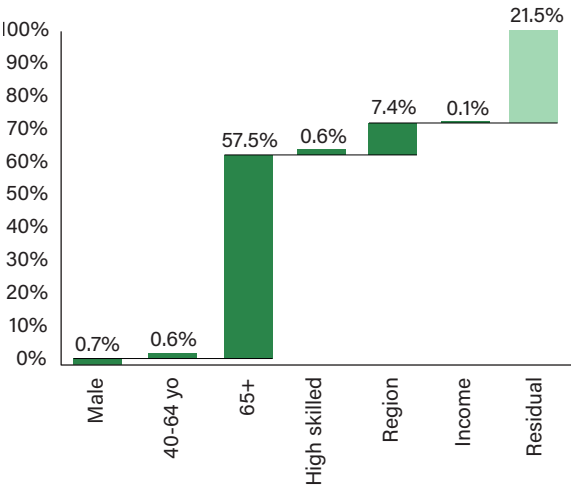
Figure 4. Excess deaths in 2020 and 2021 (compared with 2019)



Source: Elaboration based on SINADEF.
Note: The figure compares 2019 daily deaths reported by SINADEF (blue lines) with 2021 and 2022 daily deaths reported by SINADEF (red lines). The excess deaths are the differences between the red and blue lines.

Age and area of residence explained most of the variation in mortality rates. An analysis of variance (ANOVA) in mortality rates by individual characteristics shows that age and the region of residence are the main determinants of the probability of dying from COVID-19. Figure 5 shows the decomposition of the variance in excess mortality by variables. Almost 60 percent of the variance is explained by the age of 65 or more. Another 7 percent is explained by the regions where individuals live. Education and sex had little explanatory power. Household income did not explain any of the variations in mortality rates.

Figure 5. ANOVA Analysis

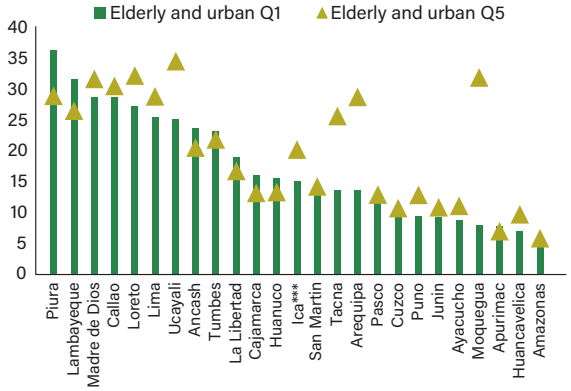


Source: Elaboration based on INEI-ENAHO and SINADEF.

Mortality rates are homogeneous throughout the income distribution; they vary mainly by region of residence. Initially, a comparison of excess mortality between poor and nonpoor groups seems to indicate that excess mortality is greater among the highest deciles in Peru.

This reflects the fact that the richest population in Peru lives in urban areas and is the longest living. Both characteristics (urban and age) made them more at risk of dying. On average, among the highest expenditure deciles, 17.3 percent of people were ages 65 or more, and 98.7 percent were among the urban population. Meanwhile, the lowest spending decile is represented by only 9.9 percent of people ages 65 or more and only 28 percent of the urban population. However, after controlling for age-group and region of residence, income level is no longer significant. For the urban population ages more than 65, the difference in mortality rates between the highest expenditure quintile and the lowest expenditure quintile is not significant. In most regions, the urban population ages 65 or more showed no difference in mortality rates between the lowest expenditure quintile and the highest expenditure quintile (Figure 6). The difference in excess deaths varied much more across regions. Thus, the excess deaths in regions such as Lambayeque and Piura were twice those in Cajamarca and Huánuco and four times those in Apurimac and Huancavelica, independent of income levels. Income therefore did not protect Peruvians from COVID-19 deaths. The probability of dying depended more on the region of residence.

Figure 6. Excess deaths per thousand among 65+ population by region and expenditure quintiles



Source: Elaboration based on SINADEF and ENAHO data.
Note: Expenditure quintiles are defined for the entire population from ENAHO. Lambayeque is not considered in the sample because no deaths were registered in Lambayeque among the first quintile of expenditure. In Ica, the comparison is between the second and the fifth quintiles because there are no individuals in the lowest quintile of expenditure. Area definition comes from INEI's classification of urban (A), rural (B), and semiurban (AB) areas at the district level. A detailed explanation of the definition can be found in Sistema de Datos Micro Regionales (2020).

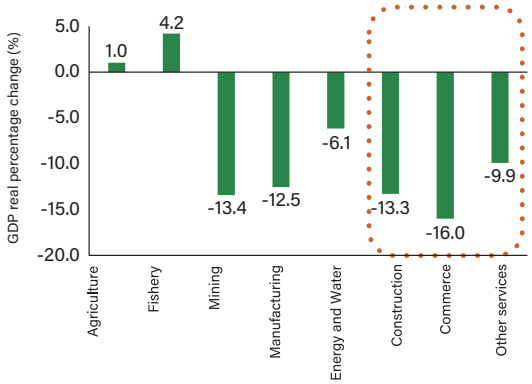
The finding that mortality rates did not vary much across socioeconomic groups could be verified using additional sources of data. To verify the robustness of these results, the analysis was replicated using data from the 2017 population census, which has the advantage of including data from all districts (the local administrative unit). The 2017 population census includes expenditure data projected based on ENAHO data and used to replicate the analysis.[6] The results of the analysis using census data are consistent with those of the ENAHO: excess mortality is greater among people ages 65 or more, the urban population, and people living in certain regions (see Figure 5). After controlling for these characteristics, excess deaths are homogeneous across household spending in most regions, that is, spending is not a good predictor of COVID-19 deaths (see Appendix B for a detailed description of the census analysis).

6. The 2017 population census uses asset data to project expenditure based on parameters from an ENAHO regression of expenditure and assets. INEI performed this regression to create the 2018 poverty map.

2.3. The short-term economic effects of COVID-19

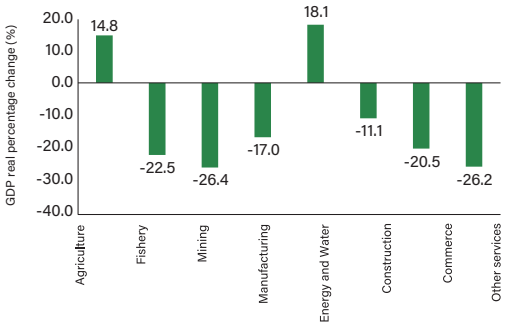
In the short term, the pandemic represented an economic and social setback, with an 11 percent fall in GDP and a 10 percent increase in poverty, especially in the commerce and services sectors. The economy contracted 11 percent in 2020, its biggest fall in the last 30 years and the biggest fall registered in any country in Latin America during that year. Poverty increased by 10 percentage points, from 20.2 percent to 30.1 percent, eliminating two decades of progress in poverty reduction in the span of a year. Extreme poverty also increased from 2.9 percent in 2019 to 5.1 percent in 2020. In 2020, GDP in real terms in the construction sector fell by 13.3 percent; commerce dropped by 16.0 percent; and other services fell by 9.9 percent.

Figure 7. Variation in GDP by sector, 2021



Source: BCRP 2021.

Figure 8. Variation in employment by sector, 2020



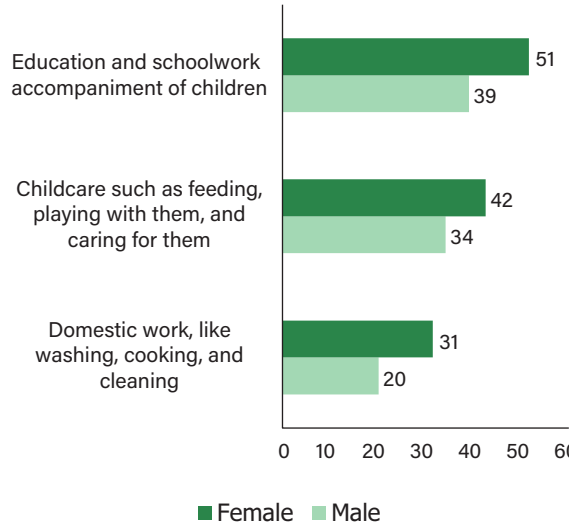
Source: ENAHO 2019–20.

Employment fell in most sectors, and women and youth were the most affected. Figure 7 shows that employment fell by between 10 percent and 26 percent in fishing, mining, manufacturing, construction, commerce, and other services between 2019 and 2020. Mining, commerce, and services were the most affected. Women were more concentrated in some of these sectors. By 2019, one woman in every four was working in the commerce sector, and another 40 were working in other services. In contrast, 15 percent of men worked in commerce, and 35 percent in other services.

Women increasingly left the labor force, mainly to take care of children and the elderly given the closure of schools and the reduced supply of support and care systems. Female labor force participation was 68.7 percent in 2019 and 58.9 percent in 2020, while male labor force participation was 82.1 percent in 2019 and 74.4 percent in 2020. This implies that the gap between male and female labor force participation was 13.4 percentage points in 2019; it increased to 15.5 percentage points in 2020. That women were exiting the labor market at a higher rate was partly explained by the disproportionate increase in household work and children accompaniment. According to the World Bank High-Frequency Phone Survey (HFPS) performed during the

pandemic, 31 percent of women reported that they experienced an increase in the amount of domestic work, compared with 20 percent of men. Furthermore, 42 percent of women reported that they experienced an increase in the amount of childcare work, while only 34 percent of men reported such an increase (Figure 9).

