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Estimates of internet access for children in Ethiopia, Kenya, Namibia, Uganda and the United Republic of Tanzania

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To address the digital divide and enable equal access to digital connectivity, three priorities should be pursued.

1. **Invest in electricity and connectivity with a focus on marginalized communities and users.** A lack of electricity was reported as a barrier to access by between 13 per cent and 28 per cent of children in this study, depending on the country. Coordinated, large-scale investments from national governments and the private sector are needed to bring electricity and connectivity to the millions of unconnected children around the world.
2. **Reduce the cost of connectivity and devices.** Cost of connectivity was the most common barrier to access in three of the five countries surveyed here, while a lack of available devices was very common in some countries but less so in others. Governments working with telecommunication companies can address this by subsidizing devices and lowering costs to make data and content more affordable. For instance, in May 2020, a partnership between Airtel Africa and UNICEF made browsing selected websites that host educational content free of any data charges in 13 African countries.
3. **Recognize and address cultural and social norms as barriers to access for children.** A lack of parental permission was reported as a barrier to access for between 15 per cent and 26 per cent of children, depending on the country. This affected younger children more commonly than older ones, which may reflect parental concerns around online risks. However, it was also more common for girls than boys. Perceptions of internet use as being more valuable for boys than for girls and entrenched gender norms reducing girls' access are issues that need to be addressed at the normative and cultural levels. Efforts to provide electricity and connectivity will only reduce the digital divide if normative barriers are also addressed.

Connectivity and the digital divide

The COVID-19 pandemic transformed internet connectivity from an important asset to an essential piece of infrastructure. It made clear that affordable and accessible internet connectivity is a critical resource for children and their families, serving their educational, social and professional needs. Yet two thirds of the world's school-aged children (1.3 billion in total) still have no fixed internet connection in their homes.[1] This lack of connectivity not only limits children's and young people's ability to go online; it also prevents them from participating and competing in the modern economy and risks isolating them from the world.

1 https://www.unicef.org/media/88381/file/How-many-children-and-young-people-have-internet-access-at-home-2020.pdf

The digital divide perpetuates inequalities among and within countries and communities and poses challenges to equality of opportunity. Children and young people from the poorest households, rural areas and low-income states may fall behind wealthier peers and have access to fewer opportunities to catch up.[2]

The almost universal school closures that occurred in the wake of the COVID-19 pandemic exacerbated an already challenging situation for children in low-income countries.[1] With limited or non-existent infrastructure with which to connect to digitally supported distance learning and essential services, these children's educational progress and future opportunities have been significantly set back. This situation signals the urgency of accelerating wider connectivity to enable children and communities to meaningfully access the internet and draw on its potential for educational, creative, civic, cultural, social and economic opportunities.[3]

In March 2021, the UN Committee on the Rights of the Child officially launched its General Comment No. 25 on children's rights in relation to the digital environment.[4] The general comment sets out how the UN Convention on the Rights of the Child applies in the digital world and it is the first authoritative international legal document explicitly recognizing that children's rights apply both offline and online. It emphasizes that governments should ensure that all children have equal and effective access to the digital environment in ways that are meaningful to them, to uphold and advance children's rights to non-discrimination, access to information, freedom of expression, education, culture, leisure and play.

Data on children's internet access

Disaggregated national data on children's internet access are scarce in many regions of the world, and especially in low- and middle-income countries. Where data exist, they are often based on adults' internet access or on estimates of fixed internet access at the household level. However, the proliferation of 3G and 4G technology means that many children are likely to access the internet without a fixed connection or outside their homes. Mobile devices are now the most common form of device used by young people to go online in many low- and middle-income countries,[5] and in recent years they have also overtaken the popularity of computers in high-income countries.[6] This means that a different method of estimating access is required in the case of children.

