

# THE WELFARE COSTS OF BEING OFF THE GRID\*



Policy Note No.3 / July 2021

## Main Messages:

- Digital connectivity has been a critical mitigating factor for the adverse effects of lockdowns implemented in response to the Covid-19 pandemic on household welfare in Latin America and the Caribbean. Households with access to digital technologies were able to cope better with the shock (largely by staying economically active but also accessing basic services).
- Within groups of households that share similar socioeconomic characteristics, those with higher digital connectivity experienced noticeably lower job loss rates. More connected households also reported lower income losses, fewer instances of food insecurity and higher access to high quality remote learning.
- The Covid-19 pandemic has underlined the importance of ensuring that all segments of the population have access to digital technologies and of promoting digital skills throughout the lifecycle of individuals.

**D**igital connectivity has played a critical role in mitigating the impacts of the containment measures imposed at the onset of the pandemic. By linking people, firms, and markets, digital technologies allow the continuation of many economic and social activities and help countries find innovative tools to face the pandemic. For instance, with the rise of online marketplaces, firms could keep operating safely while minimizing dismissals. Consumers could access e-markets and satisfy their needs. Households with access to digital technologies have adapted more quickly to 'new' forms of education and work. Moreover, connectivity has reduced the cost of acquiring information and making transactions, as well as minimizing job losses and increasing access to public services. (World Bank, 2016; CAF, 2020; OECD, 2020).

**Different levels of connectivity impacted the relative resilience of households and countries to cope with the Covid-19 pandemic shock.** Before the pandemic started, the region's overall connectivity rate<sup>1</sup> – which stood at 68 percent in 2020 – lagged far behind the 84 percent rate of OECD countries (OECD et al., 2020). Moreover, significant gaps existed in household connectivity rates between countries<sup>2</sup> and also within countries. As explained above, access to digital technologies mediates the effect of the shock on households. This brief shows how similar households with varying levels of digital connectivity were impacted differently by the pandemic. To do so, it draws on evidence from the LAC High-Frequency Phone Surveys – HFPS (Box 1) – which was collected between May and August 2020 in households from 13 countries in the region.

\* This note was prepared by Paola Ballon, Carolina Mejía-Mantilla, Sergio Olivieri, Gabriel Lara-Ibarra, and Javier Romero, under the guidance of Ximena del Carpio, with financial support from the Latin American and Caribbean Regional Vice Presidency. This brief has been edited by Oliver Balch.

<sup>1</sup> Measured as internet access of the population.

<sup>2</sup> While Chile exhibited an 82 percent rate, well above the region's average, Nicaragua showed the lowest rate, only 28 percent (OECD et al., 2020).

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## Box 1: The High-Frequency Phone Survey

The World Bank conducted a multi-round High-Frequency Phone Survey (HFPS) to assess the impact of the coronavirus pandemic on the welfare of Latin American and Caribbean households. Between March and June 2020, the HFPS collected nationally representative information for 13 countries: Argentina, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Paraguay, and Peru. The HFPS provides information on the welfare loss that households and people experienced with respect to food insecurity, changes in employment, income loss, access to health services and education, and coping mechanisms. Additionally, it documents household responses to lockdown and safe-distancing measures imposed by their governments and catalogues the behaviors they undertook to mitigate the spread of the disease. These socioeconomic impacts are available at the COVID-19 monitoring [global dashboard](#), which provides 96 harmonized indicators across 50 countries in Latin America and the world. For further information on the HFPS, see World Bank (2021).

## Clusters, connectivity, and the threshold

**When analyzing the mitigating effect of connectivity at the household level, it is important to look at households with similar characteristics.** The heterogeneous impact of Covid-19 between households with different digital connectivity levels are likely related to underlying socioeconomic factors such as education and income<sup>3</sup> rather than connectivity itself. To tackle this issue, we create clusters of households with similar characteristics and then explore if welfare losses were different for households with varying levels of connectivity within these groups (Figure 1). More specifically, using socioeconomic characteristics (i.e. geographic location (urban/rural), the respondent's level of education, and the household's dependency rate) leads to the classification of households into two groups. The first group (Cluster 1) is characterized by households with low education levels (less than secondary) who reside mainly in rural areas and who have a relatively higher dependency ratio (80 percent on average). More than six out of 10 households belong to this group (Figure 2). The rest belong to the second group (Cluster 2), whose members are primarily urban and educated (tertiary education) and have a relatively low dependency ratio (72 percent on average).