Figure 9. Share of respondents who experienced an increase in the volume of various work indicators



Source: HFPS 2021.

Young people (ages 15–24) also lost jobs at a higher rate. Youth unemployment averaged 6.6 percent in 2020, while, among adults, the annual average was 3.5 percent that year (Figure 10). Furthermore, young people showed an increase in unemployment in the first quarter of 2021, while adults did not. Likewise, the informality rate among this group, which was already higher than the rate among adults, increased during the pandemic. In 2019, informality, measured as the absence of social security, was almost 8 percentage points higher among young people than among adults. By the second semester of 2020, the gap had widened to 15 percentage points.

The immediate impacts of higher unemployment and lower job quality are clear: loss of the main source of income, exposure to stress, and unproductive time (that is, without accumulating additional human capital).

Figure 10. Youth and adult unemployment, by trimester, 2018–21

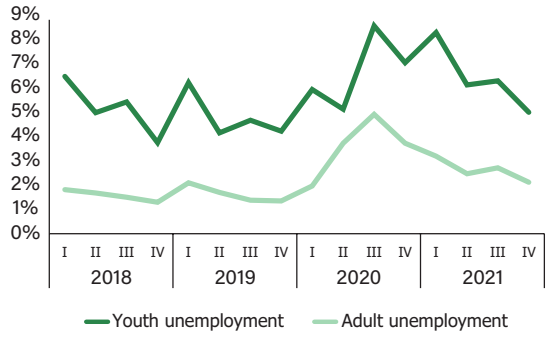
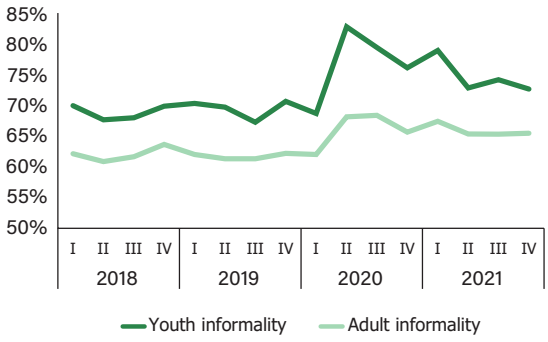


Figure 11. Youth and adult informality, by trimester, 2018–21



Source: Permament Employment Survey (EPE), 2018–21.

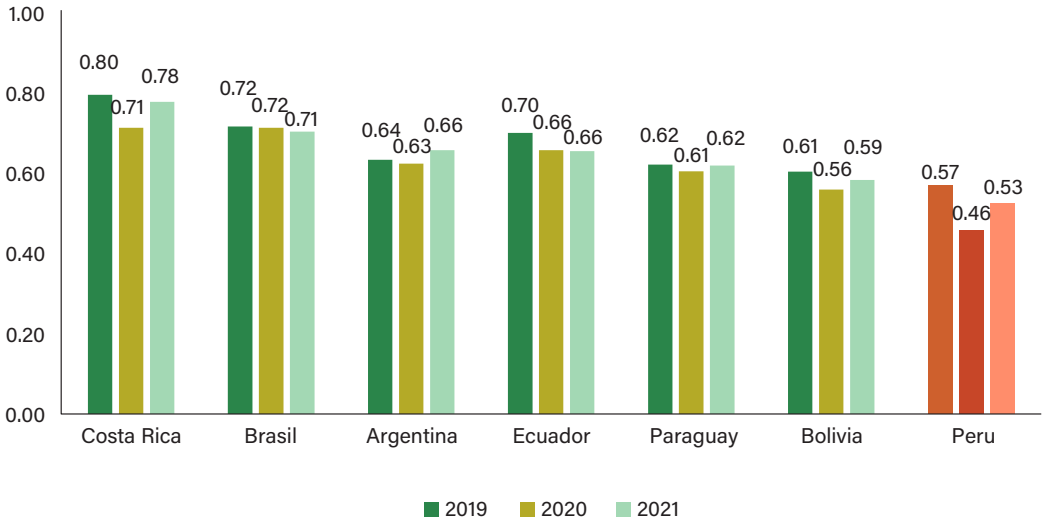
Depressed labor market conditions also led to lower labor income and lower per capita household expenditure. Average labor income went down from S/1219 in 2019 to S/1105 in 2020, a 21 percent decrease.[7] Average household per capita monthly expenditure went from S/664 in 2019 to S/580 in2020, a 15.9 percent decrease.[8] The fall in labor income was more pronounced

7. At constant Lima Metropolitana prices of 2021 (INEI 2022).
8. At constant Lima Metropolitana prices of 2021 (INEI 2022).

among those at the lower end of the income distribution. Among the bottom 40 percent of the income distribution (the bottom 40), the decrease in labor income was 22 percent, while, among the top 60 percent (the top 60), the reduction in average monthly labor income was 15 percent. In contrast, the fall in per capita expenditure was almost the same among the bottom 40 (12 percent) and the top 60 (13 percent). These trends in expenditure per capita reflect the government support for the most vulnerable households through transfers.

The quality of jobs dropped substantially because of the pandemic. A good-quality job, according to the job quality index (JQI), is defined as a job that gives a worker a sufficient income (above the poverty line), benefits (health care and retirement), stability (a contract), and satisfaction.[9] Before the crisis struck, Peru was already among the countries with the lowest JQI in the region compared with, for example, Argentina, Bolivia, Brazil, Costa Rica, Ecuador, and Paraguay (Figure 12).[10] With the shock, job quality fell drastically: the share of workers with good jobs declined from 57.0 percent in 2019 to 45.5 in 2020 (Figure 12). The drop was also the biggest among the comparable countries with data available data on 2021.

Figure 12. Job quality index, by country, 2019–21

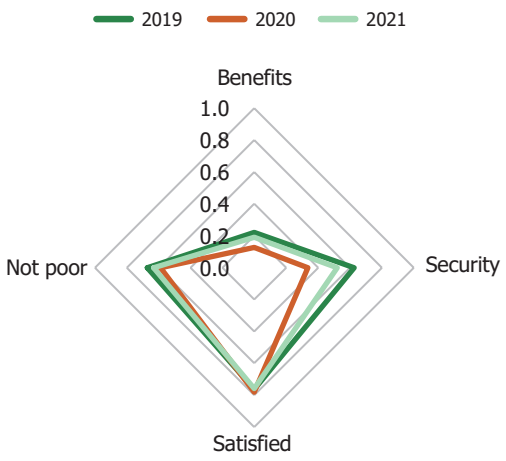


Source: Elaboration based on data from SEDLAC (2019-2021) and methodology from Brummund, Mann, and Rodriguez-Castelan (2018).
Note: The JQI was estimated for countries with data available on 2021. To estimate each dimension, the following criteria were followed. On income, the international poverty line was used to estimate the share of workers who earned more than the threshold. On benefits, access to pensions was considered. On security, the presence of a contract was considered. On satisfaction, a proxy was used on whether a worker has a secondary job.

9. Brummund et al. (2018), "Job Quality and Poverty in Latin America." Poverty and Equity Note 9, World Bank.8. At constant Lima Metropolitana prices of 2021 (INEI 2022).

10. The JQI was estimated for Argentina, Bolivia, Brazil, Costa Rica, Ecuador, Paraguay, and Peru using SEDLAC datasets for 2019, 2020, and 2021. On income, the international poverty line was used to estimate the share of workers who earned more than that threshold. On benefits, access to pensions were considered. On stability, the presence of a contract was considered. On satisfaction, a proxy was used on whether a worker has a secondary job.

Figure 13. Job quality index, by component, 2019–21



Source: Elaboration based on data from SEDLAC (2019-2021) and methodology from Brummund, Mann, and Rodriguez-Castelan (2018).
Note: The JQI was estimated for countries with data available on 2021. To estimate each dimension, the following criteria were followed. On income, the international poverty line was used to estimate the share of workers who earned more than the threshold. On benefits, access to pensions was considered. On security, the presence of a contract was considered. On satisfaction, a proxy was used on whether a worker has a secondary job.

Estimates of job quality show that all dimensions of job quality decreased because of the pandemic. The biggest drop occurred in job security, as expected (Figure 13). However, the drop in job security was larger in Peru than in the rest of the comparable countries in the region. This was followed by the drop in job benefits, where Peru was also the country that regressed the most among the comparison group. Earnings likewise suffered significantly. Job satisfaction was the only dimension in which the regression was small and smaller than in comparison countries.

Two years after the beginning of the pandemic, economic activity appears to have recovered. GDP grew at a 13.3 percent rate in 2021 and is expected to reach 2.7 percent in 2022, returning to the pre-pandemic rate. Higher vaccination rates have made this recovery possible because restrictions were lifted when mass vaccination was launched. By the second trimester of 2022, 27.5 million Peruvians had received two doses of the COVID-19 vaccine (84 percent of the target population), and 18.1 million had received three doses (64 percent of the target population).