Meanwhile, a granular understanding of why some children in a specific country can access the internet and why other children cannot is vital to overcome the digital divide. However, the digital divide is not simply a distinction between those who have access and those who do not; even children who do have access can regularly experience barriers that impede it or hinder their effective use of the internet. These barriers can relate to a child's gender, lack of access to electricity, cost of connectivity or cultural perceptions around what children should or should not do with their time. Fully overcoming the digital divide therefore requires us to build infrastructure and bring connectivity to those who do not have any access at all but also to reduce barriers to access and use for those who do.

Research Questions

This research brief presents new data on children's access to the internet in five countries in Eastern and Southern Africa: Ethiopia, Kenya, Namibia, Uganda and the United Republic of Tanzania.

In addition to access estimates, it provides estimates of the frequency with which children use the internet and assesses the most common barriers they face when trying to do so.

Finally, the brief explores the impact of these barriers on some of the activities children typically engage in online to illustrate the consequences of leaving these bottlenecks unaddressed.

To answer these research questions, we use survey data collected from individual children as part of the *Disrupting Harm* project. Disrupting Harm is a large-scale, multimethod research collaboration between the United Nations Children's Fund (UNICEF), ECPAT International and INTERPOL.[7] The data used in this

2 https://www.t20italy.org/wp-content/uploads/2021/09/TF4-PB2-Brossard-1.pdf

3 https://www.ohchr.org/EN/HRBodies/CRC/Pages/GCChildrensRightsRelationDigitalEnvironment.aspx

4 https://tbinternet.ohchr.org/_layouts/15/treatybodyexternal/Download.aspx?symbolno=CRC%2fC%2fGC%2f25&Lang=en

5 https://www.unicef-irc.org/publications/1060-growing-up-in-a-connected-world.html

6 https://www.lse.ac.uk/media-and-communications/assets/documents/research/eu-kids-online/reports/EU-Kids-Online-2020-10Feb2020.pdf

7 https://www.end-violence.org/disrupting-harm

brief were collected in the five countries mentioned above.[8] Data were collected between December 2020 and January 2021. The sample in each country was composed of a stratified random cluster sample with random walk within clusters. Children were randomly selected at household level if they were between 12 and 17 years and had used the internet at least once in the past three months.

The research brief answers four research questions for each of the countries.

1. What proportion of children aged 12–17 years have access to the internet?
2. How frequently do internet-using children access the internet?
3. What barriers to access do internet-using children face?
4. What is the impact of these barriers on the activities children engage in online?

For every household contacted during fieldwork, field teams collected data on the total number of children per household, their age and gender and whether they had used the internet in the three months prior to data collection. This naturally evolving random sample was used to estimate children's access to the internet in each country. The characteristics of the sample are presented in Table 1.

The sample of all households contacted was used to answer Research Question 1, while the sample of internet-using children was used to answer Research Questions 2–4.

Research Question 1: What proportion of children aged 12–17 have access to the internet?

Of the five countries surveyed in Eastern and Southern Africa, access to the internet among children aged 12–17 was highest in Namibia (81 per cent). This was followed by Kenya and the United Republic of Tanzania (both 67 per cent). About 40 per cent of children aged 12–17 had access to the internet in Uganda and this was true of only 25 per cent in Ethiopia – the lowest rate among the five surveyed countries *(see Table 2)*.

Across all five countries, access to the internet was more prevalent among older children than younger ones. This pattern was particularly pronounced in Ethiopia and Uganda – the two countries with the lowest connectivity overall – where the proportion of children with internet access was much higher among those aged 16–17 years than among the younger age groups.

Table 1. Sample characteristics by country

Country	Total number of sampled internet-using children aged 12–17	Total number of sampled households with children aged 12–17
Ethiopia	1,000	5,938
Namibia	994	1,733
Kenya	1,014	1,879
Uganda	1,016	3,464
United Republic of Tanzania	996	1,857

Table 2. Proportion of children aged 12–17 who were internet users in five countries in Eastern and Southern Africa by age, gender and urban/rural location

Country	N	Total	12–13	14–15	16–17	Boys	Girls	Urban	Rural
Ethiopia	5938	25%	8%	19%	46%	28%	21%	45%	21%
Kenya	1879	67%	55%	62%	83%	68%	66%	80%	64%
Namibia	1733	81%	58%	86%	94%	82%	81%	84%	79%
Uganda	3464	40%	16%	35%	63%	45%	35%	56%	36%
United Republic of Tanzania	1857	67%	42%	68%	86%	70%	64%	70%	65%

8 Ethical approval for the study was obtained from national ethics review boards in each country. Government approval was also obtained in each of the countries.

