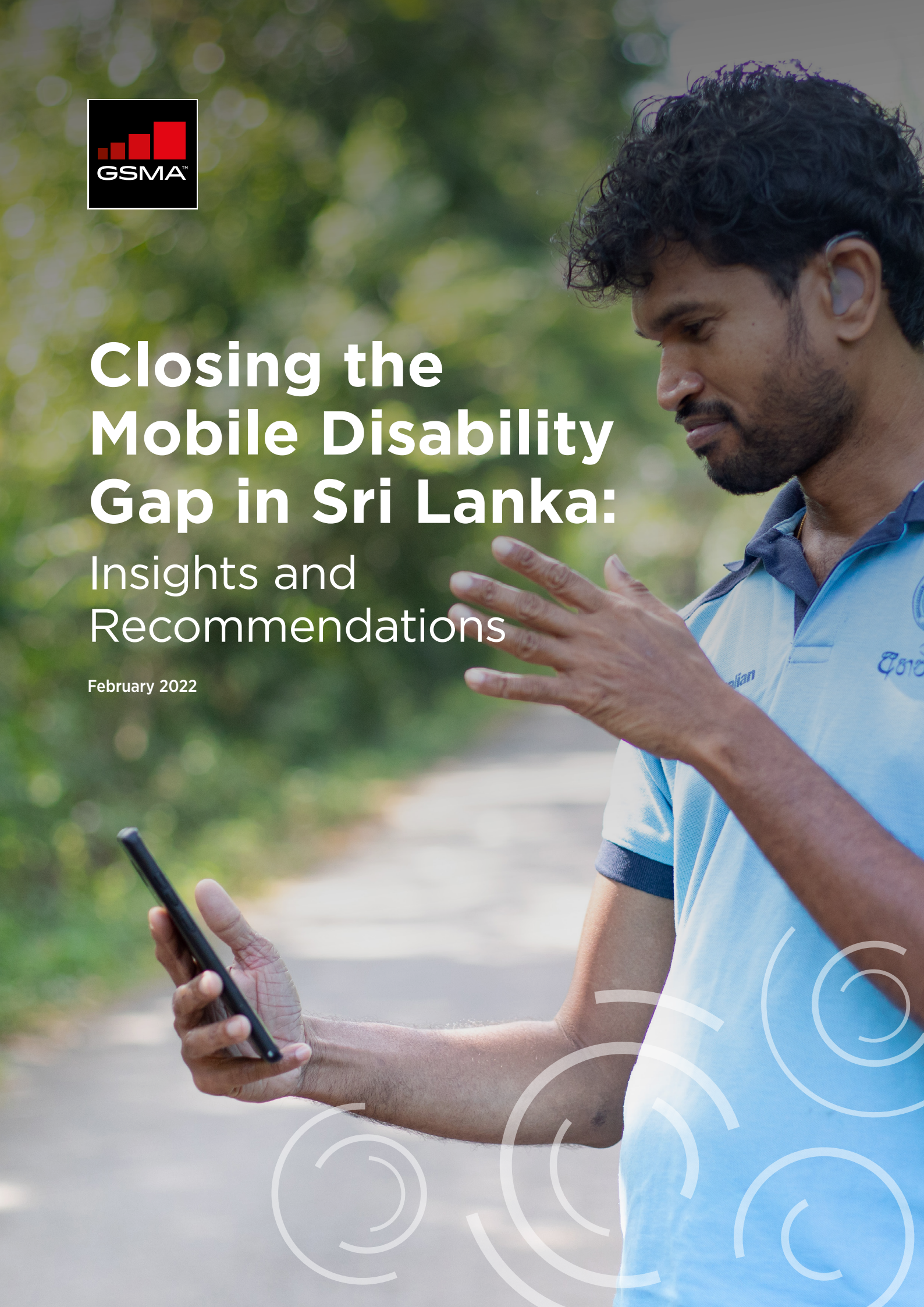

Closing the Mobile Disability Gap in Sri Lanka:

Insights and Recommendations

February 2022

GSMA Assistive Tech

The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions, and Outreach. This activity includes advancing policy, tackling today's biggest societal challenges, underpinning the technology and interoperability that make mobile work, and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events.

