

HOW MANY CHILDREN AND YOUNG PEOPLE HAVE INTERNET ACCESS AT HOME?

Estimating digital connectivity during the COVID-19 pandemic



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Foreword

The COVID-19 pandemic has caused the largest mass disruption of education in history and worsened the global learning crisis. In April 2020, more than 190 countries instituted national school closures, putting up to 1.6 billion students at risk of falling behind at great cost to their education and futures.

In response, ministries of education all over the world have deployed different remote learning policies, and education stakeholders have been inspired to “reimagine education” by harnessing technology to close the persistent gaps in access to education that limit the potential of children and young people around the world.

The digitalization of society has made ICT skills and access to technology important, but the COVID-19 pandemic has turned these things into essential human rights in terms of the educational, social and professional needs of children and young people. The lack of connectivity among the most marginalized populations – children and young people from poor households and rural areas – places them at an extreme disadvantage, and all but eliminates any chance they might have of participating in the modern economy.

To this end, UNICEF has joined forces with the International Telecommunication Union (ITU) to launch [Giga](#), an ambitious global initiative to connect every school to the internet and every young person to information, opportunity and choice. With the support of [Generation Unlimited](#), UNICEF now works under the [Reimagine Education](#) initiative which aims to address the learning crisis and transform education by giving children and young people equal access to quality digital learning.

This report supports these efforts with findings from a first-of-its-kind analysis that delivers critical insights about the vast numbers of children and young people whose education and professional futures are jeopardized by a lack of access to digital technology at home. Today, 2.2 billion children and young people are still unconnected, deprived of the digital technologies and services that have proved so essential during the pandemic. Closing the digital divide will require significant resources, cooperation and dedication. But we must act – the ability of many children and young people to achieve their full potential depends on it.



Doreen Bogdan-Martin

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UNICEF

Key messages

1. Globally, 2.2 billion children and young people aged 25 years or less – two-thirds of children and young people worldwide – do not have an internet connection at home.¹
2. More than two-thirds of school-age girls and boys aged approximately 3 to 17 years (1.3 billion children) and 63 per cent of youths aged 15 to 24 years (almost 760 million youths) lack internet access at home.
3. 768 million children and young people aged 25 years or less who lack internet access live in South Asia. In the regions of East Asia and Pacific, West and Central Africa and Eastern and Southern Africa more than 300 million children and young people per region lack home internet access, totaling more than 900 million without access.
4. There is marked inequality in internet connectivity across the world's regions. Only 5 per cent of children and young people aged 25 years or less in West and Central Africa, and just 13 per cent in South Asia and in Eastern and Southern Africa, have internet access at home, compared to 59 per cent in Eastern Europe and Central Asia.
5. Differences in access to the internet are even starker between rich and poor countries. Among children and young people aged 25 years or less only 6 per cent in low-income countries have internet access at home, compared to 87 per cent in high-income countries.
6. A large difference is also seen globally in levels of home internet access between children and young people who live in rural areas (25 per cent) and their urban peers (41 per cent).
7. Socioeconomic inequalities within countries also produce notable differences in internet access. Globally, 58 per cent of children and young people aged 25 years or less whose families are among the richest 20 per cent in their countries have internet access at home, whereas only 16 per cent of children and young people from the poorest 20 per cent of households in their countries have such access. While high-income countries have high rates of internet access, sizable gaps exist – although the richest households have near universal access at 97 per cent, only 74 per cent of the poorest households have access.
8. The gap in home internet access between children and young people aged 25 years or less from the poorest and richest households is greatest in upper-middle-income countries, where it exceeds 50 percentage points. In contrast, while only 2 per cent of children and young people from the poorest households in low-income countries have internet access at home, just 16 per cent of their richest peers are connected, which underscores the low prevalence of internet access.
9. The impact of wealth on internet access is also visible at the regional level. In West and Central Africa, internet access for the poorest populations is almost non-existent. In Eastern and Southern Africa, just 3 per cent of children and young people aged 25 years or less from the poorest families have internet access at home, compared to 40 per cent of children and young people from the richest families. The largest regional disparity in internet access due to household wealth is seen in the East Asia and Pacific region, where only 23 per cent of children and young people from the poorest households have internet access compared to more than 80 per cent among the richest households.



¹ This report looks at children and young people aged 25 years or younger who have a fixed internet connection at home. Fixed internet access is distinct from cellular networks that can be used through mobile phones.



Introduction

Despite progress in providing access to education in recent decades, a global learning crisis persists and hundreds of millions of children are still being left behind. Before COVID-19, one in five school-age children of primary to upper secondary school age was out of school.² Moreover, even children in school are not necessarily learning – 617 million children and adolescents worldwide, many of whom are in school, cannot read or perform basic mathematics.³ Global school closures in 2020 – which the World Bank estimates that could result in a loss of US\$10 trillion in lifetime earnings for this generation of children – further exacerbate this dire state of affairs.

At the onset of the crisis, governments and education actors began developing systems to deliver education remotely, and recent data show that over 90 per cent of education ministries worldwide have implemented remote learning approaches that involve radio, television or the internet.⁴

Connectivity is critical in today's world, and UNICEF has been working to reach every child and adolescent worldwide with digital learning technologies. This work has been supported by the considerable data that are available on internet use among different age groups across the

world's regions and countries. However, the disruption to education and other essential activities caused by the COVID-19 pandemic make it necessary to understand how many children and young people aged 25 years or less are able to access digital technology at home that can support their educational, professional, social and other needs.

As such, rather than simply estimating the share of households with an internet connection, this analysis leverages household survey data from 87 countries and looks specifically at the number of children and young people aged 25 years or less who live in households that have an internet connection. Therefore, the statistics presented in this report are influenced by the number of family members aged 25 years or less in each household. More details on the methodology are available in the Annex.