Gender differences in access were generally insignificant, though they were more pronounced in Ethiopia, Uganda and the United Republic of Tanzania, where boys were somewhat more likely than girls to have access to the internet, than in Kenya and Namibia.

In all countries, children in urban areas had better access to the internet than those in rural areas; this trend was more marked in Ethiopia, Kenya and Uganda than in Namibia and the United Republic of Tanzania.

Research Question 2: How often do internet-using children go online?

The study revealed considerable variation in the *frequency* of internet use among children with internet access across the five countries surveyed.

Daily internet use was highest (56 per cent) in Namibia, followed by Ethiopia (31 per cent) and Kenya (27 per cent). Only 20 per cent of internet-using children aged 12–17 in Uganda and as few as 7 per cent in the United Republic of Tanzania reported that they went online daily. In the United Republic of Tanzania, 75 per cent of children who went online at all did so less than once every month *(see Table 3)*.

This analysis reveals that, even though a considerable number of children in each country have access to the internet, many of them do not use the internet daily.

Each sample has a slightly different age composition, and this influences the estimates, as older children tend to use the internet more frequently than younger ones. The findings should therefore only be taken as an indication of children's frequency of internet use within each country, rather than be compared across countries.

Research Question 3: What barriers to access do internet-using children face?

A range of barriers can prevent children from accessing the internet as much as they want or need to. We asked the children in our sample which of the following six barriers they regularly experienced:

1. slow connection or poor signal
2. lack of electricity
3. high internet or data costs
4. device being used by someone else
5. parents not allowing it
6. teachers not allowing it.

For the purposes of our analysis, we grouped these barriers into three categories: those related to infrastructure (1–2), those related to resource constraints (3–4) and those related to adult permission (5–6).

Across the five countries surveyed, 90 per cent of children reported experiencing at least one barrier to internet access regularly. The most commonly reported barrier was the high cost of data. In three out of the five countries this was the most common barrier, and it affected 41 per cent of children across the five countries. This was followed by device access, which affected 34 per cent of children across the five countries.

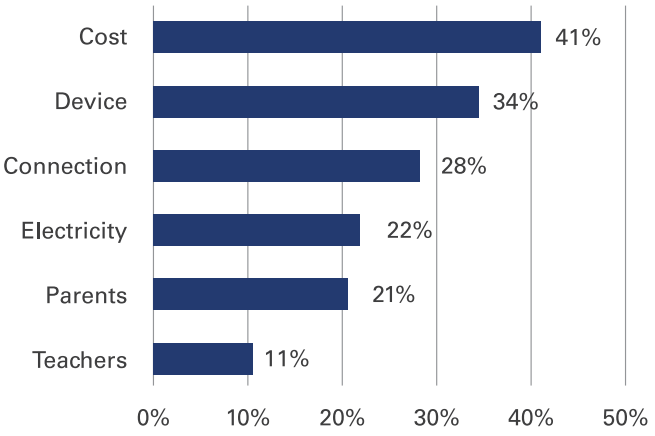
Infrastructure-related barriers, such as a slow connection or poor signal, affected 28 per cent of children, while a lack of electricity affected 22 per cent of children in the surveyed countries. Barriers related to adult permission were the least frequently encountered, but still substantial, with 21 per cent of children reporting that their parents would not allow them to use the internet when they wanted to and 11 per cent reporting that their teachers would not allow them to do so *(see Figure 1)*.