We invite you to find out more at **www.gsma.com**.

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The GSMA Assistive Tech programme works to drive greater access and use of mobile technologies for persons with disabilities in emerging markets and maximise opportunities for social and economic inclusion. The programme works with the mobile industry and key disability and development stakeholders to address the digital inclusion gap of persons with disabilities, identify innovation opportunities and highlight the value of mobile-enabled assistive technologies. The programme is supported by the UK Foreign, Commonwealth & Development Office (FCDO).

For more information, please visit **www.gsma.com/AssistiveTech**.

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This initiative has been funded by UK Aid from the UK Government and is supported by the GSMA and its members. The views expressed do not necessarily reflect the UK Government's official policies.

This document has been financed by the Swedish International Development Cooperation Agency, Sida. Sida does not necessarily share the views expressed in this material. Responsibility for its contents rests entirely with the author.

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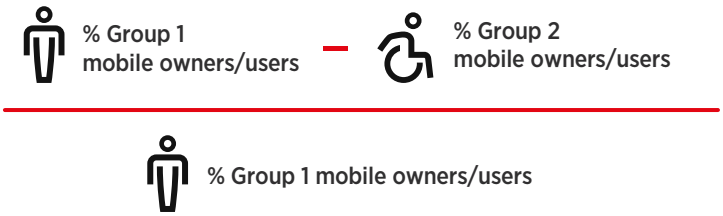
Acknowledgements

The authors would like to thank LIRNEasia, our fieldwork partner, and to all those who participated in the surveys and interviews.

Contents

Definitions

Disability	The interaction between individuals with a health condition (e.g. cerebral palsy, Down's syndrome and depression) and personal and environmental factors (e.g. negative attitudes, inaccessible transportation and public buildings and limited social supports).[1]
Mobile disability gap	The difference in mobile phone ownership and mobile internet use between persons with and without disabilities. It is calculated using the following formula: 
Gender and disability gap	The gap between men without disabilities and women with disabilities.
Mobile internet user	A person who has used the internet on a mobile phone at least once in the last three months. Mobile internet users do not have to personally own a mobile phone. Non-mobile phone owners who use mobile internet by accessing it on someone else's mobile phone are also mobile internet users.
Mobile owner	A person who has sole or main use of a SIM card or mobile phone that does not require a SIM and uses it at least once a month.
Mobile user	A person who has sole ownership of a phone or who has access to a phone (e.g., through a relative) at least once a month.
Non-disabled person	A person who does not report any acute difficulty ("a lot of difficulty") or complete inability ("cannot do at all") to perform the functional domains of the Washington Group Short Set of Questions.
Person with disabilities	A person who reports any acute difficulty ("a lot of difficulty") or complete inability ("cannot do at all") to perform one or more of the functional domains of the Washington Group Short Set of Disability Questions.
Smartphone	A mobile phone with a touchscreen display, an advanced operating system (Android or iOS) and the ability to download apps from an online app store, such as Google Play or the App Store.
Washington Group Short Set of Questions	A set of questions designed to identify persons with disabilities in a survey or census.[2] Respondents answer questions and report difficulties experienced in six functional domains: seeing, hearing, walking, cognition, self-care and communication.

Executive summary

The COVID-19 pandemic highlighted the importance of connectivity as people around the world were asked to stay at home to stop the virus from spreading. As people began working remotely, schools moved to digital platforms and doctors provided virtual consultations, digital inequalities were revealed, leaving those without mobile and internet access behind.