The unique findings presented in this report provide new insights on children and young people's access to connectivity worldwide, as well as the factors that drive inequities among and within countries. It also aims to serve as a resource for stakeholders who seek to reimagine education and enhance internet access in their communities.

² UNESCO Institute for Statistics (2018). One in Five Children, Adolescents and Youth is Out of School. <http://uis.unesco.org/sites/default/files/documents/fs48-one-five-children-adolescents-youth-out-school-2018-en.pdf>

³ UNESCO Institute for Statistics (2017). More Than One-Half of Children and Adolescents Are Not Learning Worldwide. <http://uis.unesco.org/sites/default/files/documents/fs46-more-than-half-children-not-learning-en-2017.pdf>

⁴ UNICEF (2020). COVID-19: Are children able to continue learning during school closures? <https://data.unicef.org/resources/remote-learning-reachability-factsheet/>

How many children and young people have access to the internet at home?

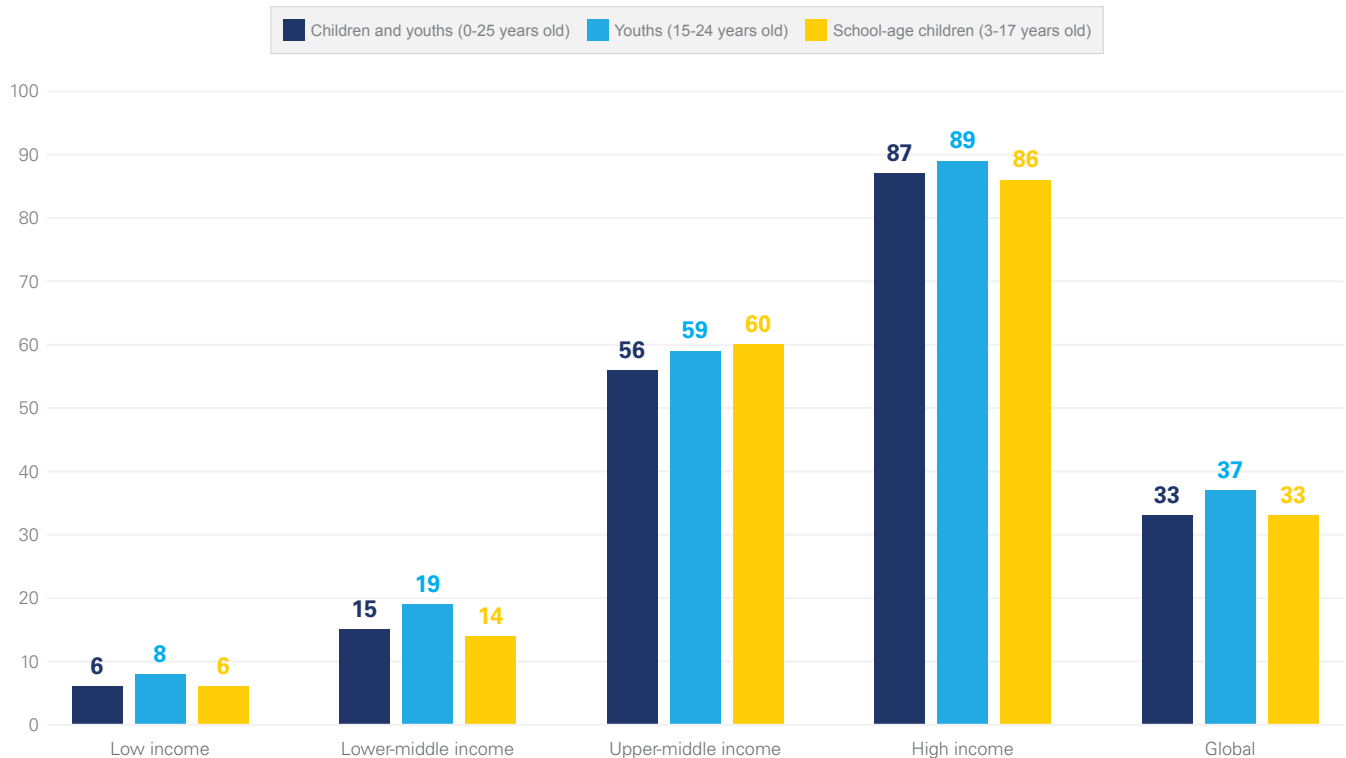
Globally, two-thirds of children and young people aged 25 years or less do not have an internet connection at home. However, access varies widely depending on countries' relative wealth: in high-income countries 87 per cent of children and young people have an internet connection at home, but in low-income countries only 6 per cent do. This pattern holds true for the other age groups analyzed (school-age children 3 to 17 years old and youths 15 to 24 years old).

Strong inequality in digital connectivity can also be seen across the world's regions. In Eastern Europe and Central Asia, approximately 60 per cent of children and young people aged 25 years or less have internet access at home. A similar situation is observed in the East Asia and Pacific and Latin America and Caribbean regions, where at least 50 per cent of children and young people have internet

connectivity at home. However, in South Asia as well as Eastern and Southern Africa only 13 per cent of children and young people have internet access at home, and in West and Central Africa access is even lower at 5 per cent.

