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Digital Society:
Gaps and Challenges
for Digital Inclusion in Latin
America and the Caribbean

UNESCO PROLOGUE

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These documents seek to raise multidisciplinary debates, propose evidence-based analysis and formulate proposals for public policies in order to consolidate a strategy for sustainable development which is needed in Latin America and the Caribbean, under Agenda 2030.

This series includes the following discussions:

- "Digital Society: Gaps and Challenges for Digital Inclusion in Latin America and the Caribbean", by Hernán Galperin.

- "The role of social policy in facing disasters", by Alonso Brenes.

- "ICT, education and social development in Latin America and the Caribbean", by Enrique Hinostroza.

The Papers are not intended to conclude the discussion on such issues, on the contrary - they are aimed at stimulating the debate.

They are UNESCO's invitation to advancing the public debate on key issues related to the fight against inequalities and poverty, strengthening social inclusion in the region.

These texts are a further contribution of UNESCO, through its Intergovernmental Programme for Management of Social Transformations (MOST), to the Regional Conference on Social Development in Latin America and the Caribbean 2017 to be held in Montevideo, Uruguay, integrating the documents attached with the final declaration.

They were carried out under the coordination of the UNESCO Montevideo Office - in partnership with ECLAC - from an intersectoral and interinstitutional strategy of profound commitment to the region.

We are especially grateful to the Regional Center for Studies on the Development of the Information Society (Cetic.br), department of the Brazilian Network Information Center (NIC.br), and to the experts who made important contributions here presented, certain that they represent substantive inputs to the regional discussion and to the development of sustainable social policies in Latin America and the Caribbean.

Welcome to the debate.

Lidia Brito,

Director,
Regional Bureau for Sciences in
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Digital Society: Gaps and Challenges for Digital Inclusion in Latin America and the Caribbean

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EXECUTIVE SUMMARY

Connecting more than 200 million Latin Americans who remain off-line poses a complex challenge, requiring not only technological and commercial innovations, but also new models of collaboration between governments and the private sector. Telecommunication service operators have played a key role in expanding networks and developing new business models, providing connectivity to millions of people that were marginalized by traditional communication services. However, given their socio-demographic characteristics, the unconnected population constitutes a much less attractive public for the private sector. This calls for new public-private partnerships, so that connectivity is universalized n the region.

The aim of this document is to provide evidence and policy recommendations on how to address this challenge. The findings provide many important lessons for policymakers. First, demand-side factors are found to be as important as supply-side factors for understanding the barriers to Internet use. More specifically, some barriers are associated with digital skills and human capital, including language skills. Second, although rural areas still lack adequate connectivity infrastructure, the vast majority of the unconnected Latin Americans reside in urban areas where there is a wide supply of access services. Third, there is a considerable unmet demand for low-cost household Internet access services, especially among households with school-age children. Fourth, evidence shows a significant access divide for persons with disabilities, whose marginalization is reinforced through digital exclusion.

This document recommends public policy strategies in three main areas. First, providing connectivity to school establishments in addition to curricular reforms and other initiatives to introduce ICT in schools. Second, developing online content and applications designed to fulfill the needs of low-connectivity groups, especially older adults, persons with disabilities, and indigenous languages speakers. Lastly, the investment in human capital from connectivity subsidies focused on low-income households with school-age children conditioned on school enrollment and attendance.

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INTRODUCTION

It is widely agreed that Internet access is a pre-requisite for human development in the 21st century. Without connectivity, individuals, businesses and organizations face significant barriers for participating in the economic and social networks that permeate modern societies.[1] Therefore, universalizing Internet access has become a policy priority for Latin American and Caribbean countries and is consonant with the United Nations 2030 Agenda for Sustainable Development which addresses the inequalities in Internet access in its targets.[2] Today, Internet access services are considered essential for ensuring citizens' well-being, and digital inclusion has also become a key factor to tackle socioeconomic inequalities in the region (CGI.br, 2016).

Internet access became a full-fledged market around 1995. As early as 2005, half of the population of developed countries was already connected to the network. Today, the average number of individuals using the Internet in developed countries exceeds 80%. By contrast, in the developing world the average number is only 41% (ITU 2017). According to ITU's data (2017), in Latin America, approximately 215 million people aged 15 years old or older are not connected to the Internet. The challenges are manifold, including deficits in telecommunication infrastructure, low population density, lack of human capital, poverty, and an inadequate regulatory environment.

Connecting more than 200 million Latin Americans who remain off-line poses a complex challenge, requiring not only technological and commercial innovations, but also new models of collaboration between governments and the private sector. Telecommunication service operators have played a key role in expanding networks and developing new business models, providing connectivity to millions of people that were marginalized by traditional communication services. However, given their sociodemographic characteristics, the unconnected population constitutes a much less attractive public for the private sector.

This calls for new public-private partnerships, so that connectivity is universalized in the region.

The aim of this document is to provide evidence and policy recommendations on how to address this challenge. First, this paper analyzes the patterns of Internet diffusion in Latin America based on industry data as well as with data from selected countries' national household surveys. Secondly, the document studies the unconnected population considering different dimensions of exclusion. The reasons for not adopting the Internet, in particular, are examined, based on four types of barriers: affordability, skills, relevance and availability.

The findings provide many important lessons for policymakers. First, demand-side and supply-side factors are equally important for understanding the barriers to Internet use. Second, although rural areas still lack adequate connectivity infrastructure, the vast majority of Latin America's unconnected individuals lives in urban areas where there is a wide range of Internet access services. Third, there is a considerable unmet demand for low-cost Internet household access services, especially, among households with school-age children. In fourth place, gender gaps in Internet use remain significant, particularly in the Andean countries. And finally, language skills represent a major obstacle to Internet adoption.

1. TRENDS IN INTERNET ADOPTION AND THE DEMAND GAP

Figure 1 shows the penetration rates of various ICT services in Latin America and the Caribbean over the period of 1990-2016. This long-term perspective brings light to a number of trends. First, the extraordinary growth in mobile telephony penetration from the mid 90s that contrasts with the trend in fixed telephony, which peaked in 2008 (18.7 lines per 100 inhabitants). It is not surprising that the adoption curves of mobile and fixed broadband coincide with the pattern of mobile and fixed telephony, respectively. The number of mobile broadband subscrip-

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1   World Development Report 2016. Washington D. C: World Bank.

2   Most significantly, target 5.b ("Enhance the use of enabling technologies, in particular information and communications technology, to promote women's empowerment") and target 9.c ("Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in the less developed countries by 2020").

Source: ITU Indicators Database 2017.

Note: Latin America includes Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, The Dominican Republic, Uruguay and Venezuela. Unweighted averages reported

tions has grown exponentially over the last five years, following the mobile phone pattern in the early 21st century. However, the fixed broadband growth rate is much lower and appears to be slowing down.