Yet, employment, earnings, and job quality have not recovered to pre-pandemic levels. Monthly labor income was, on average, 5 percent lower in 2021 than the pre-pandemic level, and expenditure was, on average, 3 percent lower in 2021 than the pre-pandemic level. Differences in income and expenditure with respect to pre-pandemic times were more pronounced among higher income and expenditure deciles. While, in the lowest decile of the expenditure distribution, per capita household expenditure was only 1 percent lower in 2021 than in 2019, at the highest decile, expenditures were 9 percent lower than pre-pandemic. The recovery in employment has been slower among women than among men. The labor participation of men and women, which was 16.5 percentage points in 2019, was still 17.8 percentage points in 2021, the same level as in 2016.

On quality, between 2019 and 2021, informality went from 72.7 percent to 76.8 percent, which represents 693,500 new informal jobs. The share of self-employed workers increased from 35.8 percent to 36.2 percent of the working population. The share of workers in small and micro firms rose from 70.3 percent of the workforce in 2019 to 73.8 percent in 2021. The share of salaried workers, whose working conditions are associated with better earnings and more stability, dropped from 43.8 percent to 42.1 percent between 2019 and 2021. The 2021 JQI shows a similar pattern: the recovery in job quality was slower in Peru than in other countries with available data. In 2021, only 52.1 percent of the jobs in Peru were high quality, a proportion that was below the pre-pandemic level.

2.4. The potential long-term impacts of COVID-19

In addition to the short-term impacts on the economy, the COVID-19 shock affected other areas of human development whose potential impacts on the lives of Peruvians will manifest with the passage of time. The mobility restriction described above also involved the closure of schools for a prolonged period. As a result, the generation of children that stayed out of classrooms will acquire less human capital, which will translate into lower earnings if corrective measures are not undertaken. Similarly, young adults who did not the labor market because of the economic crisis will have a harder time finding quality jobs.

Furthermore, the incidence of death from COVID-19 was greater among numerous households in which more surviving members will experience impacts. The probability of death has been higher in households with four or more members (0.66 percent) than in smaller households (0.61 percent). This is especially true among members ages 40–65 or more. The death of thousands of adults has left behind orphaned children, who, if not cared for, will suffer from the scarring effects on their development. The greater incidence of death among the elderly will leave children without an additional source of childcare and households without an additional source of income. The food crisis generated by the loss in income among households will also affect children through stunting. This section of the chapter delves more deeply into these issues.

2.4.1. Education

The pandemic affected the human capital accumulation process, and, because of the disruption, many individuals will acquire lower levels of human capital. COVID-19 forced school closures in 188 countries, interrupting the learning process among more than 1.7 billion children and young people.[11] Children in Latin America and the Caribbean experienced some of the longest uninterrupted COVID-19 school closures in the world. On average, students lost two-thirds of all in-person school days after the onset of the pandemic.[12]

Peru and the rest of the Latin America and Caribbean region already lagged behind developed countries before the COVID-19 crisis. According to the Comparative and Explanatory Regional Studies (ERCEs) of the United Nations Educational, Scientific, and Cultural Organization (UNESCO)most students in the region do not reach the minimum level of proficiency in fundamental skills. such as reading and mathematics.[13] In Peru in 2019, between 24 percent and 25 percent of 3rd grade students did not meet the minimum proficiency level (MPL) in reading and mathematics, respectively. Even more worrying, one young person in three in secondary school did not reach the level of learning in mathematics required to attend the grade.

Nonetheless, relative to other Latin American countries, Peru had been making progress in the years before the pandemic. In both mathematics and reading, the share of students below the MPL was lower than the average in the region. Moreover, according to Peru's 2019

11. OECD (2020), "Education and COVID-19: Focusing on the Long-Term Impact of School Closures."
12. World Bank (2022), "Two Years After: Saving a Generation."
13. UNESCO's Latin American Laboratory for Assessment of the Quality of Education (LLECE) performs a large-scale assessment program in most Spanish-speaking countries in Latin America and the Caribbean. The ERCE has measured standardized outcomes in mathematics, reading, and natural science since 1996 among students in grades 3 and 6. The assessments evaluate students on a scale from 1 to 4, where 1 is the lowest level and 4 the highest. For each subject and grade, a minimum proficiency level (MPL) is established.

national assessment (ECE), only 24 percent of students in primary school and 9 percent of students in secondary school reach satisfactory performance in mathematics and reading. Even though its performance was low, Peru was one of three countries in the region that improved learning outcomes between 2013 and 2019, along with Brazil and the Dominican Republic. Additionally, according to national assessments, the share of second graders who scored satisfactorily on the reading assessment increased by 4 percentage points between 2013 and 2019, and, among fourth graders, the share of students who scored satisfactorily on the mathematics reading assessment rose 9 percentage points between 2016 and 2019.[14]

The pandemic meant a step back in this progress because Peru was among the countries with the longest school closures in the region. According to the UNESCO school closure tracker, Peru, at 34 weeks, ranked 16th with the longest full extent of school closures among 41 countries in the region. It also ranked 13th with the longest partial school closure, at 43 weeks, among 41 countries. The regional average was around 30 weeks of fully closed schools and around 32 weeks of partially closed schools, both below the values in Peru. Peru was also the last country in the region to allow the return to hybrid classes at the end of 2021, when it allowed the reopening of 20 percent of all schools in the country.

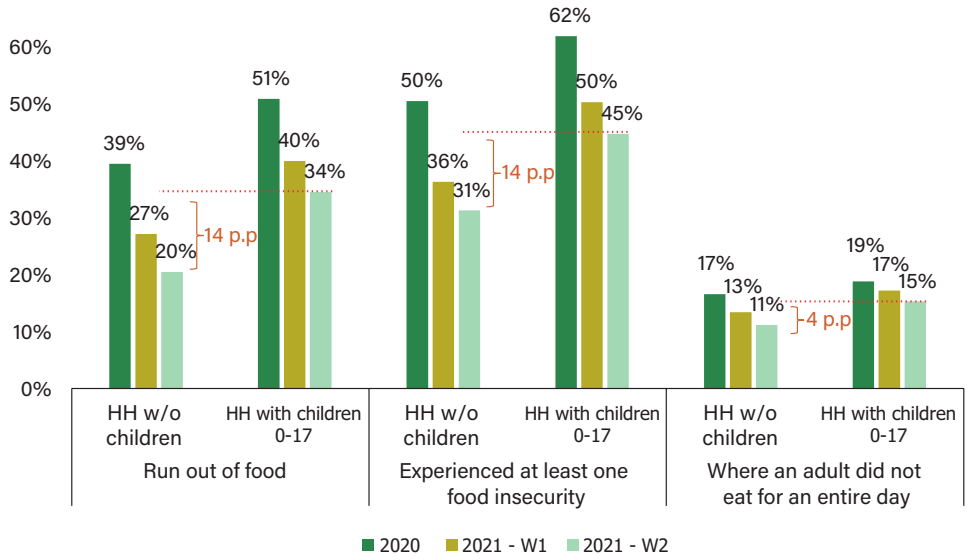
The loss in LAYS due to COVID-19 in Peru has been estimated at 1.7 years per pupil. In contrast, the average estimated loss in the region was 1.5 LAYS. The LAYS in Peru declined from 8.6 pre-pandemic to 6.9 after the pandemic, considering an intermediate scenario.[15]

Furthermore, the share of third graders below the MPL is expected to increase from 30 percent to 50 percent in mathematics and from 60 percent to 80 percent in reading.[16] Even under the most optimistic scenario, the loss in learning is expected to be substantial, erasing a decade of progress. In an optimistic scenario, the LAYS with reach 7.7, which is the level of Peru in 2010.

School closures also affected other dimensions of child and youth development, including mental health and nutrition. According to a joint study of the United Nations Children's Fund (UNICEF) and the Ministry of Health of Peru, 73.4 percent of parents or caregivers consider that staying at home during the COVID-19 quarantine affected the mental health of their sons and daughters. Additionally, for many children in the country, school meals are the only reliable source of daily food and nutrition. With the closure of schools, many children also lost access to a crucial element of their food security. According to the HFPS, households with children in 2020 and 2021 were more exposed to the risk of exhausting food supplies, experiencing at least one food insecurity, or living with an adult who did not eat for an entire day (Figure 14).

14. MINEDU (2019), "Evaluaciones nacionales de logros de aprendizaje 2019."
15. World Bank (2022), based on Azevedo et al. (2022). The intermediate scenario refers to the assumption on the extent of school closures in partially opened systems (50 percent, 25 percent, and 15 percent in the optimistic, intermediate, and pessimistic scenarios, respectively) and the effectiveness of mitigation efforts (high, medium, and low in the optimistic, intermediate, and pessimistic scenarios, respectively).
16. Request data from Azevedo et al. (2022).

Figure 14. Food insecurity by presence of children
% of households



Source: HFPS 2020–21.

To mitigate the negative effects of school closures, authorities in the Peruvian educational system undertook substantial efforts to provide distance education. The government created digital content as part of an initiative to roll out a massive remote learning program, Aprendo en Casa. Using a multimodal remote learning strategy that included television, radio, computer, and some in-person interactions, the program reached children in 18,000 schools across the country.[17] The learning experience included a facilitator to introduce the lecture, an expert teacher who would explain the main concepts, and students who would hold discussions. The Ministry of Education also launched a website, PeruEduca, to help train teachers in their new role of remote teaching.