Table 3. Frequency with which internet-using children aged 12–17 accessed the internet by country[9]

Frequency of internet use	Ethiopia	Kenya	Namibia	Uganda	United Republic of Tanzania
Less than once a month	38%	27%	8%	28%	75%
At least monthly	4%	13%	22%	18%	6%
At least weekly	26%	33%	13%	33%	12%
Once a day or more	31%	27%	56%	20%	7%

9 Where the total for each country is below 100%, this is due to rounding.

Figure 1. Barriers to internet access for internet-using children aged 12–17 in five countries in Eastern and Southern Africa (n=5020)



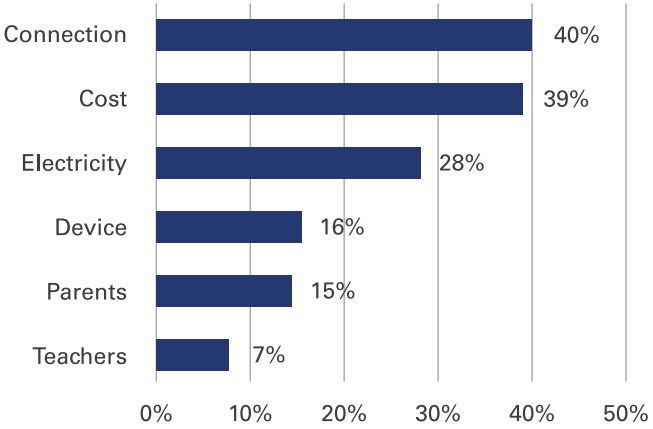
There was significant variation between countries in the prevalence of these barriers; this is explored in the subsections below and may help guide national solutions.

Ethiopia

The most common barrier to internet access for internet-using children aged 12–17 in Ethiopia was a slow connection or poor signal where they lived. This was closely followed by the high cost of data. A lack of electricity was a barrier to access for almost a third of the internet-using children in the sample, while barriers related to access to devices and adult permission were less common *(see Figure 2)*.

There were notable differences according to gender, age and urban/rural location in Ethiopia. Older children were more likely than younger ones to report barriers related to connectivity, cost and electricity, as were boys (relative to girls) and children living in rural areas (relative to those living in urban locations). In contrast, parental permission affected younger children, girls and children living in urban areas more than their peers *(see Table 4)*.

Figure 2. Barriers to internet access for internet-using children aged 12–17 in Ethiopia



Namibia

The most common barrier to internet access for internet-using children aged 12–17 in Namibia was the high cost of data. This was followed by a slow connection or a lack of signal where children lived. Parental permission prevented a quarter of children from going online when they wanted or needed to, as did a lack of electricity; barriers related to device access and a lack of teacher permission were less common *(see Figure 3)*.

Figure 3. Barriers to internet access for internet-using children aged 12–17 in Namibia

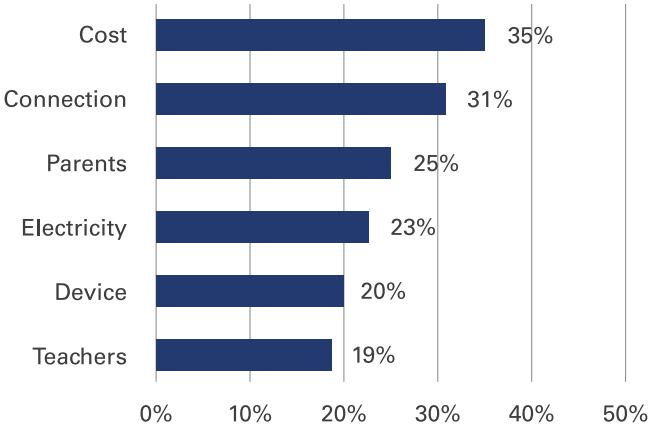


Table 4. Prevalence of barriers to internet access among internet-using children aged 12–17 in Ethiopia by age, gender and urban/rural location