As seen in Figure 1 the growth rate of online population in Latin America and the Caribbean is slowing down. This deceleration poses a major political challenge for the region. Above all, because as the mobile broadband services coverage (3G or 4G) expands, the demand gap grows, a concept that reveals the difference between Internet infrastructure coverage and service subscriptions. According to ITU estimates, mobile broadband reaches approximately 90% of the region's population. Nevertheless, there are just over 54 mobile broadband subscriptions per 100 inhabitants. This represents a demand gap of approximately 200 million potential users, and the reasons for that may be derived from socio-demographic factors and human capital.
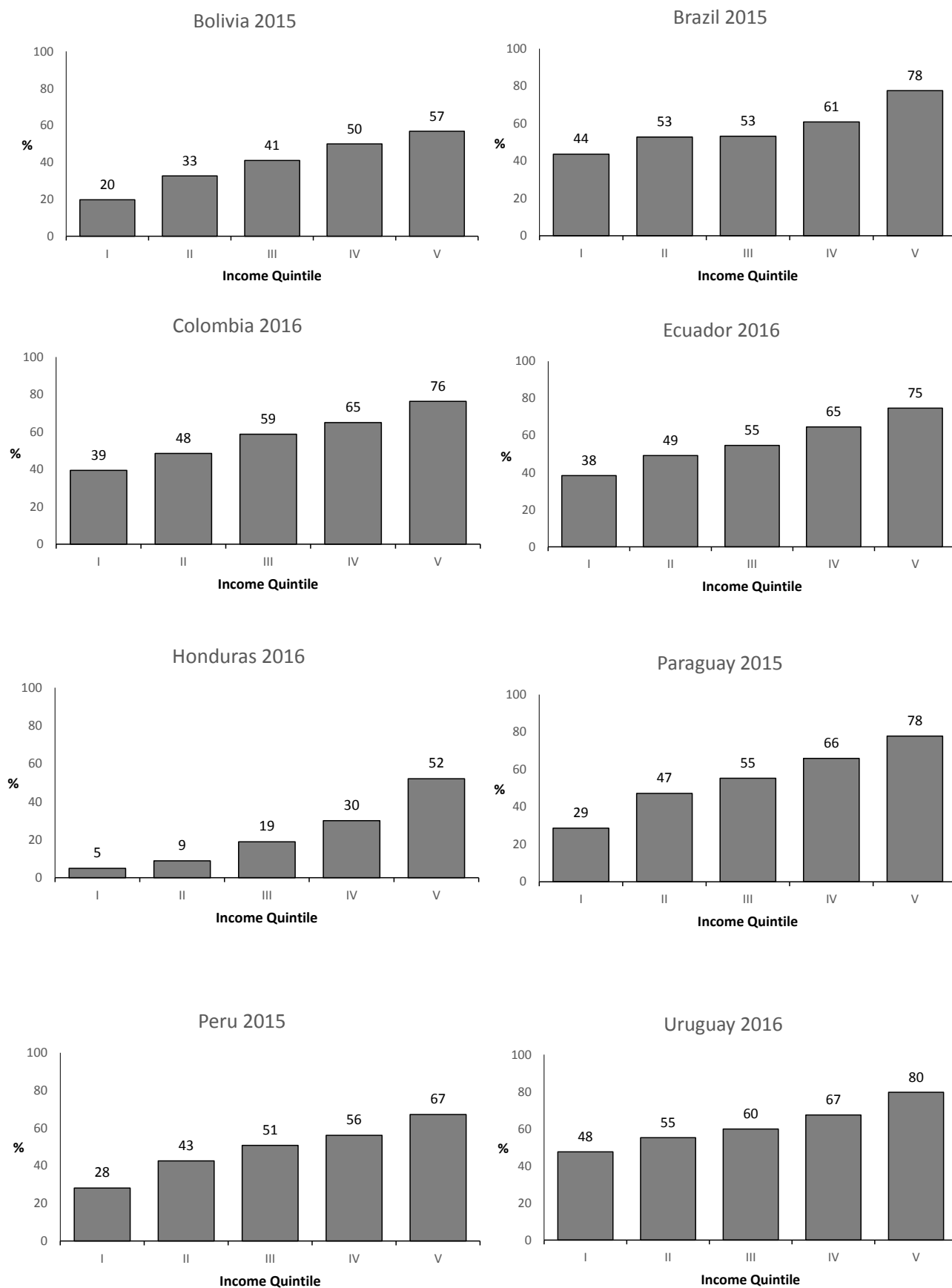
Adoption indicators produced by household surveys provide a more detailed portrayal of the digital divides in the region. Figure 2 presents estimates of Internet use (regardless of the location or device used to access the Internet) for eight countries, for which recent household sample survey data are available. The results are presented by income quintiles, measured by total family income per capita.[3]

The analysis shows a significant variation in Internet adoption by income levels among countries, as well as within each country. In low-income countries such as Honduras and Bolivia, Internet adoption level reaches no more than 50% in the top income quintile. This contrasts with the higher income countries, such as Brazil and Uruguay, where Internet connectivity levels in the highest income quintile are close to 80%. The bottom part of the distribution also features significant variations: while in Uruguay almost half of the inhabitants in the poorest quintile use the Internet; in Honduras, the number barely reaches 5%. Overall, there is a gap in Internet use

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3   Total household income per capita is deflated by the CPI for the respective country and adjusted by 2005 PPP.
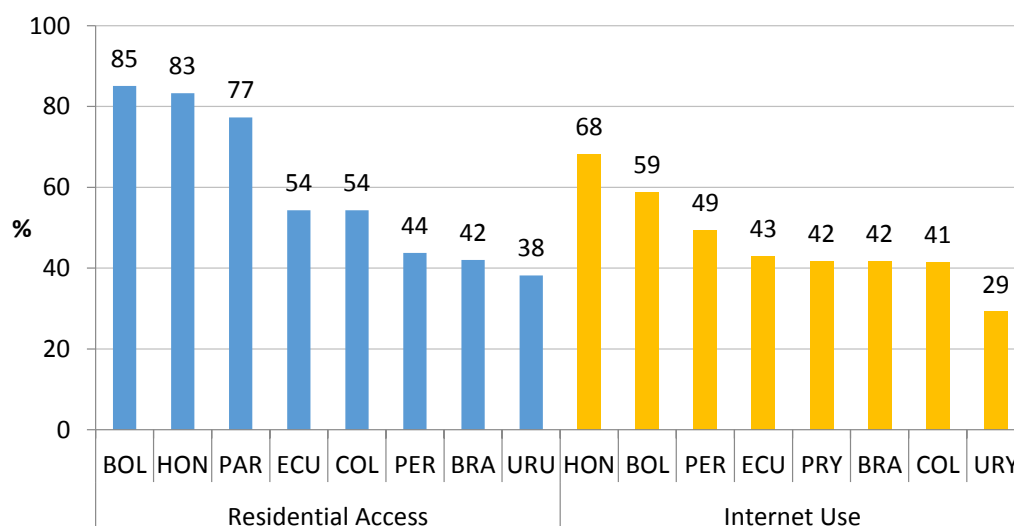
Bolivia 2015

Brazil 2015

Colombia 2016

Ecuador 2016

Honduras 2016

Paraguay 2015

Peru 2015

Uruguay 2016

Source: National statistical offices.