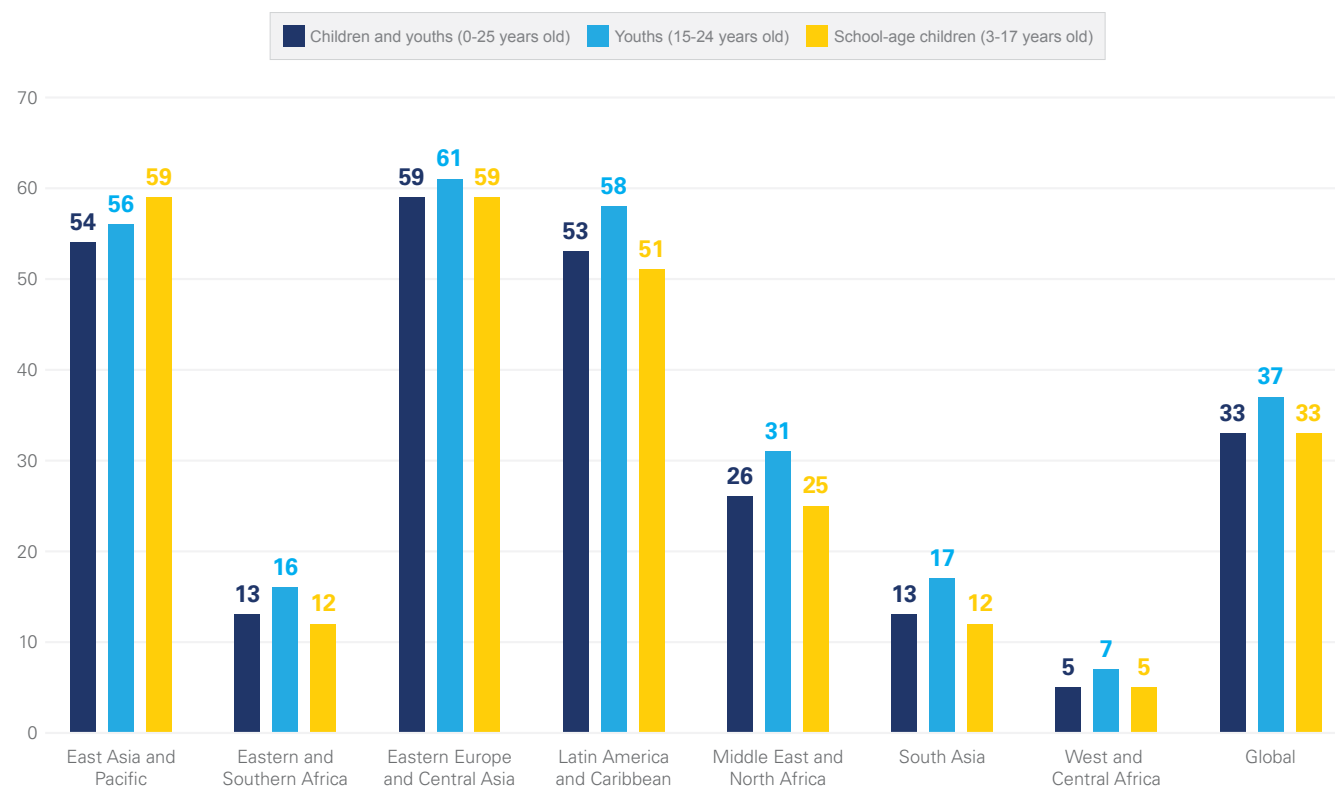
The actual headcounts behind these percentages are striking: 2.2 billion children and young people aged 25 years or less worldwide – out of which approximately 1.3 billion are school-age girls and boys between 3 to 17 years old and nearly 760 million are youths aged 15 to 24 years – do not have an internet connection at home. 768 million of these children and young people aged 25 years or less live in South Asia. In the regions of East Asia and Pacific, West and Central Africa and Eastern and Southern Africa more than 300 million children and young people per region lack home internet access, totaling more than 900 million without access.

Figure 1
Percentage of children and young people with internet access at home, by country income group



Source: Authors' calculations based on Multiple Indicator Cluster Surveys, Demographic and Health Surveys and other national household surveys (2010-2020).

Figure 2
Percentage of children and young people with internet access at home, by region



Source: Authors' calculations based on Multiple Indicator Cluster Surveys, Demographic and Health Surveys and other national household surveys (2010-2020).

Figure 3
Number of children and young people with and without internet access at home (in millions), by region

Region	Children and youths (0-25 years old)		Youths (15-24 years old)		School-age children (3-17 years old)	
	Access	No Access	Access	No Access	Access	No Access
South Asia	117	768	57	282	59	449
East Asia and Pacific	435	369	174	136	265	183
West and Central Africa	18	329	7	97	10	194
Eastern and Southern Africa	47	313	19	97	26	191
Middle East and North Africa	56	160	23	50	30	89
Latin America and Caribbean	145	130	62	45	77	74
Eastern Europe and Central Asia	87	60	31	20	51	36
Global totals*	1,076	2,212	442	759	617	1,264

*Note: The global totals exceed the sum of the regional values because the global totals include additional countries in regions not listed.