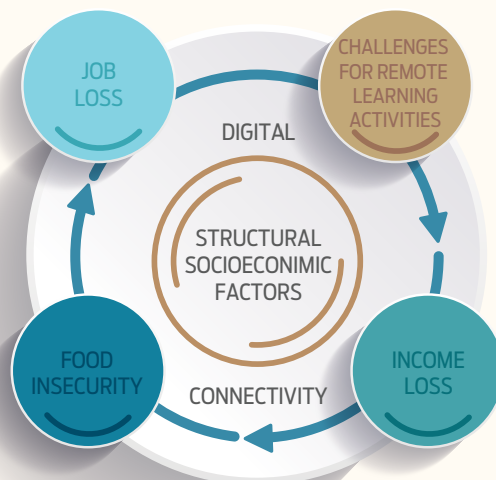
<sup>3</sup> Through their effect on the type of job a person has and savings, to name some examples, education and income could be driving both connectivity and the ability to cope better with negative shocks.

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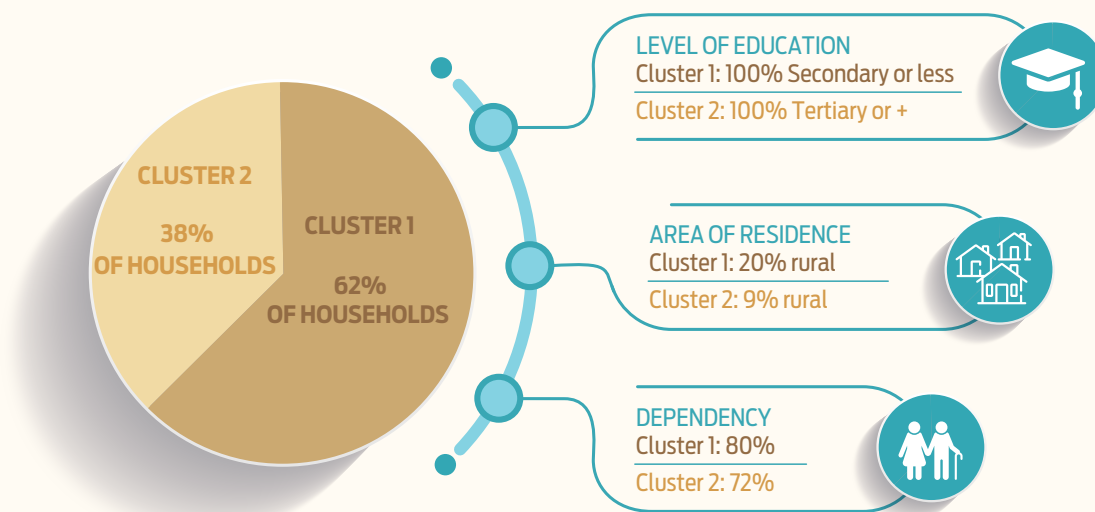
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Figure 1: Connectivity and Welfare Loses



Source: Own elaboration

Figure 2: Socioeconomic Clusters



Source: Own elaboration based on LAC High-Frequency Phone Surveys (2020)

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**About half of all households in Latin America and the Caribbean have access to internet at home (broadband).** Data from the LAC-HFPS provides three indicators of digital connectivity. These comprise access to the internet by mobile phone, by Wi-Fi (broadband), and mobile phone household penetration or the share of household members who own a mobile device. In April 2020, 63 percent of households in the region used mobile internet as the primary source of internet access. Of this number, half had a Wi-Fi internet connection at home. Mobile phone household penetration, meanwhile, amounted to about one mobile device per two adult household members.