Source: National statistical offices.

of approximately 40 percentage points separating the richest and the poorest quintiles across the countries examined.

Another approach to understanding digital divides consists in comparing levels of inequality in access to ICT within a population. The most widely used method to measure inequality is the Gini coefficient and the Lorenz curve, which measures the extent to which the distribution of a resource deviates from perfect equality. In Figures 3 and 4, such methods are used to measure inequality in access to ICT resources in the region. Figure 3 shows Gini coefficients for residential access and Internet use. The associated Lorenz curves are presented in Figure 4. As usual, for these curves, the 'x' axis represents the cumulative number of individuals or households from lowest to highest income, and the 'y' axis represents the cumulative percentage of residential access (Figure 4a) and Internet use (Figure 4 .b) by the population.

Results show that the largest disparities are related to residential broadband access, featuring high levels of inequality, especially in low-income countries (Honduras, Bolivia and Paraguay). On the other hand, the distribution of Internet use is significantly less biased, with Gini coefficients ranging from 0.29 (Uruguay) to 0.68 (Hondu-

ras). As explained below, this difference is largely due to the expansion of mobile broadband and the importance of Internet access in public locations.

2. WHO IS NOT ONLINE? MAIN CHARACTERISTICS.

Several studies suggest that both the household demand for Internet and individual use depend not only on income, but also on varied sociodemographic factors. Among the most relevant are education, gender, geographic location (urban or rural) and the presence of school-age children in the household. In order to corroborate these findings, and to determine how each of these factors affects Internet adoption in Latin America and in the Caribbean, a characterization of the unconnected population is presented for eight selected countries, for which recent data is available.[4]

a. Level of Education

The level of education is a reliable indicator of residential Internet adoption. As shown in Figure 5, there is a linear relationship between the head of the household's highest level of education and

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4 The following technical document supplements the descriptive statistics: Galperin, H. (2016). How to Connect the Other Half: Evidence and Policy Insights from Household Surveys in Latin America. Global Commission on Internet Governance Paper Series No. 34. Available at https://www.cigionline.org/sites/default/files/gcig_no34_web.pdf.

4.a. Residential Access
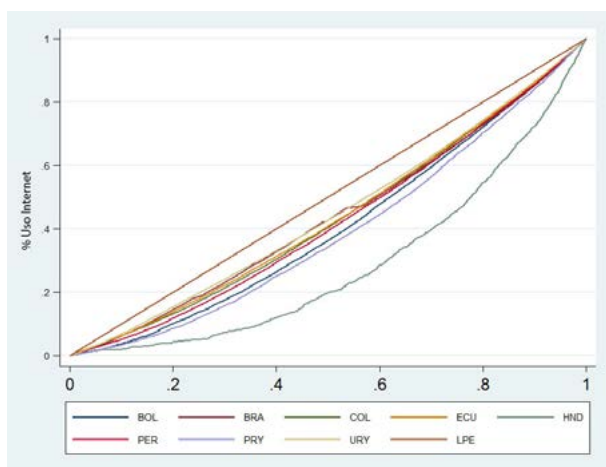
4.b. Internet Use

Source: National statistical offices.

residential Internet access. It is noteworthy that there is a greater service penetration in countries that provide services targeted at low-income families, such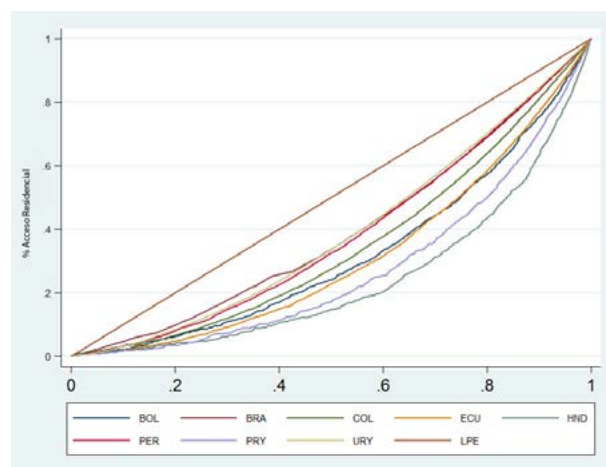 as in Brazil (Banda Larga Popular) and Uruguay (Universal Hogares). On the other hand, it is also notable that the relationship between education and connectivity persists even when controlled by household income and other factors related to the level of education. Compared to the baseline scenario of a person who has not finished elementary education, an individual with a secondary degree has a 9 to 24% higher probability (depending on the country) of having Internet access at home.

Education is also a strong predictor of Internet use. As shown in Figure 6, the relationship is also linear; however, there is a faster increase in adoption as the level of education rises. This correlation also persists when comparing the baseline scenario by income level and other demographic variables: an individual with higher education is at least twice as likely to use the Internet as an individual who did not complete elementary school. This result corroborates the so-called Internet skills gap, which means that those with greater human capital tend to benefit more from the Internet.

b. Age

As expected, age is inversely related to the use of the Internet, and the effects are particularly strong. As shown in Figure 7, Internet usage in most countries is very high among the population under the age of 24, and from then it tends to decrease until it reaches low levels among the older population. Except in the case of Uruguay, the level of Internet use among adults over 65 is close to or below 10%. This population consists mostly of latecomers with regards to the use of online services, thus reinforcing social exclusion among this age group.