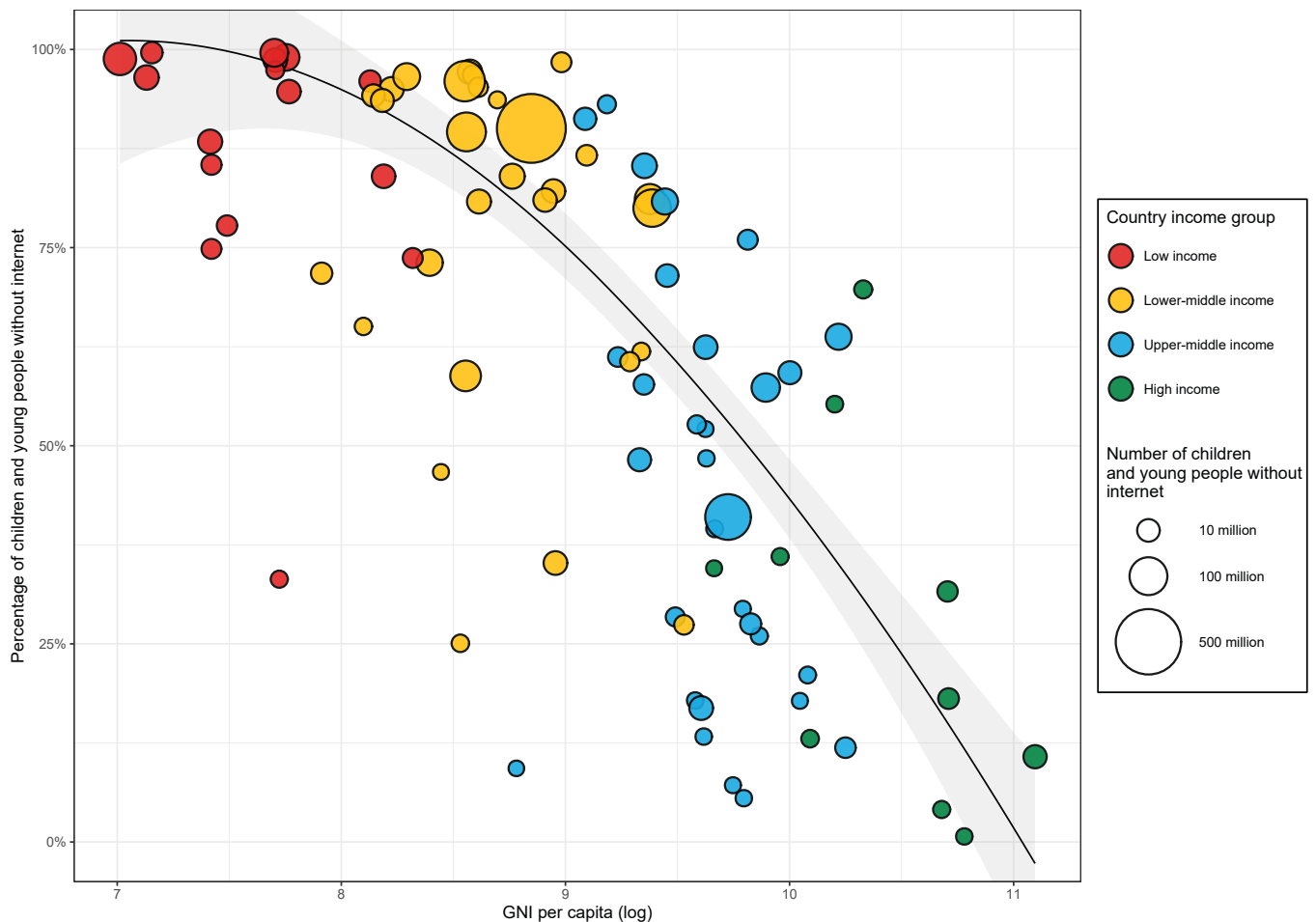
Source: Authors' calculations based on Multiple Indicator Cluster Surveys, Demographic and Health Surveys and other national household surveys (2010-2020).

Economic development and connectivity rates

The data confirm that the prevalence of internet access is linked to a country's level of economic development. An explicit negative trend is observed in the association between gross national income (GNI) per capita and the share of children and young people aged 25 years or less without internet access at home. In other words, a higher GNI per capita means more children and young people have access to the internet at home. That said, some variation can be seen among countries that have similar GNI per capita and belong to the same income group.



Figure 4
Relationship between the percentage of children and young people aged 25 years or less without internet access at home and GNI per capita



Source: Authors' calculations based on Multiple Indicator Cluster Surveys, Demographic and Health Surveys and other national household surveys (2010-2020).



The rural – urban digital divide

Given the vast number of children and young people aged 25 years or less without access to the internet at home, it is important to identify the factors that contribute to this lack of connectivity. An equity analysis based on sex, area of residence, and family socioeconomic status confirmed that internet access at home is strongly determined by place of residence and household wealth.⁵

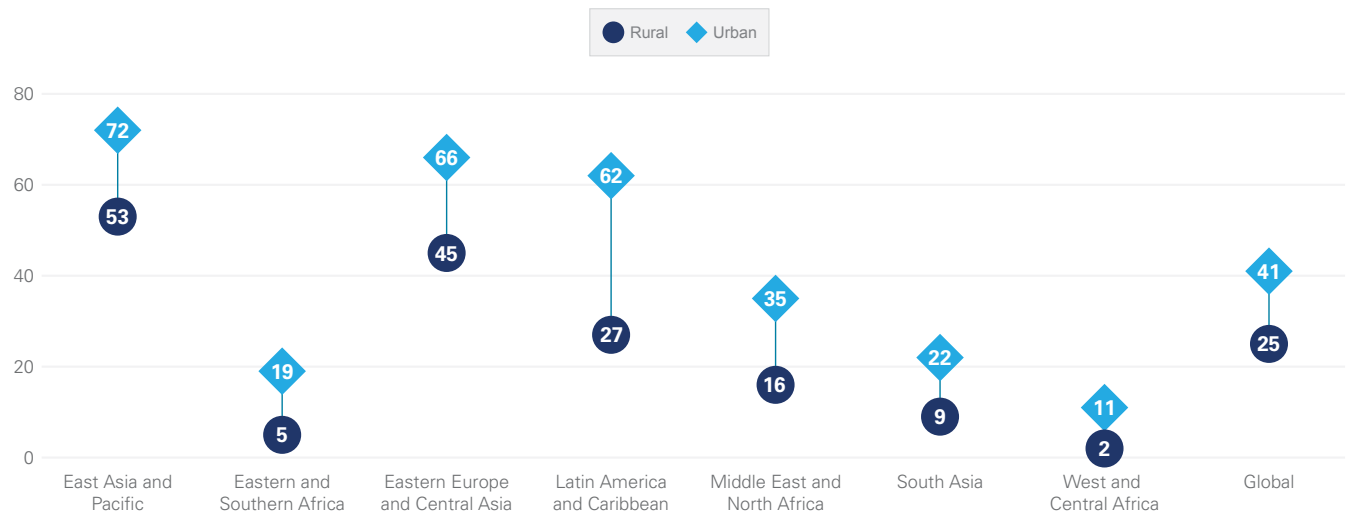
Globally, 25 per cent of rural children and young people aged 25 years or less have internet access compared to 41 per cent of their urban peers, a difference of 16 percentage points. However, some regions show a much larger gap. In the Latin