School enrollments have not recovered to pre-pandemic levels. According to the Statistic Unit at the Ministry of Education (ESCALE), attendance in early education and primary and secondary education are lagging from pre-pandemic levels. In primary education, attendance is 0.5 percentage points below the pre-pandemic level; in secondary education, it is 1 percentage point below the pre-pandemic level; and, in early education, it is 7.7 percentage points below the pre-pandemic level. Official statistics of the Ministry of Education reveal that more than 120,000 students dropped out of school in 2021 because of a lack of digital connectivity, family issues, or economic constraints.[18] Among these students, 62 percent had been attending public schools, and 37.5 percent private schools.

Digital gaps limit the opportunities for poor and vulnerable students to participate in virtual education, thereby exacerbating existing inequalities in education outcomes. Recent data of the World Bank (2022) show that only one household in four in Peru has access to internet through Wi-Fi at home. For indigenous students, the ratio is one household in five. Access to digital devices is also limited in the country. Fewer than

17. Barron Rodriguez et al. (2021).
18. Gestion (2022).

30 percent of primary-school students have a computer at home. Among indigenous students, the share is 15 percent. According to ENAHO 2021, the ratio of internet access by any source is one student in every two, a value that goes down to one student in every three among indigenous and Afro-descendant households and to one student in every five among rural households. Access to televisions—an important, but less interactive tool in Aprendo en Casa—is more prevalent throughout the country: 8 households in every 10 have access to a television. The ratio among indigenous households is 7 households in every 10.

The compensatory actions of parents also play an important role in children's learning. The literature suggests that such actions may have a long-term effect on human capital accumulation. Fuchs-Schündeln et al. (2020) estimate the effects of parental compensatory actions (that is, investing time in children's education) during COVID-19 school closures on children's future earnings and well-being. They conclude that parental investments reduce the negative impact of school closures, but do not fully offset it. They also find that the negative effects are especially severe among children with less well educated, low-income parents.

Lower levels of human capital will have long-term consequences on earnings and poverty among this generation of children and youth. According to a World Bank study by Bracco et al. (forthcoming), more than a third of the 2020 academic year was lost because of school closures even after considering compensatory measures. They conclude that the new generation of Peruvian workers will exhibit a decrease of 8 percent in earnings by 2045 if no adjustments are made. This reduction is expected to increase the poverty rate by 6.5 percent. The authors also simulate adjustment scenarios. After parental adjustments, the decrease in earnings would go down to 4.0 percent, and, if government adjustments are included, the decrease would be 4.6 percent.[19] A combination of both would yield a decrease in earnings of only 2.6 percent.

School closures and learning loses are also expected to reduce intergenerational mobility. The patterns described above in the unequal capacity to engage in meaningful learning during school closure will result in unequal losses in human capital formation. As a result, absolute and relative intergenerational mobility will decline. Estimates suggest that, in upper-middle-income and high-income countries, absolute educational mobility will decline as the share of children with more years of schooling than their parents will drop by 5 percent or more.[20] Latin America and the Caribbean is expected to show the largest decline. As a result, in that region, relative mobility is expected to decrease by 3 percent.[21] In Peru, the decline in relative mobility could reach 11 percent.

2.4.2. Health and nutrition

The COVID-19 pandemic also had consequences on stunting and malnutrition. The reduction in income, the increase in poverty, the food crisis, and the higher rates of orphanhood caused families to experience food insecurity. As a result, the rates of malnutrition, child stunting, and children born to women with a low body mass index (BMI) have been rising. A study by Osendarp et al. (2021) published in Nature estimates that, by 2022, there will be an additional 2.6 million stunted children in 118 low- and middle-income countries.

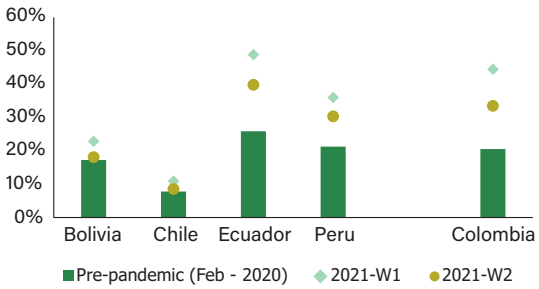
19. Parental reactions include assisting in the learning process at home. Government reactions include compensations by school systems for the lack of classes with other technologies and inputs, as defined by Neidhöfer et al. (2021).
20. Azevedo et al. (forthcoming).
21. Relative educational mobility is measured as the extent to which a child's position in the distribution of educational attainment is independent of the distribution among parents.

A competing study of the Fredrick S. Pardee Center for International Futures (2022) estimates an increase of 1.6 million children experiencing stunting. Analysis by Osendarp et al. (2021) points to an additional 168,000 deaths among under-5-year-olds, 2.1 million cases of maternal anemia, and 2.1 million children born to women with low BMI. There is also evidence of stunting because of orphanhood. In areas of Tanzania exposed to the HIV/AIDS pandemic, adults who had experienced maternal orphanhood at ages 7–15 experienced an average loss of 2 centimeters in final height attained.[22] A meta study in 49 low- and-middle-income countries finds that maternal orphanhood is associated with a higher risk of stunting, especially among children whose surviving fathers were not living in the same household.[23]

The potential long-term implications of malnutrition and stunting are losses in productivity and lower incomes. The literature points to a 21 percent reduction in adult earnings because of undernutrition and stunting in early childhood.[24] A study commissioned by the World Bank from Gasparini and Laguinge (forthcoming) estimates the potential reduction in future earnings because of COVID-19–induced stunting in Latin America. The study uses the estimates of Osendarp et al. (2021) on excess stunting due to COVID-19 and of Horton and Ross (2003) of future earning reductions. Although the results point to only a small average drop in income (0.012 percent) due to additional stunting, the reduction is not evenly distributed across households. The reduction in income among the poorest income deciles is around 0.11 percent, while incomes among the richest deciles remain unchanged.

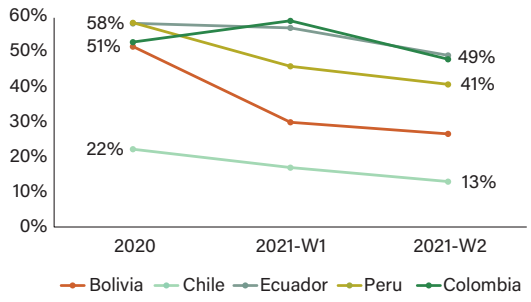
As one of the countries most affected by COVID-19, the incidence in Peru of stunting and future income losses should be a priority concern. Statistics collected by the World Bank through the HFPS exemplify the level of food insecurity that families have suffered during the pandemic. In 2020, at the peak of the pandemic, 58 percent of households in Peru reported that they were experiencing at least one type of food insecurity (Figure 16). Although, by June 2021 (2021-wave 1), the share of households had declined to 46 percent, the drop was not much larger by December 2021 (2021-wave 2), to 41 percent. This points to a slower recovery relative to other, more common and more frequently measured indicators, such as employment. By December 2021, the share of households that had run out of food was still up by 9 percentage points compared with pre-pandemic times (Figure 15).

Figure 15. Households that ran out of food in the previous 30 days (%)



Source: Elaboration based on HFPS.

Figure 16. Households with at least one food insecurity experience (%)



Source: Elaboration based on HFPS.

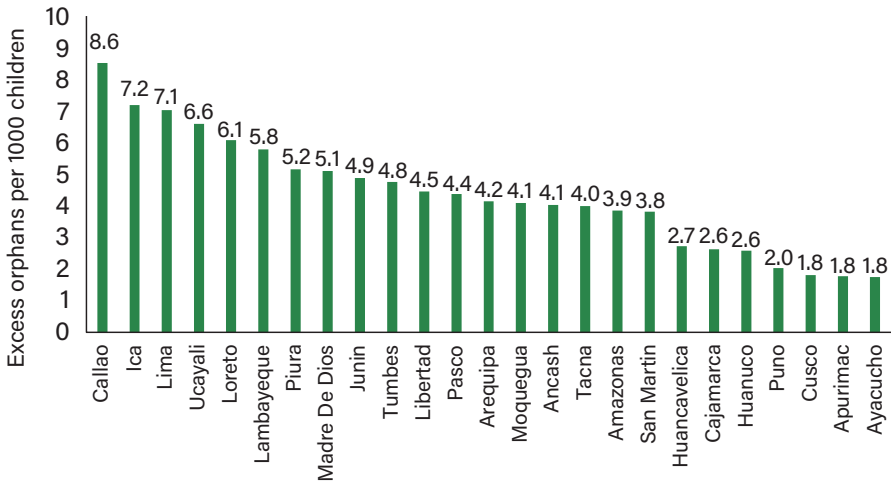
22. Beegle et al. (2010).
23. Finlay et al. (2016).
24. Horton and Ross (2003).

2.4.3. Orphanhood

Peru shows a greater incidence of orphans

Estimates derived from national registries show an orphan excess in Peru of 43,500 children in 2020–21 relative to 2018–19.[25] An indirect effect of deaths due to COVID-19 is experienced by the family members left behind by the deceased: an increase in orphan excess by 20 percent with respect to previous years, representing five additional orphans per 1,000 children, including orphanhood due to the death of a mother, father, or both. Excess orphanhood is higher in urban areas and varies greatly across regions (Figure 17)

Figure 17. Excess orphanhood per 1,000 children, 2021 relative to 2019



Source: World Bank, 2022e.
Note: World Bank estimates are derived from the Unique Identification Registry of Natural Persons, which is managed by the independent national organization responsible for the identification of Peruvians through the National Registry of Identification and Civil Status. Estimates included in the technical note "Orphanhood in Peru: Estimation and proposal of a registration system", prepared through the project "Social Protection Reforms in Peru for post-COVID-19 recovery".