The relationship between age and Internet use is also verified when other demographic characteristics are controlled. On average, each additional year reduces the probability of using the Internet by roughly 2%. The findings vary slightly across countries, but the overall pattern is similar. It is worth noticing that age is also inversely related to the adoption of other ICT, such as mobile telephony, but the effect is much weaker. On average, each additional year reduces the likelihood of using a mobile phone by only 0.2%, an effect that is approximately ten times weaker than for Internet use. This proves the need for policies designed
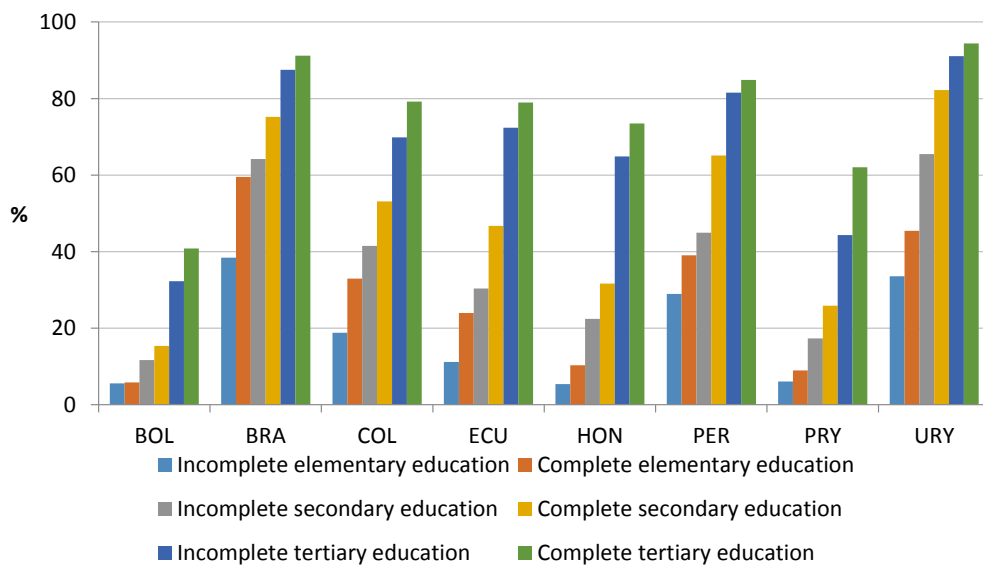
Source:National statistical offices.
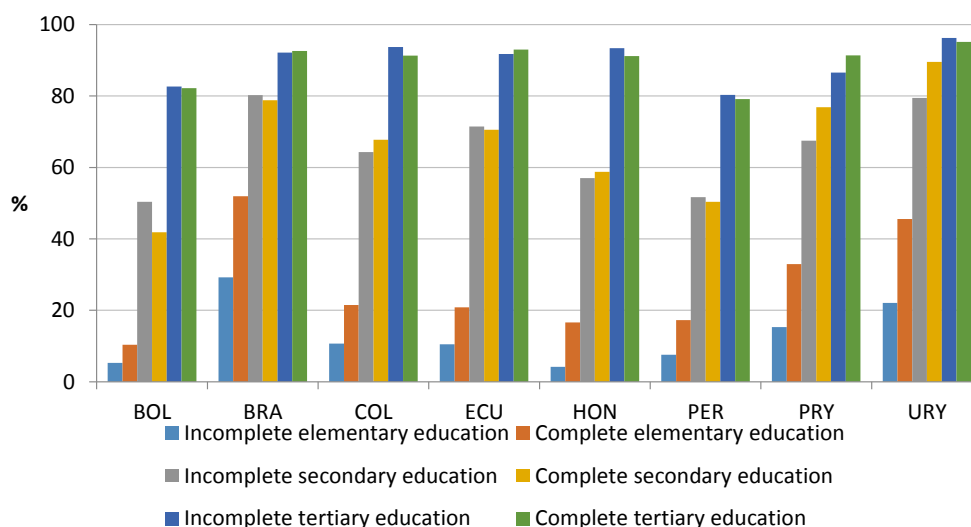
Source: National statistical offices.

to foster digital skills and providing Internet connectivity among the older population.

c. Gender

The digital gender gap in Latin America and the Caribbean persists, although evidence suggests that the situation varies by country. As shown in Figure 8, the digital divide is particularly significant in Bolivia and Peru (approximately 8 percentage points), and in Ecuador there is a slight bias towards males (3 percentage points) regarding Internet use. No significant statistical differences were observed in other countries. It is worth mentioning that, overall, the gender gap in access to ICT in Latin America is significantly smaller compared to other emerging regions.[5]

While encouraging, findings on the gender gap in relation to Internet access must be interpreted

5   ICT Facts and Figures (ITU 2017).
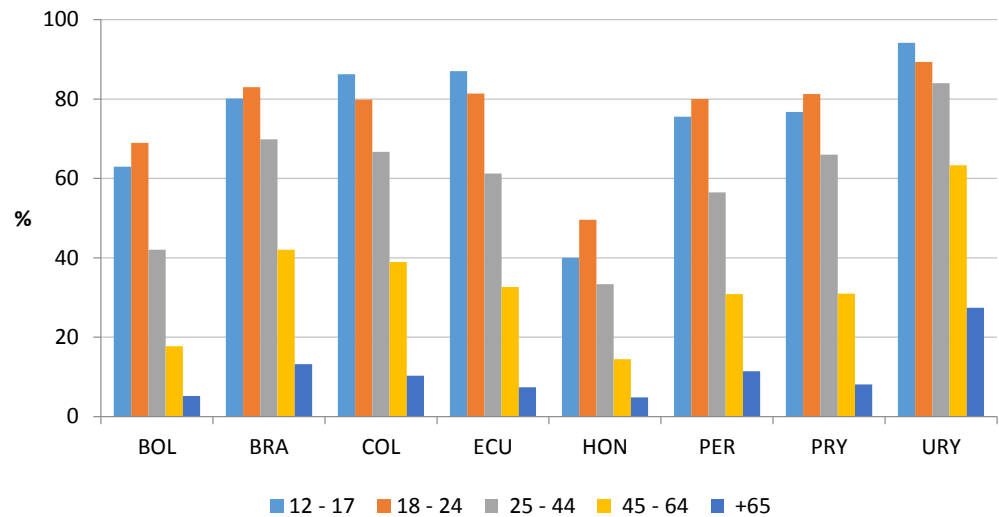
Source: National statistical offices.
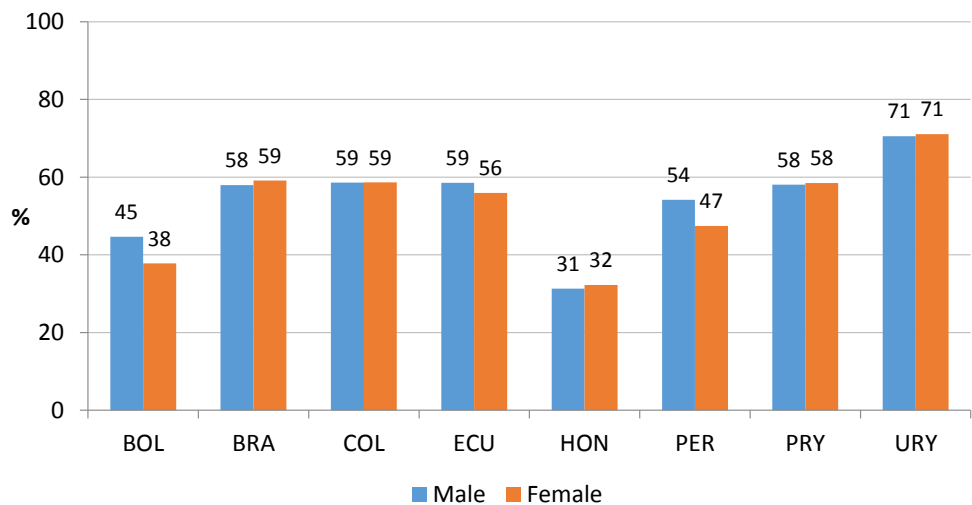
Source: National statistical offices.

carefully, for they only address the digital divide that refers to accessing technology. There is also a second digital divide, regarding use and skills, which refers to the effective use of ICT. Since this relates to structural factors that limit opportunities in terms of gender equality, this second digital divide reflects limited use and adoption of information and communication technologies by women and should therefore be taken into consideration.