America and Caribbean region, for example, 27 per cent of rural children and young people have internet access at home, compared to 62 per cent of their urban peers, a difference of 35 percentage points.

However, the presence of a rural-urban digital gap is in many ways a function of a country's income level. The data show that inequities in home internet access between children and young people aged 25 years or less from rural and urban areas are almost non-existent in high-income countries, but they are much more noticeable in low-, lower- and upper-middle-income settings.

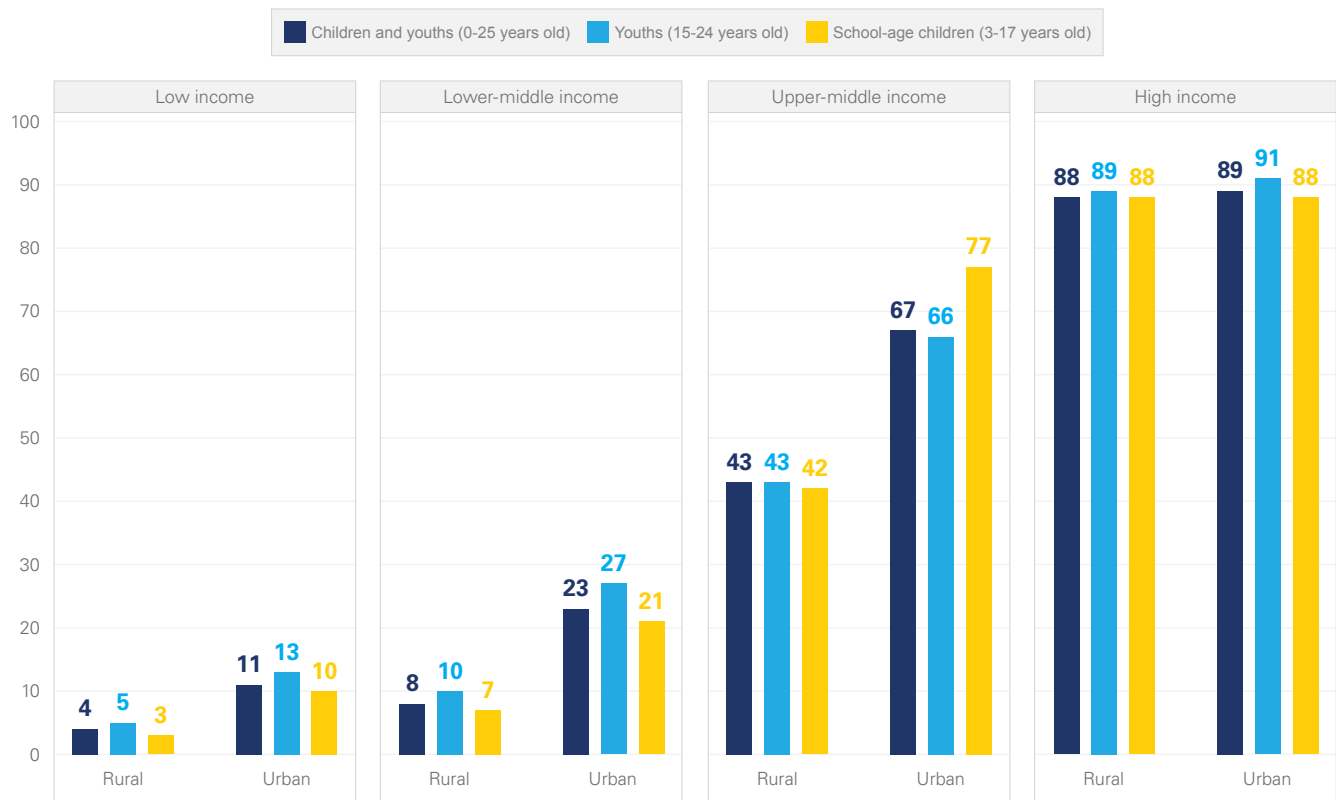
⁵ As no gender gap was identified, results by sex are not shown in this report.

Figure 5
Percentage of children and young people aged 25 years or less with internet access at home, by place of residence



Source: Authors' calculations based on Multiple Indicator Cluster Surveys, Demographic and Health Surveys and other national household surveys (2010-2020).

Figure 6
Percentage of children and young people with internet access at home, by place of residence and country's income group



Source: Authors' calculations based on Multiple Indicator Cluster Surveys, Demographic and Health Surveys and other national household surveys (2010-2020).

Household wealth and internet access

Wealth is an important driver of access to digital technology at home.⁶ The data show clear differences between richer and poorer countries, as well as between the richest and poorest households within countries, in terms of the share of children and young people aged 25 years or less with access to the internet.