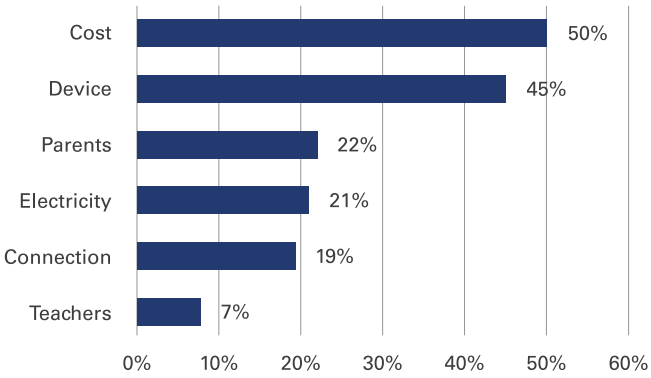
Barrier	Total	12–14	15–17	Boys	Girls	Urban	Rural
Connection	40%	31%	43%	45%	32%	21%	49%
Cost	39%	23%	45%	42%	34%	33%	42%
Electricity	28%	20%	31%	33%	20%	10%	18%
Device	16%	23%	16%	17%	17%	13%	20%
Parents	15%	26%	11%	10%	22%	24%	10%
Teachers	7%	13%	5%	5%	10%	8%	6%

In Namibia, the differences according to age, gender and urban/rural location were less marked than in Ethiopia for most of the barriers to internet access. Older children were more likely than younger ones to report a poor connection. Girls and younger children were more likely to report parent permission as a barrier to access. Children in rural areas reported that a lack of electricity was a barrier for them more often than children in urban areas did *(see Table 5)*.

Kenya

The most common barrier to internet access for internet-using children aged 12–17 in Kenya was affordability of data and device access. The high cost of data affected 50 per cent of those surveyed, while a lack of available devices affected 45 per cent of them. The high prevalence of these barriers indicates that resource constraints are a prominent issue in Kenya. A lack of parental permission, a lack of electricity and a slow connection or poor signal prevented around one fifth of children from going online when they wanted or needed to, while a lack of teacher permission was a rare barrier in Kenya *(see Figure 4)*.

Figure 4. Barriers to internet access for internet-using children aged 12–17 in Kenya



In Kenya, boys were more likely than girls to experience barriers related to cost, as were older children and children living in rural areas relative to their counterparts. Barriers to connectivity seemed to affect children more or less equally regardless of age, gender or location, while parental permission and devices being used by someone else were more common barriers for younger children and girls than for older children and boys respectively *(see Table 6)*.

Table 5. Prevalence of barriers to internet access among internet-using children aged 12–17 in Namibia by age, gender and urban/rural location

Barrier	Total	12–14	15–17	Boys	Girls	Urban	Rural
Cost	35%	34%	36%	33%	37%	30%	39%
Connection	31%	26%	34%	32%	30%	29%	32%
Parents	25%	30%	21%	22%	28%	22%	27%
Electricity	23%	21%	24%	24%	22%	13%	33%
Device	19%	18%	20%	20%	19%	19%	20%
Teachers	17%	18%	17%	16%	18%	17%	14%

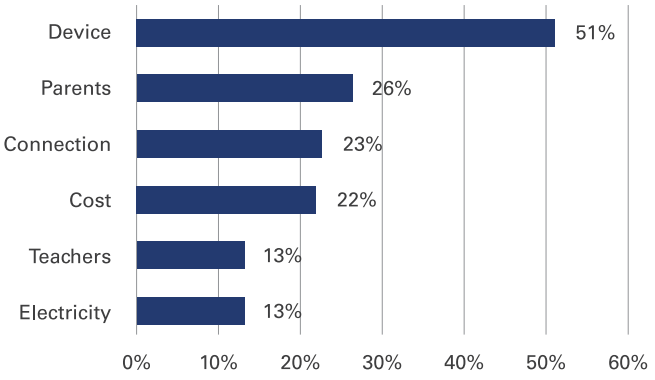
Table 6. Prevalence of barriers to internet access among internet-using children aged 12–17 in Kenya by age, gender and urban/rural location