d.　Geographical Location

Connecting the residents of low density, isolated areas remains a major challenge for Latin America and the Caribbean. As Figure 9 illustrates, there is a significant gap in terms of residential Internet access between urban and rural households. Comparatively, we find larger gaps in low-income countries such as Bolivia and Honduras, where connectivity in urban households is more than
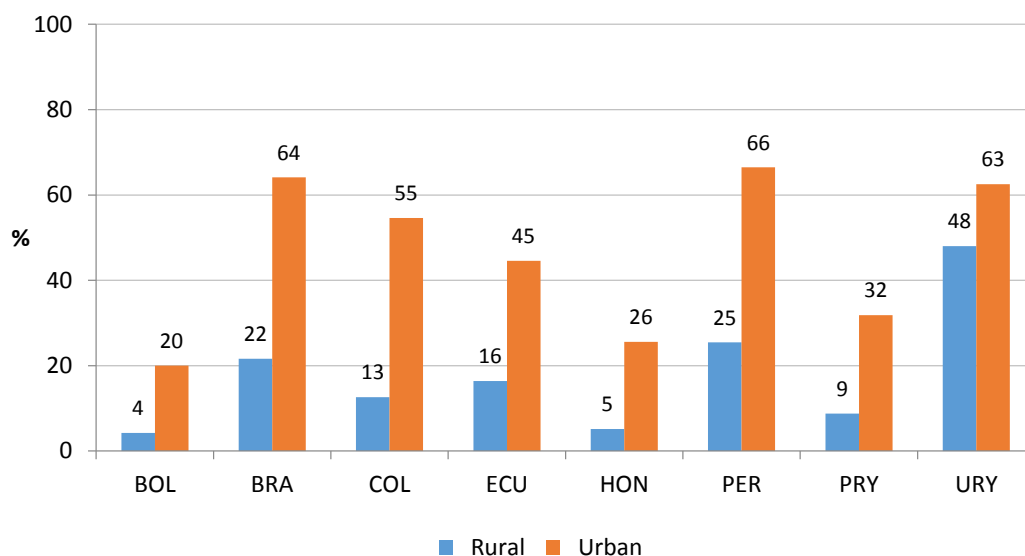
Source: National statistical offices.

five times larger than in rural households. In richer countries such as Brazil, this gap is slightly smaller, urban connectivity is three times larger than rural areas. According to statistical models, controlling for demographic characteristics such as income, urban households are 7% to 33% more likely (depending on the country) of having Internet connection compared to rural households.

With reference to use of ICT, although urban-rural divides have narrowed significantly, they are still relevant (Figure 10). This can be explained by several factors, including the increasing penetration of mobile broadband service in rural areas, and the impact of the rural broadband initiatives implemented in several countries across the region. Despite these encouraging results, the findings indicate that there is much to be done in order to meet the demand for connectivity in low density isolated areas[6].

e. Language

Latin America is a multilingual region with hundreds of indigenous languages still spoken on a daily basis, particularly in Central America and the Andean region. An estimated 40 million people in the region speak an indigenous language,

which for many is their first language. Even so, such languages are grossly under-represented on the Internet. Although precise estimates estimates are lacking, experts agree that a mere handful of languages—Spanish included—dominates online content, hence reducing adoption incentives for native speakers of indigenous languages.

Figure 11 corroborates this theory. As illustrated, Internet adoption increases significantly for residents of households where the primary language is Spanish. The findings in Bolivia are particularly meaningful. There, the likelihood of using the Internet is almost five times greater among those whose first language is Spanish. Findings in Peru and Paraguay show a slight smaller difference. In the case of Ecuador, there is a much smaller language divide, and yet it is still significant (10 percentage points).

The language divide in Internet use is a clear example of the marginalization of indigenous peoples in the region. Even if controlling for other demographic factors correlated to Internet adoption, for individuals whose first language is not Spanish, the likelihood of using the Internet diminishes between 8% (Ecuador) and 31% (Paraguay). This evidence suggests that the lack of relevant content in indigenous languages further
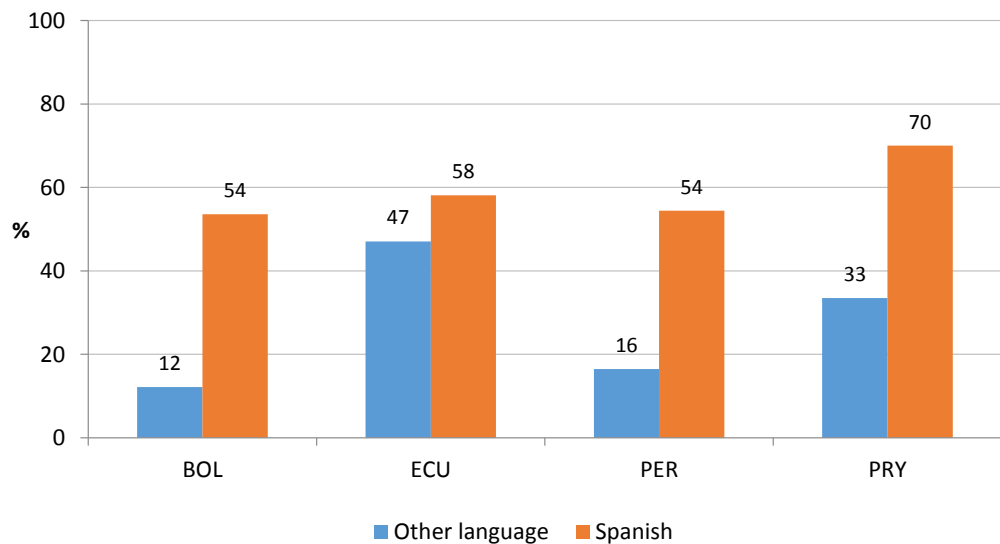
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6   See Fairlie, R. (2012). The effects of home access technology on computer skills: Evidence from a field experiment. Information Economics and Policy 24: 243-253.

Figure 10: Internet Use in Urban versus Rural Areas
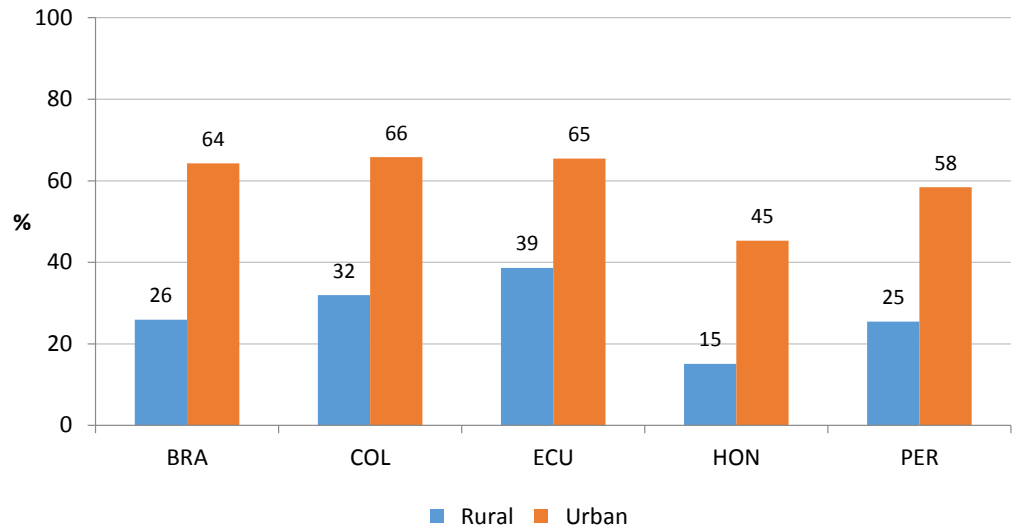
Source: National statistical offices.