Recent estimates show that Peru exhibits the highest incidence of orphanhood associated with the pandemic. According to a study that compares 21 countries, Peru had the highest incidence of orphanhood because of COVID-19 (that is, loss of a father, mother, or both), with a rate of 9.6 orphans per 1,000 children one year after the onset of the pandemic.[26] In addition, the rates of children who lost primary or secondary caregivers were also the highest in Peru, at 14.1 per 1,000 children.

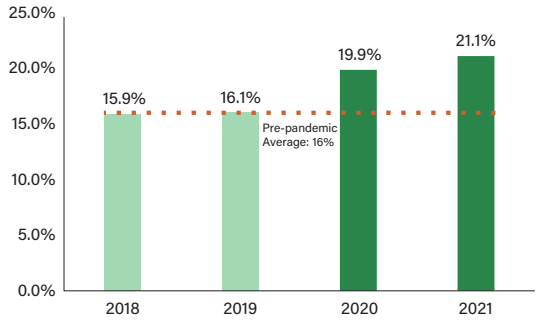
By comparison, the second highest rate was 6.4 in South Africa, and developed countries average a rate of less than 1.0 per 1,000 children. Updated estimates by London Imperial College to July 2022 also place Peru with the highest incidence of orphanhood.

Other indicators show that the share of children living with only one parent has increased in recent years. Although orphanhood is difficult to capture in household surveys given the limited

25. Estimates are derived from the Unique Registry of Identification of Natural Persons, which is managed by an independent national organization, the National Registry of Identification and Civil Status.
26. Hills et al. 2021.

panel sample of the surveys, indicators allow estimates of an upper bound in orphanhood.[27] For example, the share of children (ages under 18) living with only one parent rose from an average of 16.0 percent pre-pandemic to 19.9 percent in 2020. The share increased an additional 1.3 percentage points in 2021. Although there may be several reasons why a child lives in a single parent household, the rise is partly explained by an increase in orphanhood.

Figure 18. Percentage of children living with only one parent, 2018–21



Source: Estimates based on INEI - ENAHO.

Loss of parents or primary caregivers has a scarring effect on children

Evidence from past epidemics shows that the death of a parent or caregiver can cause serious harm to the long-term health and development of children. The health and development outcomes affected by orphanhood that are found in the literature are mostly related to human capital investments and psychological effects, which affect children's long-term economic prospects.

Orphanhood is associated with fewer years of schooling, which worsens children's economic prospects. Losing a parent increases the time a child spends in labor production inside and outside the home (as a substitute for adult labor), which translates into less time and resources devoted to the child's accumulation of human capital. For instance, two studies in Tanzania show that orphanhood had a permanent impact equivalent to one year of educational attainment and delayed school attendance among girls.[28] A study of orphanhood in Indonesia shows that the child of a parent who has recently died is, on average, two times more likely to drop out of school than children living with both parents.[29] Moreover, the death of a parent reduces a household's ability to pay school fees, which also means that the children less likely to attend school.[30]

The loss of a parent reduces the future incomes of the children. Experience during the 2004 tsunami in Indonesia shows that the loss of a mother or father resulted in worse labor market conditions among youth in the long term and higher rates of household work among young girls, which suggests that the children are obliged to substitute for their parents.[31] A similar study in Tanzania shows a gap in consumption among adults who were orphaned relative to similar adults whose mothers had survived until at least their 15th birthday.[32]

29. AGertler, P., Levine, D. I., & Ames, M. (2004), "Schooling and Parental Death," Review of Economics and Statistics 86 (1): 211–225. See the review by Ainsworth and Filmer (2005), "Inequalities in Children's Schooling: AIDS, Orphanhood, Poverty, and Gender," World Development 34 (6): 1099–1128.
30. Foster, G., and Williamson, J. (2000), "A Review of Current Literature on the Impact of HIV/AIDS on Children in Sub-Saharan Africa," AIDS 14 (3): S275–S284.
31. See Gail Cas et al. 2014.
32. Beegle et al. (2010), "Orphanhood and Human Capital Destruction: Is There Persistence into Adulthood?", Demography 47 (1): 163–80.

27. Although the panel sample covers 30 percent of the households, the sample varies yearly. Thus, it is only possible to observe less than 2 percent of the sample during the four years of the panel.
28. Beegle et al. (2010) find that maternal orphanhood in northwestern Tanzania –an area devastated by HIV/AIDS– had a permanent adverse impact of one year of educational attainment among orphans ages 7 and 15. Ainsworth et al. (2005) also study orphanhood because of the HIV pandemic in Tanzania and find that maternal orphanhood is associated with delayed school attendance, especially among girls.

Orphanhood also causes children to be placed with guardians who may not care as much about the education of the children; children without guardians face suboptimal care environments that do not facilitate adequate learning. Two recent studies in Lancet (2020) examine the problem of institutionalization worldwide. Institutional care is associated with lower levels of physical growth, cognition, and attention and a less socioemotional development. These effects are exacerbated by the length of the institutional stay. Close to 30,000 children are institutionalized in Peru, and close to 80 percent of the institutional care facilities in Lima are informal.[33] Given the negative effects, reducing the number of children entering institutional care facilities to a minimum should be a priority.

The psychological impact among children who are orphaned by the death of parents or caregivers include an increased risk of post-traumatic stress disorder, depression, and suicide in adulthood. Losing a parent can have a traumatic and scarring effect on children and youth. Trauma influences schooling and health outcomes.[34] The most widely studied long-term effects of the loss of a parent are vulnerability to depression and depressive disorders. Other studies link parental loss with other psychiatric disorders, such as schizophrenia, generalized anxiety disorder, phobic disorder, panic disorder, and eating disorders.[35] Trauma raises the risk of mental health issues, suicide, and abuse.

COVID-19 deaths occurred during a period of social isolation and economic hardship, leading to additional trauma. Loss of a caregiver during the pandemic was aggravated by imposed isolation from friends and the extended family. Moreover, the losses occurred in a context of other household traumas, such as job losses and financial and food insecurity. Cumulative trauma increases the odds of high-risk adolescent behavior and functional impairment. Layne et al. (2014) find that each additional type of trauma exposure is associated with a higher probability of any of the following risk behaviors: attachment difficulties, skipping school, running away from home, substance abuse, suicide, criminality, self-injury, alcohol use, and victimization through sexual exploitation.

The loss of grandparents may reduce welfare in the entire household

Grandparents play a vital role in childcare assistance around the world. Grandparents are the most common providers of informal childcare, usually because of the high costs or lack of formal childcare, negative social norms, or the absence or separation of parents.[36] Peru is no exception. In Peru, grandparents tend to be involved in the lives of their descendants, and households compose of several generations are common. Estimates derived from ENAHO 2019 show that 27 percent of Peruvians live in multigenerational households.

In Peru, grandparents take care of children so that the mothers can work. Grandparents may have moved closer to their children because their grandchildren require care. A test is the female labor force participation rate. If grandparents care for children while the mothers work, then one would expect the female labor participation rate to be higher among households with grandparents.[37] If, on the other hand, the elderly added an additional care burden to the home, then the female labor participation rate would be lower.

33. Lancet (2020), https://diariocorreo.pe/peru/el-78-de-albergues-en-lima-es-informal-639569/?ref=dcr.
34. See Beegle et al. (2006); Kentor and Kaplow (2020).
35. See Agid et al. (1999); Bifulco et al. (1987); Kendler et al. (1992): Luecken (2008); Mack (2001).
36. See Chamie (2018).
37. For examples, see Du et al. (2019); Posadas and Vidal-Fernandez (2013).

In Peru, working-age mothers who live in households with elderly members exhibit higher average labor force participation. According to ENAHO 2019, the labor force participation rate among working-age mothers with elderly members in the household is 83.9 percent, while the rate is only 79.3 percent among mothers without elderly household members. Furthermore, a means comparison of female labor force participation rates among women ages 15–64 is influenced by the presence of minors in the household, though the associated negative correlation is more than offset if there are elderly household members; this trend holds if one controls for location, age-group, and educational level. This is especially true among women in the bottom 60 percent of the expenditure distribution (Appendix C).

The high incidence of COVID-19 among the elderly may have affected outcomes among multigenerational households in indicators of household composition and welfare. Multigenerational households share resources, such as rent, utilities, food, and responsibilities, lowering the cost of living across all members. Resources are often shared within the household; this, if one individual achieves more, the benefits are redistributed among all members.[38] During the first two years of the pandemic, an additional 150,000 elderly were among the excess deaths in Peru. This implies that as many as 150,000 households may have lost the benefits accruing to households because of multigenerational living arrangements.[39] In terms of childcare assistance, estimates derived from ENAHO 2021 data show that 9 percent of children ages under 18 were living in households with grandparents, which is 2 percentage points less relative to pre-pandemic times. Although it is too early to determine how this may affect household dynamics, some potential long-term effects will be associated with the lower availability of childcare and lower female labor force participation rates.

Another likely impact of losing a grandparent is losing an additional source of income, through pensions. Data of ENAHO indicate that, between 2019 and 2021, the number of beneficiaries of Pension 65, a noncontributory pension, declined by 6 percent. In 2019, 1 percent of the population would have been at risk of falling below the poverty line if the elderly stopped receiving pension benefits.