Barrier	Total	12–14	15–17	Boys	Girls	Urban	Rural
Cost	50%	45%	54%	56%	44%	42%	53%
Device	44%	49%	42%	40%	49%	43%	49%
Parents	22%	26%	18%	18%	25%	20%	22%
Electricity	21%	18%	24%	23%	20%	18%	23%
Connection	19%	18%	21%	20%	18%	19%	19%
Teachers	7%	8%	6%	8%	6%	7%	7%

The United Republic of Tanzania

The most common barrier to internet access for internet-using children aged 12–17 in the United Republic of Tanzania was access to devices, which affected half of the children surveyed in this country. A lack of parental permission prevented around one in four children from going online when they wanted or needed to, with a similar proportion of children encountering a high cost of data and slow connection or poor signal. A lack of electricity affected only about 1 in 10 internet-using children, with a similar proportion encountering a lack of teacher permission *(see Figure 5)*.

Figure 5. Barriers to internet access for internet-using children aged 12–17 in the United Republic of Tanzania

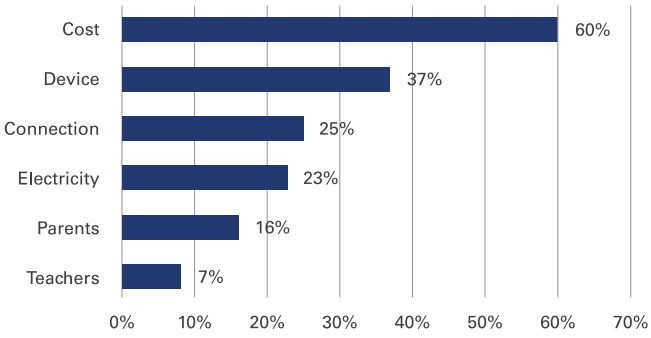


There were some differences in children's barriers to access in the United Republic of Tanzania according to age, but for most barriers they were less pronounced than the differences according to gender and urban/rural location. Older children were more likely to report barriers related to cost, connectivity and electricity than younger ones. For children living in rural areas, devices being used by someone else was the most prominent barrier, followed by a lack of parental permission and connectivity. A lack of parental permission was a more common barrier for younger children, girls and children living in urban areas than for older children, boys and those living in rural areas respectively *(see Table 7)*.

Uganda

The most common barrier to internet access for internet-using children aged 12–17 in Uganda was the high cost of data. This affected 60 per cent of children and may be related to the Over-the-Top tax that the government imposes on certain websites, including social networking sites, which are one of the most popular types of site for children in Uganda. The second most common barrier was the devices children used to go online being used by someone else, which affected more than one third of children in Uganda. A slow connection or poor signal and a lack of electricity affected around one in four children, with adult permission being rarer than the other barriers for children in Uganda *(see Figure 6)*.

Figure 6. Barriers to internet access for internet-using children aged 12–17 in Uganda



Older children were more likely than younger ones to report the cost of connectivity as a barrier in Uganda, while boys were more likely than girls to

Table 7. Prevalence of barriers to internet access among internet-using children aged 12–17 in the United Republic of Tanzania by age, gender and urban/rural location

Barrier	Total	12–14	15–17	Boys	Girls	Urban	Rural
Device	51%	52%	50%	49%	53%	44%	56%
Parents	26%	34%	20%	21%	31%	36%	17%
Connection	23%	19%	26%	24%	21%	8%	35%
Cost	22%	17%	25%	22%	21%	25%	19%
Teachers	13%	18%	10%	11%	16%	13%	14%
Electricity	13%	12%	14%	13%	13%	8%	17%

Table 8. Prevalence of barriers to internet access among internet-using children aged 12–17 in Uganda by age, gender and urban/rural location