Figure 11: Use of Internet According to the Primary Language Spoken in the Household

Source: National statistical offices.

slows the demand for Internet, thus reducing the adoption incentives.

f.   School-age Children

Several studies suggest that parents, even those with limited financial or educational resources of their owb, understand the value of Internet access in determining social mobility opportunities for their children. This is particularly true for children of school age, since it is apparent how Internet connectivity vastly amplifies educational opportunities. Therefore the presence of school--age children in the household should is expected

to have a positive impact on the likelihood of having residential access, boosting the demand for connectivity. Figure 12 fully corroborates this assumption. In the majority of countries examined, households with school-aged children are more likely to be connected.

However, overall, evidence shows that, with the exception of countries with higher incomes such as Uruguay and Brazil, most of the children in the region live in households with no Internet access,. This has a strong negative impact on learning opportunities among unconnected students,
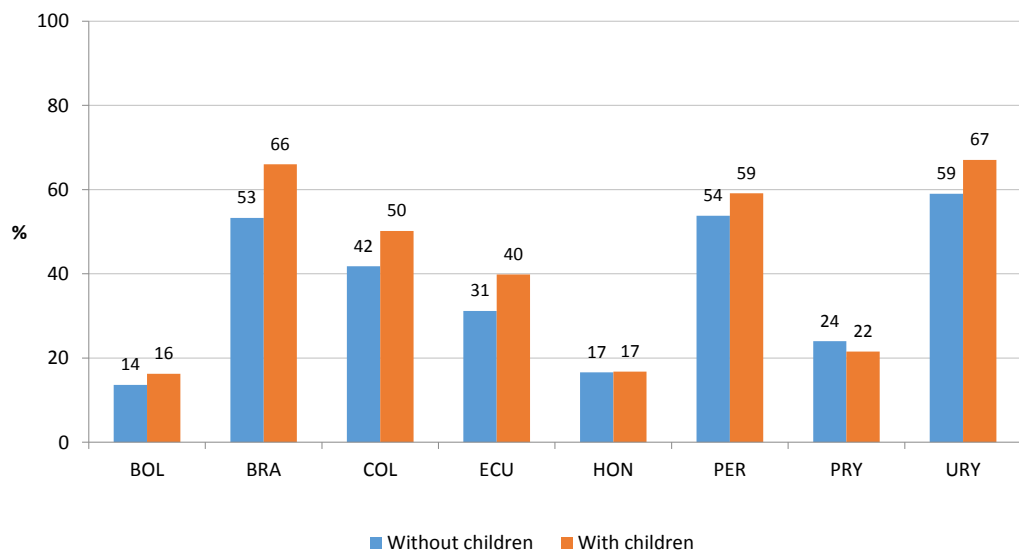
Source: National statistical offices.

reinforcing poor educational achievements that are found among students in the region.

g. Persons with Disabilities

Internet access has the potential to minimize economic and social exclusion faced by persons with disabilities. In particular, connectivity opens up opportunities of labor and educational remote inclusion, of access to health and social protection services, as well as access to civic and cultural participation for people with mobility impairments or other forms of disability. However, evidence shows that persons with disabilities face barriers to access the Internet. In countries for which survey data is available, there is a significant divide in terms of residential access were the head of the household has some form of disability (between 6 and 30 percentage points, depending on the country).

The divide becomes more evident when considering the Internet use among persons with disabilities (Figure 14). On average, in countries for which survey data is available, persons with disabilities are almost five times less likely to be online than persons with no disabilities. While this issue deserves a more detailed analysis (for instance by looking at different age ranges), the

descriptive data point out the critical need to address barriers to Internet access faced by a population that encounters multiple barriers for their full integration in society.

3. WHAT ARE THE MAIN BARRIERS TO INTERNET ADOPTION?

Household surveys contain valuable information on the reasons for not accessing the Internet. Figure 15 shows the main reasons mentioned by heads of households for not subscribing to residential access, in countries for which data is available. Overall results corroborate that affordability remains the most relevant barrier to connectivity in the households. This is consistent with research that shows that Internet access prices in Latin America are far more expensive than in other regions[7]. Nevertheless, variations in results among countries are noteworthy. The case of Peru, in particular, deserves attention, since the main reason reported for not having residential service is the lack of interest.

In Latin America and the Caribbean, unlike in the developed countries, Internet access is not centered in access to the Internet in the household . Contrarily, as shown in Figure 16, data account

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7   See Galperin, H., & Ruzzier, C. (2013). Telecommunications Policy 37, 429–438.
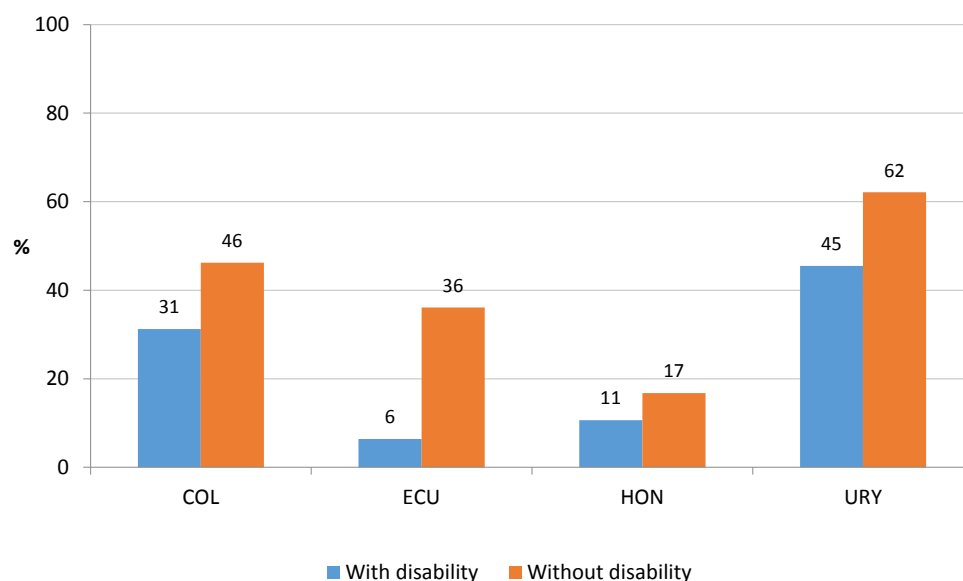
Source: National statistical offices.
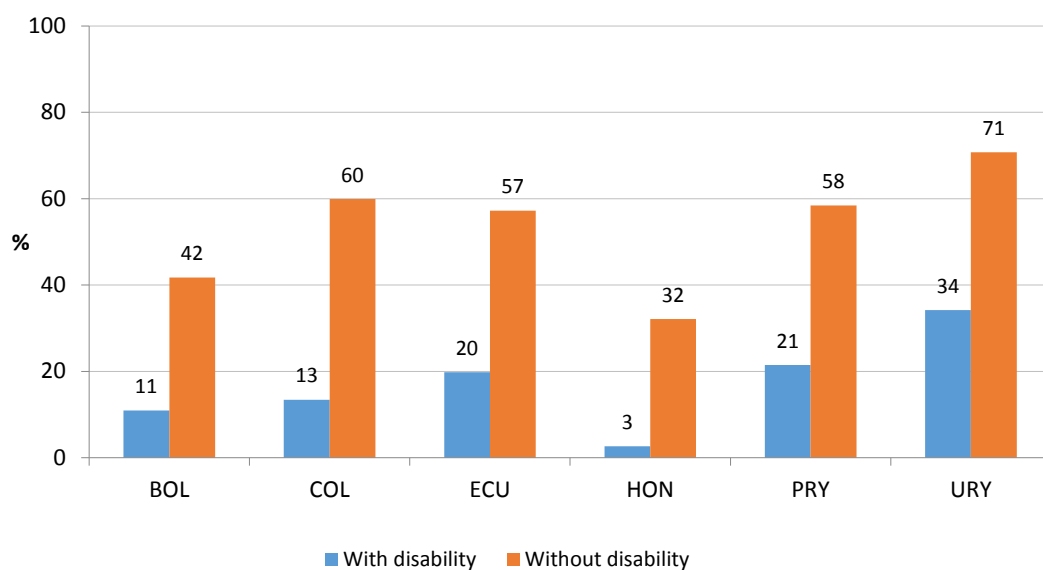
Source: National statistical offices.