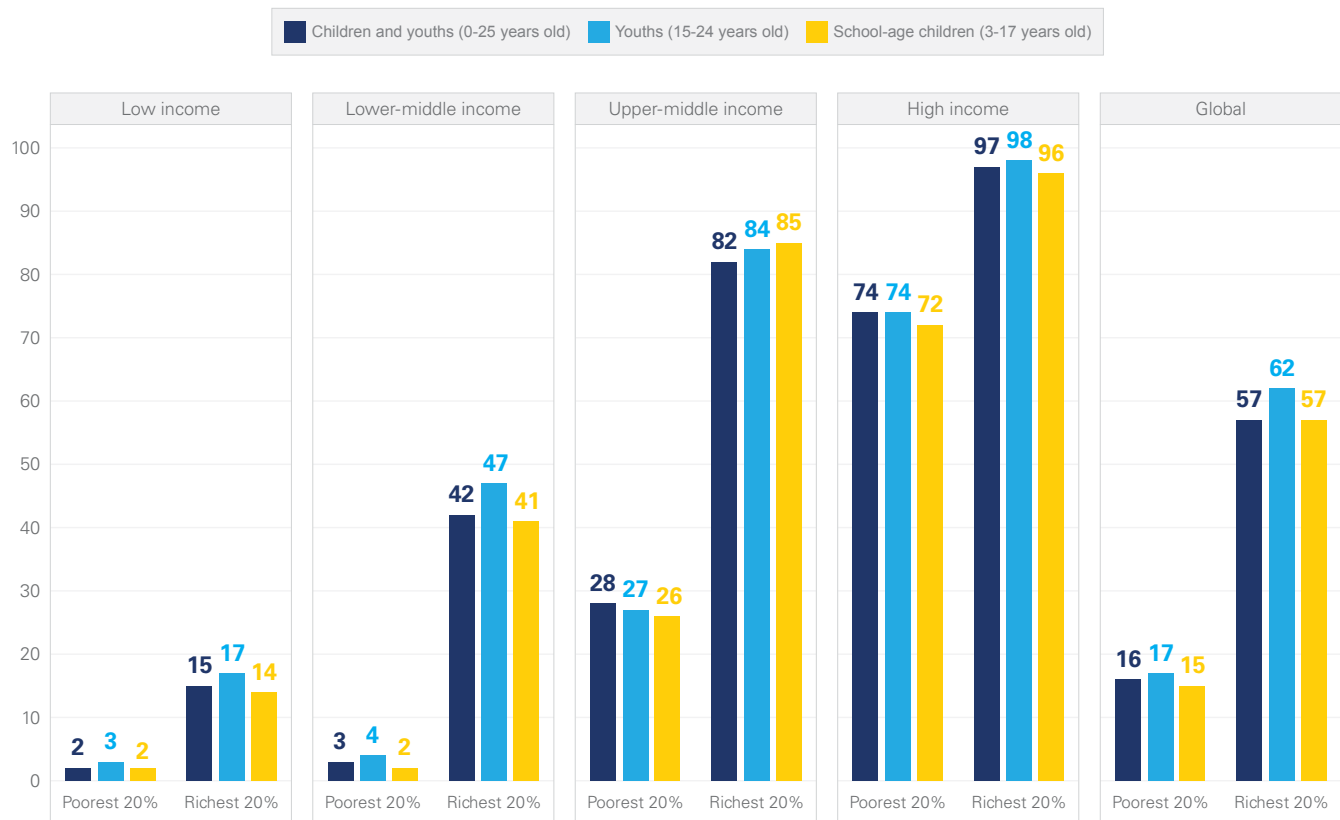
Lack of internet access is most acute for the poorest children and young people aged 25 years or less in low- and lower-middle-income countries; moreover, within lower-middle-income countries, there is a 39-percentage-point gap in access between the poorest and richest households.

Upper-middle-income countries demonstrate the highest inequity between the richest and poorest households: while 82 per cent of children and young people aged 25 years or

less from the wealthiest households have internet access at home, only 28 per cent of their counterparts from the poorest households do. This pattern is also seen in high-income countries, where 97 per cent of children and young people from wealthy households have internet access at home, compared to only 74 per cent of their poorest peers.

The disparity in home internet access among children and young people aged 25 years or less from the richest and poorest quintiles is most pronounced in the East Asia and Pacific region, where the gap exceeds 60 percentage points. Notably, in West and Central Africa, only 1 per cent of the poorest children and young people have an internet connection at home.