Barrier	Total	12–14	15–17	Boys	Girls	Urban	Rural
Cost	60%	54%	62%	65%	53%	62%	59%
Device	34%	36%	33%	30%	40%	35%	33%
Connection	25%	23%	26%	26%	24%	13%	31%
Electricity	23%	23%	23%	26%	20%	14%	28%
Parents	16%	21%	14%	13%	20%	20%	14%
Teachers	6%	5%	7%	7%	6%	9%	6%

do so. Children living in rural areas found a lack of connectivity to be a more prominent barrier to access than children living in urban areas. Parental permission was a slightly more common barrier to access for younger children, girls and children living in urban areas than for older children, boys and children in rural locations respectively *(see Table 8)*.

Research Question 4: What is the impact of these barriers on the activities children engage in online?

To understand how barriers to internet access affect children's use of the internet, we grouped children according to the number of different barriers they experienced. We analysed the extent to which children who experienced no barriers to access engaged in three important online activities: using social media, using the internet for schoolwork and using the internet to look for health information. We then compared these children to those who experienced one or two barriers to access, as well as to those who experienced three or more barriers. This provided insights into how barriers to access impact children's internet use and whether there are potentially cumulative effects for children who experience multiple barriers.

The strongest impact of barriers to access was observed in Kenya, where children who experienced multiple barriers to access used the internet less frequently for schoolwork, social media and looking for health information. These reductions ranged between seven percentage points for health information, 13 percentage points for schoolwork and 20 percentage points for social media use. This could be because Kenya is one of the most well-connected countries of the five analysed, meaning that children who experienced more barriers would fall further behind. A similar picture emerges in Namibia, the country with the best connectivity of the five included here.

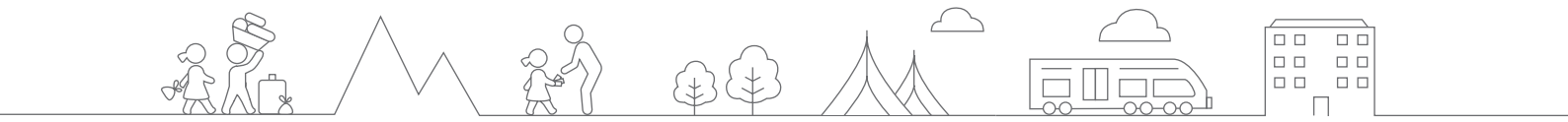
In comparison, in Ethiopia and the United Republic of Tanzania – the two countries in which the fewest children were online – those who experienced multiple barriers only reported small reductions in social media use. In Uganda, there was a positive correlation between experiencing multiple barriers to access and social media use, which was not the case for schoolwork or looking for health information. This could be because children who used social media more were more likely to report cost as one of the main barriers to access due to the social media tax that Uganda uniquely imposes.

All effects observed were cumulative, meaning that children who experienced more barriers showed a greater reduction in their engagement in online activities (except for Uganda and social media use).

Although there were national variations that cannot be fully understood without additional analysis, these results provide evidence that barriers to access affected both entertainment and educational activities to a considerable extent in the countries surveyed. Barriers to access are therefore an impediment to children's effective engagement with the digital environment and may, over time, contribute to widening inequality gaps unless they are addressed.

States should consider why boys are prioritized when access is limited. Is it because their opportunities are seen as more valuable from an economic standpoint? Or is it because parents are more concerned about keeping girls safe online? Regardless of the reasons, raising awareness and providing information and education to parents, teachers and community and/or religious leaders are essential steps to ensuring that girls can meaningfully access the internet to the same extent as boys.

There is a need for all governments to consistently monitor the proportion of children able to access the internet for meaningful purposes in all countries around the world. This report has provided detailed information on children's access to the internet in five countries in Eastern and Southern Africa. Data from more countries are needed to spur action towards more equal and improved access for boys and girls living in different circumstances. Policies and programmes designed to reduce the digital divide should be based on high-quality research focusing on children, whose circumstances in terms of gaining access to the internet often differ from those of adults.



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