for a combination of various locations used for Internet access, which vary across the countries examined. In countries such as Peru, and especially, Honduras, Internet access at public centers (both commercial and subsidized by governments or non-profit organizations) prevails over access in the household. In Colombia and Ecuador, even though residential access predominates, the

importance of work and educational institutions is undeniable. On the other hand, mobile access has grown considerably, but this is not reflected in the statistics because household surveys are not adapted to measure new modalities of Internet access.
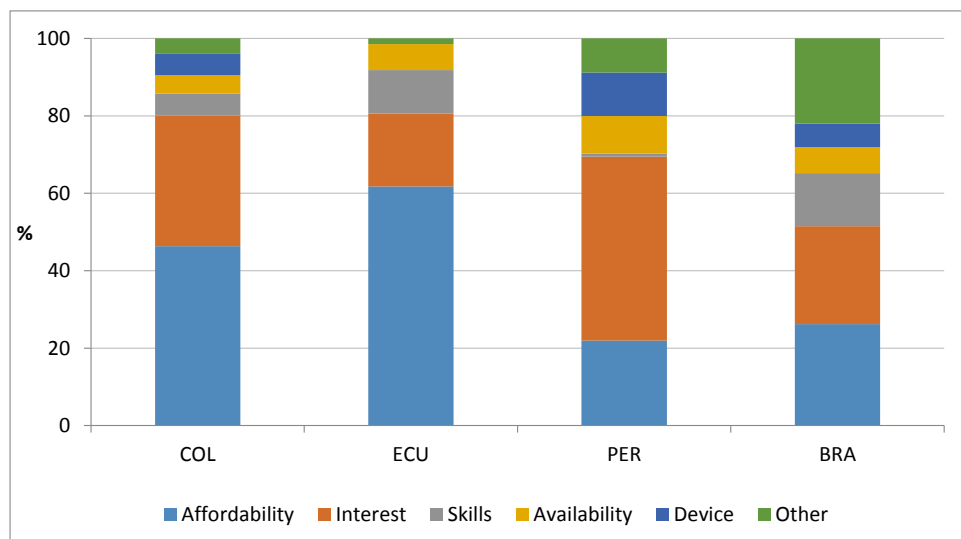
Source: National statistical offices.

Note: The category "Other" includes a number of reasons that may vary across countries.
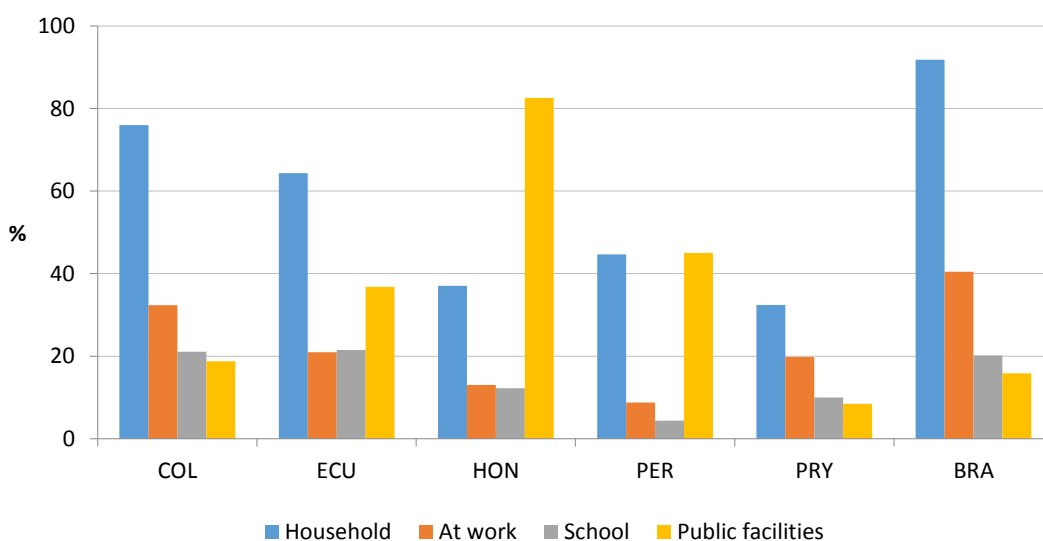
Source: National statistical offices.

4. POLICY RECOMMENDATIONS

Recent evidence shows that Internet has a great potential to help overcome barriers to socioeconomic development in Latin America and the Caribbean.[8] Particularly, it may contribute to the following: 1) accelerating economic growth and therefore help to reduce poverty; 2) stimulating efficiency in the administration of public resources, including the provision of services associated with education, health and social protection; 3) generating an effect on social inclusion that promotes government transparency and effective public policies. However, closing the digital divide by connecting more than 200 million Latin

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8   See Galperin & Mariscal (2016). The Internet and Poverty. Evidence and New Lines of Research for Latin America. Mexico DF: CIDE.

Americans who remain unconnected poses a great challenge for governments across the region.

The findings of this study clearly confirm the need to enlarge the range of initiatives undertaken so far, which have been based on efforts to foster market competition and infrastructure development in areas that are not attractive for the private sector. This is mainly because the vast majority of the inhabitants and enterprises in the region that remain unconnected are already within reach, in terms of infrastructure, of existing networks and services, but considers Internet access unaffordable or not very relevant.