**As expected, access to connectivity varies by socioeconomic characteristics.** Households living in urban areas show greater connectivity across all three indicators than those residing in rural areas. Similarly, households whose members have tertiary education or higher exhibit larger internet access rates and mobile household penetration relative to those whose members are less educated. Lower connectivity is also observed in households with dependents, compared to households with no dependents (Figure 3).

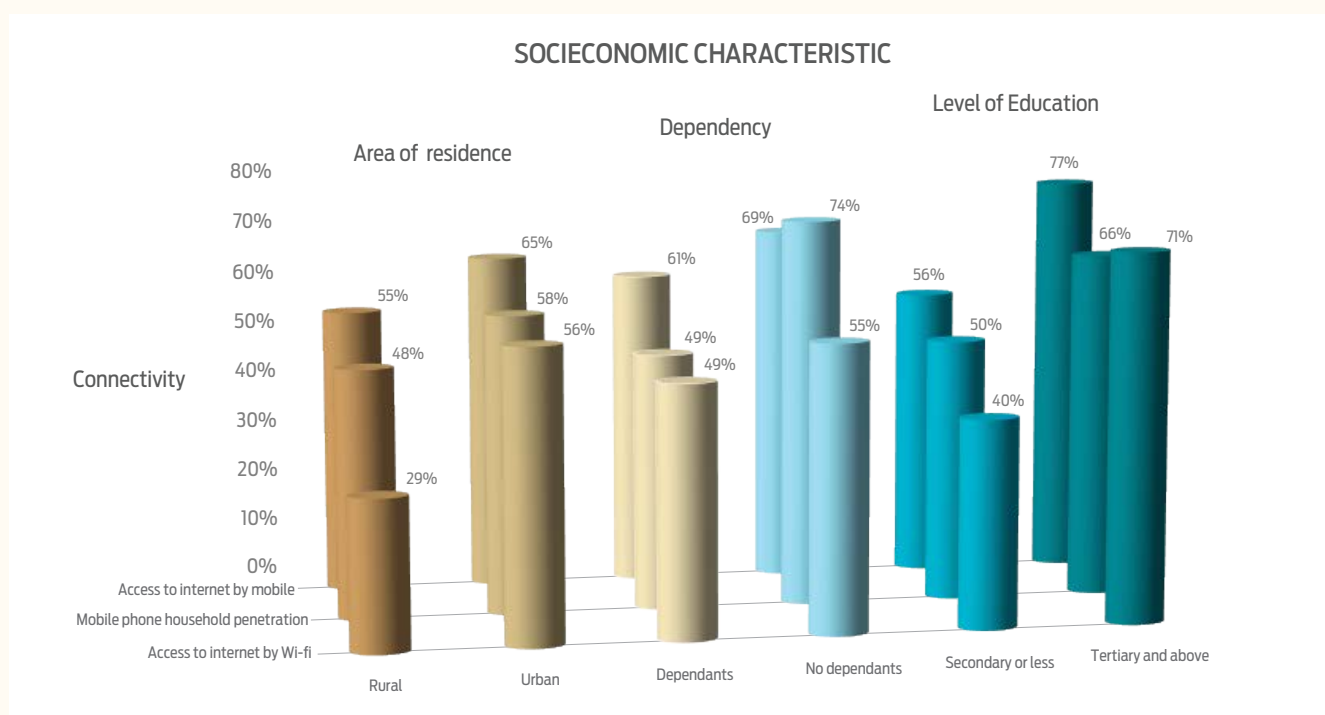
**When the pandemic hit the region, the average household in Latin America had access to two out of the three connectivity sources considered.** For our analysis, connectivity is measured as the average of these three indicators. In March 2020, when the pandemic started, the index had an average connectivity score of 0.56, equivalent to having access to two out of three connectivity sources. Now, within each cluster of similar households described above, high and low connectivity sub-groups were identified. For each cluster, households whose average connectivity score is below the cluster median are placed into the low-level connectivity group and those above into the high-level connectivity group.