2.4.4. Labor markets

The greater negative impact of the COVID-19 crisis on labor market outcomes among youth may translate into lower future earnings and job quality.

Unemployment will be a serious problem among youth after they reach adulthood because their greater exposure to unemployment is likely to affect their long-term labor market fortunes.[40] In the United Kingdom, youth unemployment leaves a lasting unemployment scar: three extra months of unemployment before age 23 lead to two extra months of unemployment during ages 28–33.[41]

Most studies agree that the impact of lost work experience persist through wages. For example, according to a study in the United States, a six-month spell of unemployment among young menage 22 results in an 8 percent lower wage at age 23.[42] The negative effects persist, and, even at ages 30–31, wages were 2 percent to 3 percent lower than they would

38. See Muennig et al. (2018).
39. This is an extreme case, first, because it assumes that all elderly who have died had been living in multigenerational households with only one elderly person, which is not likely. Second, it may also be that, as a result of COVID-19 deaths, alternative living arrangements had been adopted.
40. OECD (2010).
41. Gregg (2001).
42. Mroz and Savage (2006).

have been otherwise. Other authors find that the scarring effects of youth unemployment at age 23 on wages persist until age 42. The authors estimate a penalty of 12 percent to 15 percent in the UK labor market. The penalty drops to 8 percent to 10 percent if youth are able to avoid repeated bouts of unemployment.[43] In particular, unemployment immediately after graduation from college is associated with substantial and permanent future earnings losses.[44]

A low-quality first job—such as an informal one—may have negative consequences among workers for the rest of their lives. Because of the pandemic, the cohort that entered the labor market during the crisis obtained lower-quality jobs, and evidence shows that the quality of early job matches has significant effects on the future human capital accumulation and career paths among workers. A study in Mexico shows that young workers whose first jobs were formal were 10 percent more likely to have formal jobs 18 months later.[45] Similarly, a World Bank study finds that workers who enter the labor market during a recession show higher rates of informality even 10 to 12 years later in Brazil, Colombia, and Mexico.[46]

The potentially long-lasting effects of youth unemployment depend on the general conditions of the labor market in which the unemployment occurs. Youth unemployment leads to suboptimal short-term human accumulation, which tends to trigger a recovery response. However, over longer periods, full recovery may never occur. In such cases, if the labor market produces diminishing returns to additional tenure, then the negative effects may only be temporary.[47]

Youth unemployment may also be detrimental to other aspects of happiness, job satisfaction, and health. Bell and Blanchflower (2009) find evidence that spells of unemployment at age 23 are associated with lower levels of happiness at age 50. The negative effect increases with longer spells of unemployment at younger ages.

2.5. Recommendations

The immediate impacts of the pandemic revealed the fragility of earlier social gains. The COVID-19 shock erased a decade of social progress, as seen by the sharp increase in poverty. Employment was greatly affected, and, although they have almost recovered, the quality of jobs and the levels of income still lag. The fragility of social gains and the impacts on labor markets show the need to take actions so that jobs become more resilient to future shocks. To achieve this, informality, which is high, at 76.8 percent, and job quality, which is low, at 0.53, need to be addressed.[48]

Because Peru was one of the most affected countries, action is needed to prevent the country from also experiencing the biggest long-term scarring. Long-term impacts are expected in human capital accumulation because of the closure of schools, in health and nutrition because of the losses in health services and food security, in orphanhood because of COVID-19 deaths, and in long-term employment because of the depressed labor market. Policies in these areas should serve as a roadmap.

47. Gregg and Tominey (2004).
48. According to the above estimate of the JQI.

43. Gregg and Tominey (2004).
44. Oreopoulos et al. (2008); Gartell (2009).
45. Abel M., Carranza E., and Ortega M.E. (2021), "Can Temporary Wage Incentives Increase Formal Employment? Experimental Evidence from Mexico," Working Paper.
46. Silva J., Sousa L.., Packard T.G., and Robertson R. (2021), Employment in Crisis: The Path to Better Jobs in a Post-COVID-19 Latin America. Washington, DC: World Bank.

Promoting access to good-quality, productive jobs requires eliminating rigidities to hiring in formal jobs. The initial and recurring costs associated with formalization should be reduced.[49] Employers pay up to 68 percent of a worker's wages in nonwage costs, mainly associated with mandatory contributions, paid vacations, redundancy payments, and dismissal payments. Likewise, the complexity of the labor code, which contains more than 1,400 pages, disincentivizes formal hiring. A simplified workers guide and the removal of unnecessary requirements would therefore make the hiring process easier. Moreover, promoting better jobs beyond the efforts in formality requires greater labor market flexibility. This could be achieved by promoting flexibility in firing people with permanent contracts, for example. though a change in the interpretation of the Constitutional Court regarding firings of indefinite term contracts (contratos permanentes). The interpretation currently used is that firings without "fair cause" may result in the reinstatement of workers by firms. This interpretation, applied since 2001, raises the cost of firing and significantly reduces the probability that a worker will be employed through permanent contracts. This increases the use of fixed term contracting, which involves less training, lower salaries, and less stability.[50]

To promote hirings in the formal sector, the above recommendations should be accompanied by measures that strengthen the role of SUNAFIL. The National Labor Inspection Office (SUNAFIL) targets mainly small and large firms within the formal sector. It thus misses a large share of labor informality. Moreover, although the responsibility for supervising micro firms was transferred temporarily from regional governments to SUNAFIL in 2018, only three regions have completed this process. It is therefore recommended that SUNAFIL extend its authority to both the informal sector and micro firms. In addition, lack of inspectors, insufficient infrastructure, and the reactive nature of procedures are among the reasons for SUNAFIL's reduced impact on informality. It is therefore also recommended that SUNAFIL increase the number and competencies of inspectors and improve the ability of regional agencies to supervise micro firms. It is likewise recommended that SUNAFIL should embrace a preventive approach by assisting companies during the inspection process.

Training programs should be established to support young people, women, and minorities who face greater obstacles in obtaining high-quality jobs. To enhance employability, training programs with a regional focus launched in potential high-growth sectors could help minorities acquire transferable socioemotional skills. Although the first wave of youth training programs in Latin America had little effect on employability and the quality of jobs, more recent programs in the United States have shown promising results.[51] The novelty of these programs is that they are less focused on technical and vocational skills and more oriented to supporting beneficiaries in developing sectoral skills.[52]

51. The outcomes of raining programs in the 1990s and early 2000s in Latin America, such as ProJoven in Peru, Proyecto Joven in Argentina, Chile Joven in Chile, and Juventud y Empleo in Dominican Republic were mixed in employability, earnings, and the quality of jobs. Furthermore, they were associated with high costs of implementation, which generated significant losses in cases where positive impacts were not achieved (Almeida et al. 2012, https://openknowledge.worldbank.org/handle/10986/13549).

52. Katz et al. (2020), https://www.nber.org/system/files/working_papers/w28248/w28248.pdf.

49. The initial costs of hiring a worker are not as relevant as the recurring ones (Alcazar and Jaramillo 2012).

50. Legislation on long-term contracts allows workers to sue their employers in the case of "unjustified" firings. If the court ruling favors the worker, the worker can demand reinstatement. This creates negative incentives against hiring permanent workers. The problem is that neither an unfair dismissal nor the basis for a decision to require the reinstatement of the worker rather than monetary compensation is defined objectively. In addition, because legal precedents are not binding in Peru, the probability that the court will rule in favor of the worker is high in any case (Jaramillo, Almonacid, and De la Flor 2017).

The programs also addressed social capital deficits by acting as an intermediary during the job placement process by supporting beneficiaries in finding jobs, excelling at interviews, and keeping their jobs. The positive results of these programs are evident in employment, the quality of jobs, and income. Such programs could be replicated using the ProJoven institutional infrastructure to undertake upgraded programs.

To confront long-term challenges, the government should prioritize investments in health and education. In education, efforts should be directed toward closing learning deficits. Experiences in other countries have shown success in reducing the deficits in learning associated with school closures by complementing the return to classes with a strategy to help students catch up.[53] Peru could follow this example by implementing after-school or summer school remedial programs. In health, the government should work to improve the access to resilient infrastructure and better public services. In particular, the sector must raise the share of doctors and nurses to WHO levels and improve the spatial distribution of health services that are currently only concentrated on the coast.

53. Singh et al. (2022).

Appendixes

Appendix A: COVID-19 data and strategy

The Peruvian government was one of the first to make data on deaths from COVID-19 available to the public. This effort was led by the Ministry of Health, which assembled a group of experts to address the number of deaths due to COVID-19. The efforts came close to establishing the number of excess deaths, which represents part of the strategy used to estimate deaths internationally. During the peak of the pandemic, the government also created platforms to follow the spread of the virus, including geographical tools. Other civil society groups contributed to the task through the creation of the Open Covid Group, which recruited volunteer experts in epidemiology and computer science to examine official registries to identify means of collecting reliable data.

All deaths in Peru are reported in a national registry, the Sistema Informático Nacional de Defunciones (SINADEF), along with socioeconomic characteristics, such as date of death, sex, place of residence, civil status, education level, and health insurance. SINADEF is a joint effort of the Ministry of Health, the National Statistics and Informatics institute (INEI), and the National Registry of Identification and Civil Status to register weekly deaths, including deaths from all causes, fetal deaths, and deaths of unknown cause. COVID19 deaths are also reported in the system. The data represent a unique opportunity to estimate the socioeconomic profiles of people who have died due to COVID-19 and of the surviving household members.