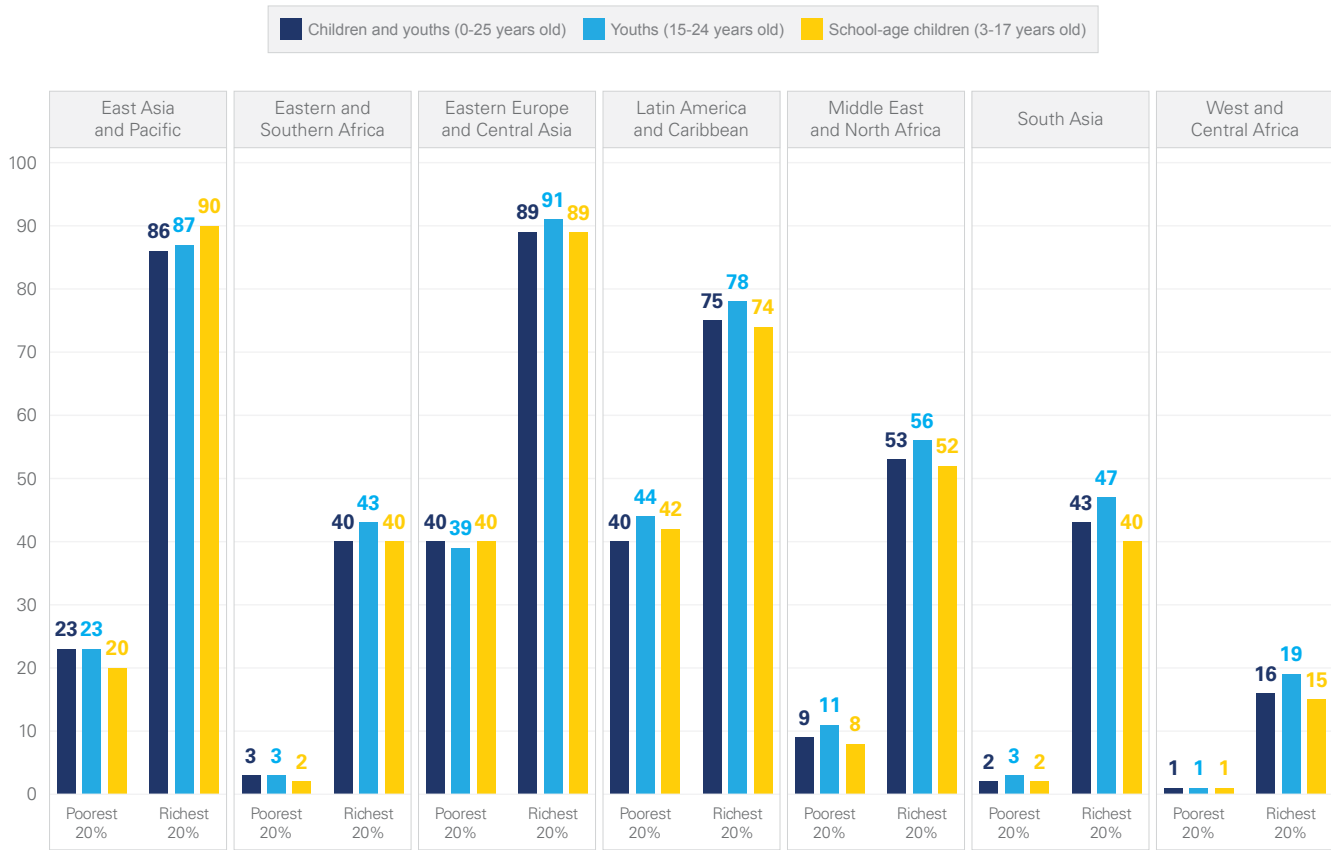
Figure 7
Percentage of children and young people with internet access at home, by country income group



Source: Authors' calculations based on Multiple Indicator Cluster Surveys, Demographic and Health Surveys and other national household surveys (2010-2020).

⁶ In countries where wealth data were unavailable, income data was used instead.

Figure 8
Percentage of children and young people from the poorest and wealthiest quintiles with internet access at home, by region



Source: Authors' calculations based on Multiple Indicator Cluster Surveys, Demographic and Health Surveys and other national household surveys (2010-2020).