The cornerstone of the new generation of connectivity initiatives is mobile broadband, which has many desirable characteristics that match the socio-demographic profile of the unconnected. Compared to fixed broadband, infrastructure deployment costs for mobile are much lower (especially in low-density areas), user interfaces often do not require as many ICT skills, and service operators have introduced commercial innovations, such as daily prepaid and zero-rating plans that are well-suited to the expenditure patterns of low-income groups.

Yet, focusing on mobile connectivity may result in neglected policy opportunities in other areas. Furthermore, there is increased evidence pointing at differentiated uses for mobile and fixed broadband access, and, especially, the limitations of these devices for uses allowing a greater social impact, such as applying for a job, filling out an official form, or carrying out educational activities.[9] This implies the need to complement mobile access with opportunities of access that are associated with traditional devices.

In summary, the following policy recommendations seek to promote Internet access in Latin America, regardless of the underlying technology. They are based on three basic premises. The first is that the existing demand gaps require policy initiatives that address three critical access barriers: affordability, digital skills and relevance. Second, regulatory initiatives to strengthen competition in access markets throughout the region— while urgently necessary in many cases — will not suffice to close the existing gaps. Third, network services operators are not able to fully capture the spillover benefits of the digital ecosystem development, hence the need for government policies to guide private investments and complement them in areas of low economic profit and high social impact.

Recommendation One: Connect Schools

In the past decade, there have been large investments ICT in-schools programs in Latin America and the Caribbean. These programs, which combine the provision of equipment, connectivity and teacher training, are based on two main assumptions: first, that schools have a key role to play in promoting digital literacy and, second, that the introduction of ICT in schools can positively affect student performance, promoting learning and other desirable outcomes, including motivation and retention.

Although the details of the programs differ by country, investments in general have prioritized the purchase of computers and, comparatively, there were fewer resources invested in educational reforms and complementary connectivity programs. As a result, many initiatives fell short of expectations, and neither schools nor students were able to maximize the learning potential of the devices provided. Much controversy surrounds the impact of these initiatives in the long run. In general terms, the empirical evidence reinforces the first assumption on the positive impacts of digital literacy, but produces diverse results in terms of the benefits to learning.[10]

The findings presented in this study corroborate the need for renewed efforts. Several countries in the region have taken large steps in connecting schools in the last decade. Brazil alone has connected almost 100,000 public schools since 2008, through a joint initiative with telecommunication operators, and there are similar initiatives in many countries across the region. However, in much of the continent, the picture is less promising. According to recent data available (UNESCO 2013), less than 10% of schools in low-income countries across the region are connected to the Internet; even in wealthier countries such

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9   Pew Research (2015). Home Broadband 2015 Available at http://www.pewinternet.org/2015/12/21/home-broadband-2015/.

10   IADB (2014). The IDB and technology in education: How to promote effective programs?

us Mexico and Argentina only about one in three schools is connected.[11]

The return on investments in human capital by means of school connectivity programs that promote ICT literacy will be substantial in the long run. For example, evidence shows that the Ceibal Plan in Uruguay eased the transition from education to work for high school graduates, increasing their chances of getting a better job, regardless of the student's cognitive skills and socio-demographic characteristics. While further study is required, these findings suggest that school connectivity may promote social mobility and help prepare children for the jobs of the future.

Recommendation Two: Promote Relevant Online Services to the Connected

Findings of this study highlight the need to promote online content and services as part of the digital inclusion policies across the region. Although affordability remains as the main access barrier for connected users, the lack of interest is growing in importance as an incentive barrier as well. This exposes the fragility of demand, as well as the need to foster the provision of target services aimed at groups that are currently off-line. In this sense, government actors have an important part to play, given their role in creating content and providing online services associated with education, health and other basic public services.

The results of this study point to three areas of high potential impact. First, applications and services aimed at older adults who face access barriers and have limited digital skills, and find no interest in services intended for the average user. Despite the existing initiatives to increase the acquisition of devices and Internet access adoption among older adults in the region, reducing this gap will further require ICT literacy efforts, and the development of specific content and applications that meet the needs of this population. Closing the digital divide for this group poses a challenge for the countries of the region, especially considering that the aging population is expected to rapidly increase in the coming decades.

Secondly, there is room to encourage multiculturalism on the Internet and promote connectivity among indigenous language speakers. The demand for linguistic diversity in online content and services is almost as old as the Internet itself. This demand is often seen as a way of preserving cultural heritage, given that the migration of content to digital format would enable online content archiving. However, the findings in this study suggest a more meaningful result, which is that the lack of linguistic diversity on the Internet discourages the adoption and the acquisition of digital skills among minority-language speakers, thus reinforcing their social exclusion.

Thirdly, the results highlight the issues concerning persons with disabilities, who face not only the generic connectivity barriers proper of the region's population, but also specific barriers related to their impairment. The Internet creates opportunities to reduce the barriers to social inclusion faced by persons with disabilities. In this sense, the applications and content accessibility concerning public services for persons with visual or hearing disabilities is crucial and must be included in the government connectivity initiatives across the region.

Recommendation Three: Conditional Residential Access Subsidy

One of the most significant innovations in social policy in Latin America in recent decades is the implementation of large-scale conditional cash transfer programs. Such programs aim at eradicating intergenerational poverty by stimulating present consumption among low-income households and inducing family investments in the health and education of their children. Several impact evaluation studies show that the programs have been particularly successful in promoting school enrollment and retention.[12]

The evidence presented in this study indicates that the presence of school-age children in the household increases demand for residential broadband; however, it also suggests that most families consider the current services unaffordable. These findings are very significant, for they offer an opportunity for governments to invest

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11   UNESCO. 2013. Use of ICT in Education in Latin America and the Caribbean. Montreal: UNESCO.

12   IADB (2012). The Growth of Conditional Cash Transfers in Latin America and the Caribbean.

in human capital by providing targeted connectivity subsidies to low-income household that are conditioned to school attendance. While many initiatives across the region have focused on providing ICT devices for use in schools, the results presented here point to an increasing demand for complementary programs that promote residential connectivity among low-income families with school-age children.

Residential connectivity subsidy programs for low-income families are offered (in various forms) in several countries in the region.[13] However, several of these programs are conditioned to no obligation and are not fully transparent, as in many cases there are no formal eligibility requirements and costs are often internalized by state-owned telecommunications operators. Linking Internet subsidies to children's schooling would largely improve the cost effectiveness of these programs, while promoting spillovers among adults who currently have limited Internet access due to affordability barriers.

Policy integration between distinct areas of government is central to the implementation of these recommendations, and, overall, to any initiative towards promoting an inclusive Internet ecosystem that stimulates development. This implies the design of cross-cutting government policies that ensure that the Internet connectivity acts as a platform to achieve growth and social inclusion goals. Therefore, digital inclusion policies should no longer be the exclusive domain of specialized agencies or ministries, and involve all government actors responsible for economic growth, human capital development, and alleviating the marked social inequalities throughout the region.

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13   For example, in Brazil (Programa Nacional de Banda Larga), Uruguay (Antel's Universal Hogares), and Colombia (subsidy based on a household stratification system for utility services).

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