Limitations of the COVID-19 death data in estimating the socioeconomic profiles include missing values and the restrictions imposed by the restrained set of relevant economic characteristics remaining after the exclusion of income and expenditures. To overcome the missing values, an imputation method was applied. To overcome the lack of useful economic characteristics, complementary databases were used in the analysis. Individual characteristics of the population, including labor income and expenditures, are collected yearly by the INEI through ENAHO. This survey is representative at the regional level and covers numerous individual characteristics.

Analysis of the distributional incidence of COVID-19 also requires data on the socioeconomic characteristics of the deceased (for example, household expenditure). In this way, the regressivity of the impacts of COVID-19 may be evaluated. However, SINADEF does not include information on the household expenditures of the deceased, and ENAHO does not include any information on deceased persons who had resided in the households surveyed. Therefore, a granular approach, combining SINADEF and ENAHO data, has been proposed. Figure A.1 summarizes this analysis.

The analysis follows a granular approach by first dividing the SINADEF data on the deceased into bins by education, sex, age, and region. Education comprises two categories: incomplete basic education and complete basic education or higher. Sex also includes two categories: masculine and feminine. Age includes three categories: 0–39, 40–64, and 65 or more. Region of residence includes 25 categories, one for each region.

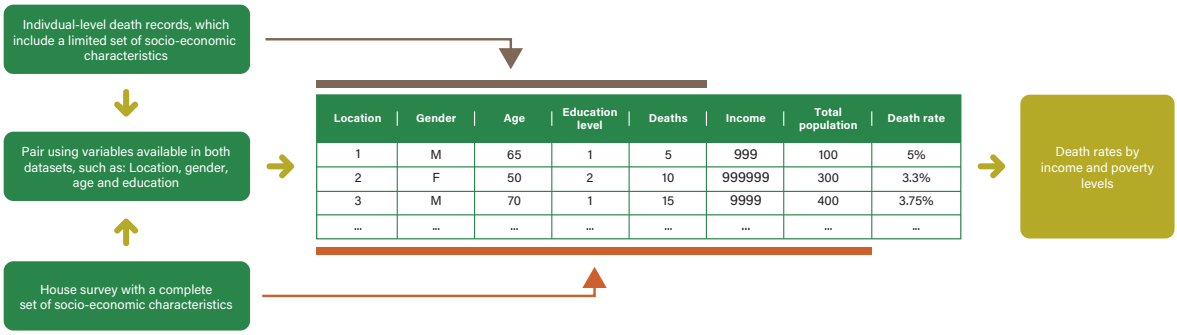
The combination gives 300 bins. For each of them, the mortality rate is calculated, that is, the number of deaths over the number of individuals in a bin. This procedure is carried out for SINADEF data from 2019, 2020, and 2021.

Then, because SINADEF data do not include information on causes of death, an indicator of "excess deaths" is calculated to identify the share of COVID-related deaths in each bin. For each bin, a baseline death rate is calculated, that is, the death rate in a year without a pandemic, such as 2019. Then the excess deaths indicator is calculated for 2020 and 2021. The indicator represents the mortality rate in a given year, less the baseline mortality rate.

Individuals included in the ENAHO are assigned to the bins on education, sex, age, and region, allowing the two datasets to be merged. Using this bin information, an excess deaths probability can be projected for each individual in the ENAHO. This represents the additional bin-specific probability of dying in 2020 and 2021. The final SINADEF-ENAHO database assembles these sources of information. The data are at the individual level and cover both household expenditure and COVID-19 deaths (proxied by the excess deaths).

Using the combined SINADEF-ENAHO dataset, it is possible to calculate excess deaths by income or poverty level (for example, expenditure quintiles). This makes it possible to assess whether COVID-19 disproportionately affects poor or rich households or whether its effect was homogeneous across the income distribution.

Figure A.1: A granular approach to excess deaths

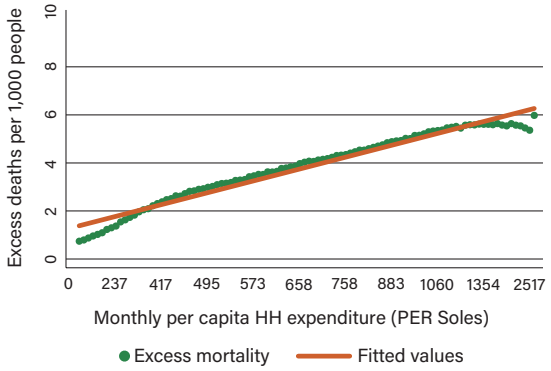


Appendix B: Robustness exercise using CENSO 2017 and Poverty Map 2018

To check the robustness of these results, the analysis was replicated using data from the 2017 census. Unlike the ENAHO, the census covers information on households in all districts (the smallest administrative unit in the country). It includes 28.4 million households. Furthermore, based on the census, INEI constructed a poverty map in 2018 that included expenditures projected for all households in the country. These two datasets, combined with the SINADEF data, make it possible to estimate excess deaths at the district schooling-sex-age level (yielding 22,488 bins) and to compare this information across the household expenditure distribution.

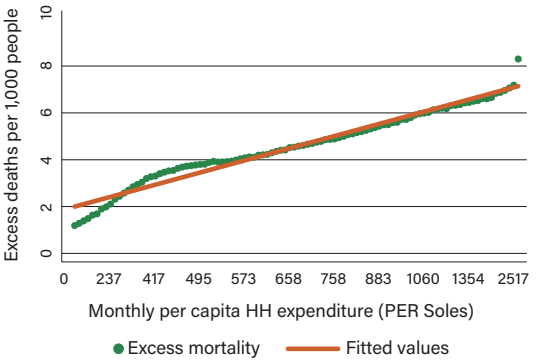
The analysis shows that the results are robust to the census database. Before controlling for age, sex, education, and district of residence, excess mortality is greater among richer households. Among households with monthly expenditure per capita of around S/ 27, the excess mortality was 1.5 deaths per 1,000 people in 2020; whereas, among households with monthly expenditure per capita of around S/ 2,517, the excess mortality was 6.0 deaths per 1,000 people in 2020 (Figure B.19). This increase in income trend was also true in 2021 (Figure B.19).

Figure B.1. Excess mortality, 2020



Source: Elaboration based on 2017 census and SINADEF.

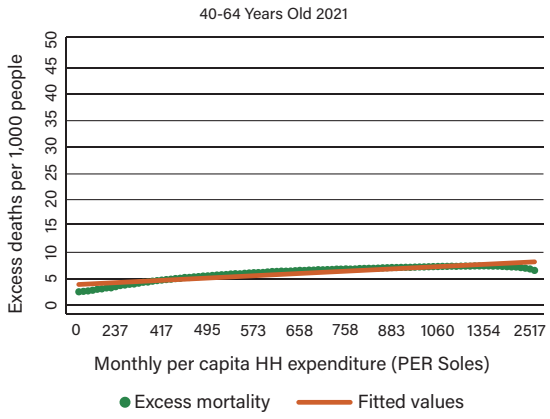
Figure B.2. Excess mortality, 2021



Source: Elaboration based on 2017 census and SINADEF.

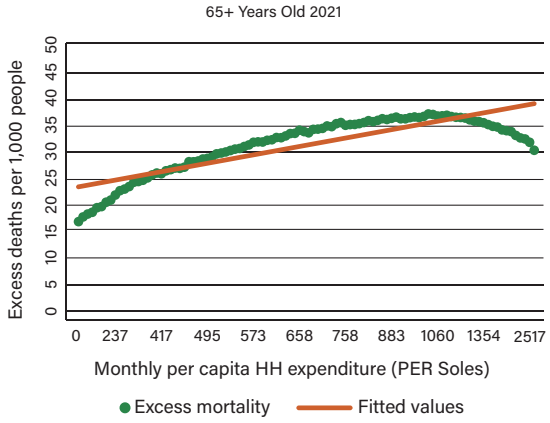
Looking at incidence disaggregated by age, sex, and education, the analysis yields results that are also similar to those of the ENAHO analysis. Excess mortality is greater among men, individuals ages 65 or more, and urban residents. There is no statistically significant difference in excess mortality across groups by educational attainment. Similar to the ENAHO, the main driver explaining the differences in excess deaths is the age-group of the individuals (Figures B.3 and B.4).

Figure B.3. Excess deaths per 1,000 population, by expenditure, 40–64 age-group, 2020



Source: Elaboration based on 2017 census and SINADEF.

Figure B.4. Excess deaths per 1,000 population, , by expenditure, 65+ age-group, 2020

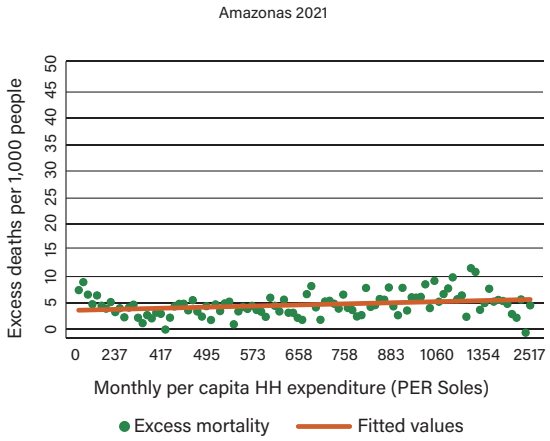


Source: Elaboration based on 2017 census and SINADEF.