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**Figure 3: Type of Connectivity by Socioeconomic Characteristic April 2020**



Source: Own Elaboration based on LAC [High-Frequency Phone Surveys \(HFPS\)](#)

## Varying welfare effects by levels of digital connectivity

**Job losses within socioeconomic groups were greater for households with lower digital connectivity.** In general, households with low connectivity experienced more significant welfare losses even after accounting for similar background characteristics such as education, area of residence, and dependency ratio.<sup>4</sup> In Cluster 1, households with low digital connectivity showed a 23 percent job loss rate, eight percentage points higher than those with high connectivity (Figure 4 – Panel A). Similarly, households in Cluster 2 with high digital connectivity registered less than half the number of employment losses (8 percent) as their low connectivity counterparts (19 percent).

<sup>4</sup> To assess robustness to the choice of threshold, we divide households into low and high connectivity levels using the mean and median of the distribution of average connectivity in each cluster. In both cases, the losses on welfare were greater for less connected households.

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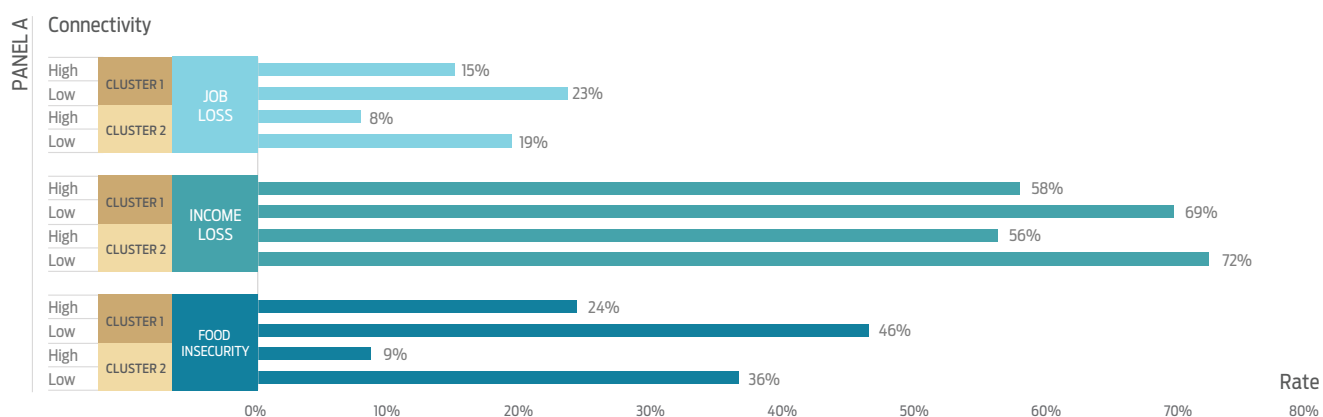


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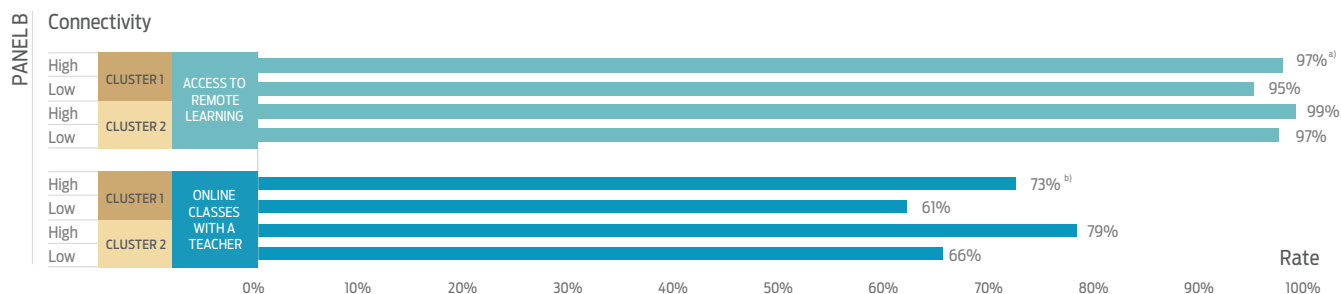
Connectivity was also a mitigating factor for household income losses and food insecurity. As employment losses reduced family incomes and exposed some households to higher food insecurity levels, digital connectivity also helped mediate these pandemic effects in both clusters. While seven out of ten low-connectivity households in Cluster 1 reported an income loss, six out of ten high-connectivity households reported such as loss (Figure 4 – Panel A).