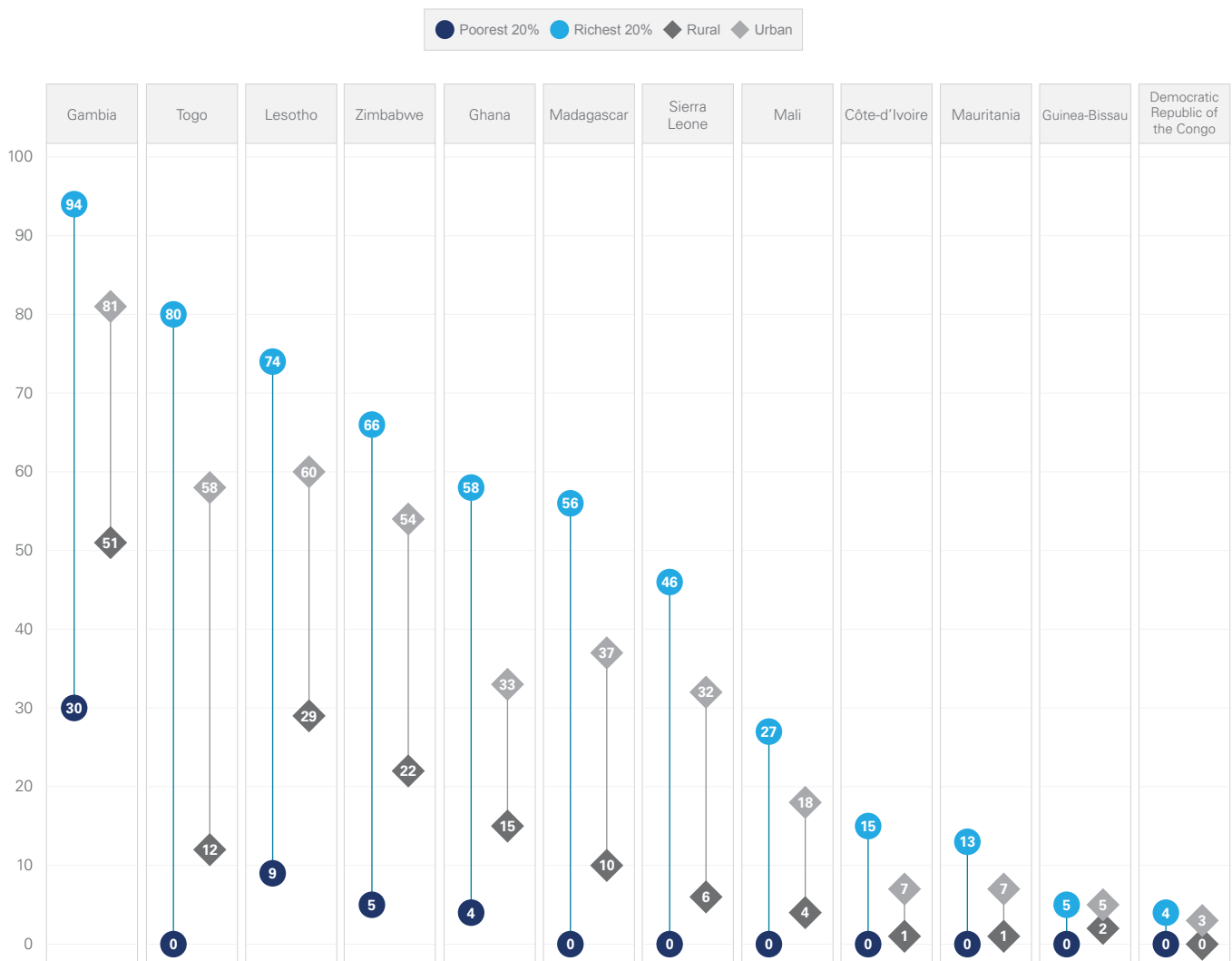


Connectivity in sub-Saharan Africa

The most critical disparities in home internet access are observed among children and young people in the countries of sub-Saharan Africa, particularly in terms of household wealth and residence in rural versus urban areas. Evidence drawn from UNICEF-supported Multiple Indicator Cluster Surveys, which track the 15- to 24-year-old age group, highlights that in some countries in the region, home internet access among the poorest 20 per cent of households is either non-existent or almost non-existent, largely due to a lack of infrastructure in rural areas. While children and young people from wealthier, urban households in several sub-Saharan countries enjoy high rates of internet access, most of their peers from poor, rural households do not. This digital divide substantially undermines the ability of young people from poor households in rural areas to gain the competencies necessary to build a better future for themselves.



Figure 9
Percentage of youths aged 15 to 24 years in sub-Saharan Africa with internet access at home by country, household wealth, and place of residence



Source: Authors' calculations based on Multiple Indicator Cluster Surveys, 2015-2019.



Conclusion

This analysis finds that 2.2 billion children and young people aged 25 years or less – more than 65 per cent of young people globally – lack internet access at home. In addition to highlighting the vast number of children and young people who lack digital connectivity, the data have also shown that internet access depends largely on where these children and young people live and the relative wealth of their household.

Globally, children and young people aged 25 years or less from rural areas have rates of internet access that are 16 percentage points lower than their urban peers. More significantly, home internet access for children and young people whose households belong to the poorest quintile in their countries is 42 percentage points lower than that of their peers from richest households in the same countries, which further exacerbates existing inequalities in access to education.

This critical situation undermines the potential for children and young people to succeed in school, work and life in an increasingly digital world. With education systems investing in hybrid and remote learning due to the COVID-19 pandemic, it is increasingly clear that this lack of connectivity is a barrier that will prevent children and young people from accessing effective and interactive forms of learning going forward.

Significantly expanding internet access in homes, communities and schools is vital to ensure that this and subsequent generations of children and young people can acquire the knowledge and skills they need to support a sustainable future

Annex: Methodology

The findings presented in this report are based on the statistical analysis of household surveys from 87 countries. The data sources refer primarily to Multiple Indicator Cluster Surveys, Demographic and Health Surveys, STEP Skills Measurement Household Surveys, and other national survey programs starting from the year 2010 onward. The purpose of the analysis was to estimate the share of children and young people aged 25 or less who have an internet connection at home. Relying on household survey data was essential for carrying out equity analysis and understanding the extent to which the availability of internet access is driven by such phenomena as socioeconomic status and area of residence.

In addition to calculating the indicator for children and young people aged 25 or less, calculations were also carried out for the age cohorts of youths aged 15 to 24 years old and school-age children approximately 3-17 years old (depending on the ISCED-based school attendance age in each country, starting from pre-primary to upper secondary education).

It is necessary to underscore that the purpose of the project was to understand how many children and young people can remain connected during COVID-19-caused lockdowns, ensuring that their educational, professional, and other needs are met. Since children and young people cannot study or work through mobile phones, it was essential to exclude access to the internet through cellular networks from the analysis. As such, the analysis focused on fixed internet access, which does not account for internet access through mobile networks.

Although the project looked at the availability of internet access at the household level, household members were chosen as the units of analysis. Availability of household rosters that list all family members, including their sex and age, allowed for this kind of analysis. Only those households with members aged 25 years or younger were selected. Consequently, households with more than one member within the outlined age brackets had a stronger influence on the calculated estimate.

Another important methodological pillar of the project was performance of an equity analysis. For all three age groups, the estimates were broken down by sex, area of residence (urban versus rural), and socioeconomic status (poorest 20 per cent versus the richest 20 per cent). Wealth was used as a proxy for socioeconomic status.⁷ As no gender gap was identified, the report does not present data broken down by sex.

After the national survey data were processed, regional and global aggregates were calculated. The available data covered more than 80 per cent of the global population aged 25 years or younger. To produce the global and regional aggregates, population-based averages were used. In other words, each country was weighted according to their share of the global population in the respective age group. The data were aggregated by UNICEF regions and World Bank country income groups.

⁷The wealth index variable is computed based on household possessions. It is available in MICS, DHS and most other household surveys. For some national survey programs that did not have this variable, either income or household assets were used to understand the position of a household in the socio-economic hierarchy.

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