After controlling by region of residence, excess deaths are revealed to homogeneous across household expenditure in most regions. Similar to the ENAHO analysis, between-region differences are larger than within-region differences across expenditure, suggesting that regional variance is more important than socioeconomic level in explaining the deaths due to COVID-19. For example, among individuals ages 65 or more in Amazonas, excess mortality in 2021 was around 5 deaths per 1,000 people across all expenditure levels, whereas, in Apurimac, excess mortality in 2021 among the 65+ age-group was around 30 deaths per 1,000 people across all expenditure levels (Figure B.5). The difference was more than 20 deaths per 1,000 population between the two regions. The patterns are similar in Arequipa, Callao, Cusco, Ica, Junin, Lambayeque, Lima, Madre de Dios, Moquegua, Pasco, and San Martin. In the remaining regions, excessdeaths are increasing with household expenditure. Still, the regional differences are greater.

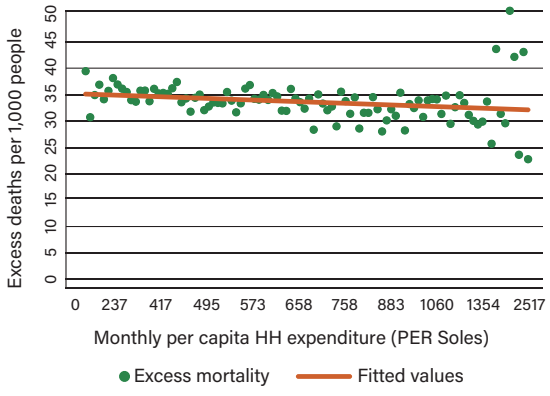
Figure B.5. Excess mortality, selected regions, by age and household expenditure

a: Amazonas, 2021

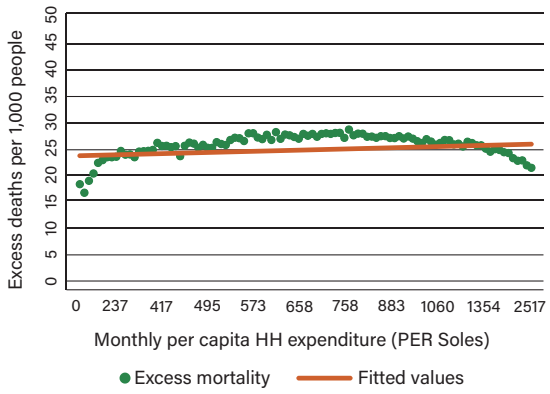


Source: Elaboration based on 2017 census and SINADEF.

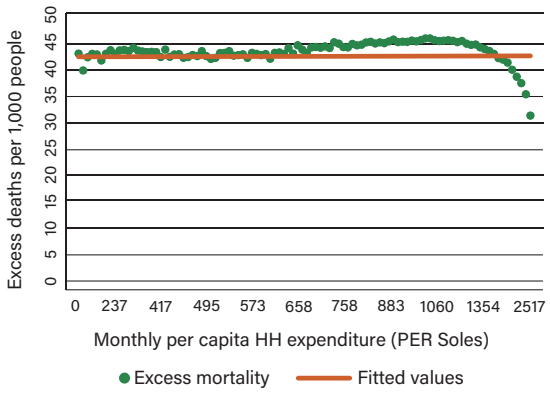
b: Apurimac, 2021



c: Lambayeque, 2021



d: Lima, 2021



Appendix C: Female Labor Force Participation and Elderly Members in the Household

A logit regression is performed to identify whether the presence of an elderly household member is correlated with higher female labor force participation rates among women ages 15–64. The regression is specified as follows:

$$\Pr(FLFP_i = 1) = \Phi(\alpha_1 Elderly\ at\ home_i + \alpha_2 Minor\ at\ home_i + \alpha_3 Elderly_i * Minor\ at\ home_i + \alpha_4 Age\ group_i + \alpha_5 Education\ Level_i + \alpha_6 Urban_i)$$

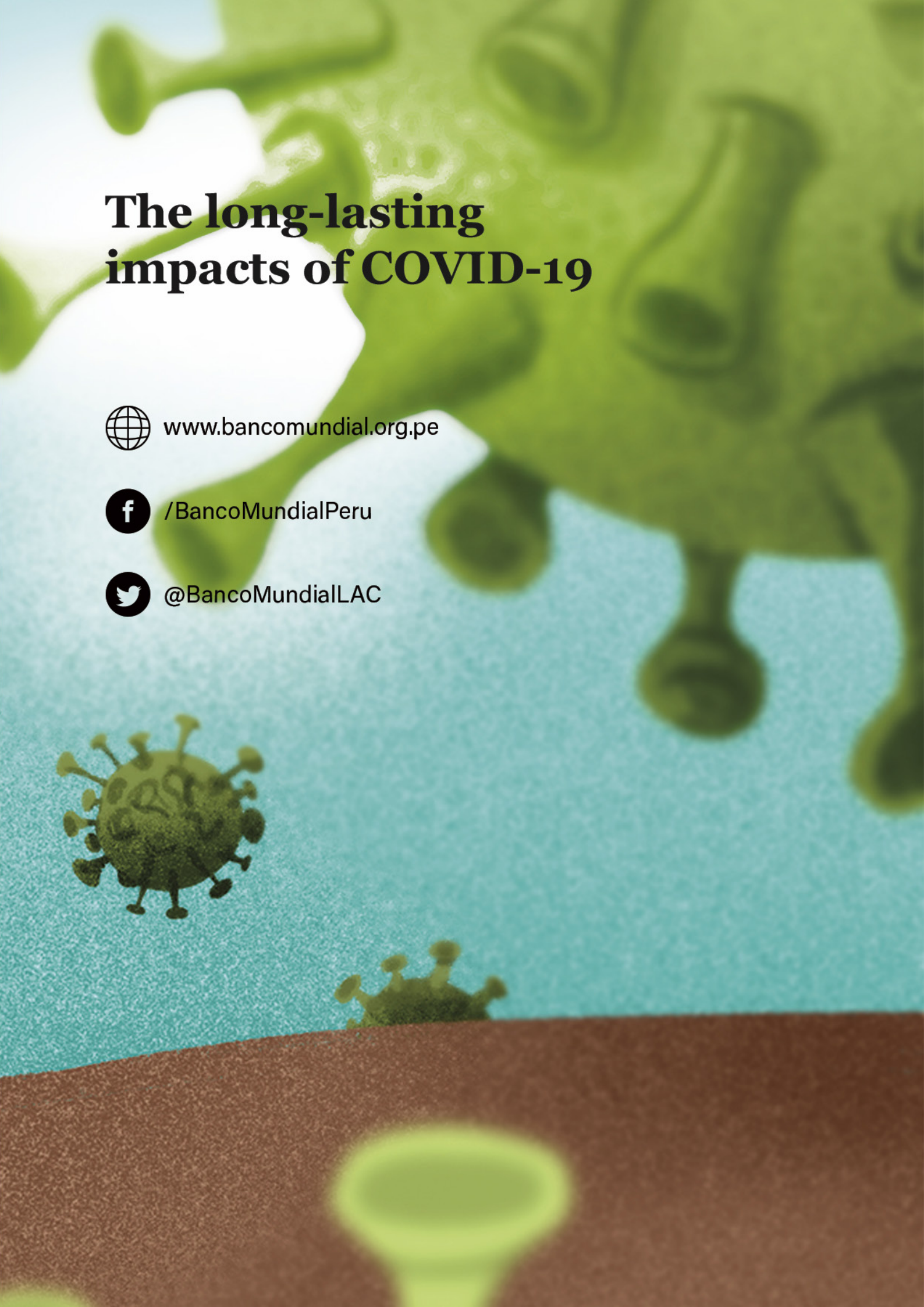
where i is the individual, and Φ (.) is the cumulative distribution function of the normal distribution. The results show that the presence of elderly household members negatively affects female labor force participation rates, and the presence of minors also negatively affects the rates. However, the presence of both elderly and minor household members offsets the negative effects of the presence only of additional child members. This result is significant after controlling for age, education, and location of residence of working-age women. Furthermore, the effects are more pronounced among the bottom 60 percent of the expenditure distribution. The results suggest that elderly household members may be playing a crucial role in childcare that can help working-age women enter the labor force (Table C.1).

Table C.1. Marginal contributions to female labor force participation

	FLFP		
	(1)	**(2)**	**(3)**
Elderly	-0.027*** (0.008)	-0.035*** (0.012)	-0.024* (0.010)
Minors	-0.020*** (0.005)	-0.021*** (0.008)	-0.018* (0.007)
Elderly * Minors	**-0.031** (0.011)**	**-0.054*** (0.015)**	**0.002 (0.016)**
Controls			
Age	Yes	Yes	Yes
Educational level	Yes	Yes	Yes
Area	Yes	Yes	Yes
Expenditure decile	All	Bottom 60	Upper 40

Source: Elaboration based on ENAHO 2019, estimated using a Probit model.

The long-lasting impacts of COVID-19



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