Even though Cluster 2 shows a similar situation, the gap between low and high connectivity groups was wider. Seventy-two percent of low-connected households suffered a reduction in their total family income, 16 percentage points higher than their high-connected counterparts. Food insecurity levels also rise with lower connectivity across both clusters, with a more significant difference within Cluster 2. These greater gaps illustrate the critical importance of connectivity in urban setting, as most households belonging to Cluster 2 are mainly urban (Figure 4– Panel A).

Figure 4: Welfare Losses by Socio-economic Cluster and Level of Connectivity



Note: Differences between low and high connectivity within clusters are statistically significant at 1% level for all three welfare indicators.



Note: a) Denotes statistically significant differences between low and high connectivity for Cluster 1 at 1% level. Differences for Cluster 2 are not statistically significant.

b) Denotes statistically significant differences between low and high connectivity at 1% level for both clusters.

Source: Own elaboration based on [High-Frequency Phone Surveys \(HFPS\)](#)

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**Welfare losses spanned beyond monetary dimensions.** While access to any remote learning activity indicates that over 95 percent of children of Latin-American and Caribbean households were engaged in any learning activity<sup>5</sup> during the pandemic, the quality of education suffered with the impossibility of in-person learning. Limited interaction with teachers and peers, as well as reduced access to educational materials and resources at home, affected learning negatively. This was particularly true for the most vulnerable students.<sup>6</sup>

**High connectivity allowed better access and quality of engagement in remote learning.** Differences of access and quality of engagement in remote learning activities<sup>7</sup> between high and low connected households are statistically significant for both clusters (Figure 4 – Panel B). Thus, connectivity helped to curb the effects of the Covid-19 pandemic on the human capital accumulation of children, particularly important for less well-off households (residing in rural areas with higher dependency ratio and lower education, such as those of cluster 1).

## Lessons Learnt

**Digital connectivity has played a crucial role in helping households cope with the effects of the Covid-19 pandemic.** Our results show that higher levels of digital connectivity allow households to better cope with the shock. Workers with internet access were more likely to keep or switch jobs. This was in an environment where almost half of the Latin American and Caribbean workers stopped working and 16 percent lost their jobs<sup>8</sup>. Thus, high-connectivity households were able to minimize welfare losses in terms of family income, food insecurity and human capital accumulation.

**Moving forward, guaranteeing digital connectivity for all is critical.** Despite the progress of the last decade, connectivity in the region lags in comparison to OECD countries. In addition, significant disparities exist between and within countries. Our results show the benefits of digital technologies, irrespective of socioeconomic background. Ensuring digital connectivity is an important policy objective which may require infrastructure investments and reforms that increase competition in the telecommunications markets (World Bank, 2016).

**Building and strengthening digital skills is vital for an inclusive recovery.** A broad digital agenda should also promote investments in lifelong digital skills learning. Technology permeates people's lives through several channels, such as work, consumption, education, and health. Individuals and households can only benefit from the digital dividend if they are 'technologically literate'. Workers will need to reskill or upskill to reintegrate into the economy as they recover and shift to being more technology-intensive (see World Bank, 2016, 2019). Similarly, teachers and students should be trained to incorporate technology into the learning process.

5 Such activities include completing assignments based on the teachers' instructions, virtual sessions, or assignments from online systems as well as educational TV and radio programs.

6 Attanasio & Rajan, (2021).

7 Proxied by access to online classes with a teacher.

8 Mejía-Mantilla et al. (2021).

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