Persons with disabilities have been disproportionately affected by the COVID-19 pandemic.[3] Although mobile phones provide an incredible opportunity for social and economic inclusion, research conducted by the GSMA Assistive Tech programme has found that persons with disabilities continue to be digitally excluded. In many low- and middle-income countries (LMICs), persons with disabilities are not only significantly less likely to own a mobile phone, but also to be aware of and use mobile internet.[4]

This report presents in-depth findings from research conducted in Sri Lanka between December 2020 and March 2021, which sought to understand the mobile disability gap in ownership and use of mobile services. It highlights the stark contrast between persons with disabilities and non-disabled persons, as well as the nuances in mobile ownership and barriers to ownership by type of disability. It also shows how different demographic factors, such as age and gender, have an impact on digital inclusion.

As Sri Lanka and the rest of the world recover from the COVID-19 pandemic, this report provides evidence for stakeholders to address barriers to digital inclusion and ensure no one is left behind. The recommendations provided in this report are both locally and globally applicable.

Key findings

1. **Persons with disabilities are 44 per cent less likely to own a mobile than non-disabled persons.** Less than half of respondents with disabilities own a mobile phone, compared to 85 per cent of non-disabled respondents.

2. **Mobile ownership levels differ by type of disability.** Among mobile owners with disabilities, respondents with a visual impairment report the highest levels of mobile ownership at 47 per cent, while only 16 per cent of respondents with a speech impairment own a mobile.

3. **Persons with disabilities are 58 per cent less likely to own a smartphone than non-disabled respondents.** Smartphones can be a driver of digital inclusion for persons with disabilities, with apps and accessibility features that offer potentially life-changing opportunities, yet only 23 per cent of mobile owners with disabilities own a smartphone.

4. **Persons with disabilities face a wide range of barriers to mobile ownership.** The most frequently reported barriers highlighted by respondents with disabilities were the ability to use a phone as a result of their condition, the cost of a handset and not knowing how to use a mobile.

5. **Only a quarter of persons with disabilities are aware of the internet.** Internet awareness plays a key role in mobile internet use and adoption. Yet, persons with disabilities are 59 per cent less likely to be aware of the internet than non-disabled persons.

6. **Despite its potential, only nine per cent of respondents with disabilities use mobile internet.** Persons with disabilities are 77 per cent less likely to use mobile internet than non-disabled persons. However, once a person with disabilities starts using mobile internet, they use internet services at a similar level, or in some cases a higher level, than a non-disabled person. This demonstrates the commercial opportunity of driving digital inclusion.

7. **Persons with disabilities are much less likely to use services beyond voice autonomously and to be aware of accessibility features on a mobile than non-disabled persons.** However, once they are aware of accessibility features, usage is high.

Introduction

The island nation of Sri Lanka has a population of nearly two million people, with an estimated eight per cent disability prevalence.[5] Persons with disabilities in Sri Lanka face barriers to equal opportunities and have very limited access to education, training and employment. Thirty-four per cent of school-age children with disabilities do not receive any education and 71 per cent of working-age persons with disabilities are not employed.[6]

For persons with disabilities, assistive technologies such as mobile phones, computers, the internet and other information and communication technologies (ICTs) can enable independent living and promote well-being. However, globally more than 90 per cent of people who need assistive technologies do not have access to them.[7] Mobile phones, particularly smartphones, can cluster multiple assistive technologies into one device,[8] but many persons with disabilities and their households do not have access to mobile, particularly in LMICs.[9] Even when persons with disabilities own a mobile, they are often unaware of the assistive technology options available on the phone.

In Sri Lanka, previous research has shown that only 32 per cent of persons with disabilities own a mobile phone, compared to 78 per cent of non-disabled persons.[10] Among those with a disability who do own a mobile, 63 per cent report owning a basic phone. More than 95 per cent of persons with disabilities in the country do not own a personal computer or have never used one.[11]

Acquiring, using and learning about digital services is not necessarily a linear process, and persons with disabilities can encounter barriers to mobile internet use at different stages. This report examines the substantial mobile disability gap in Sri Lanka, providing evidence of a widening gap at each stage of the mobile internet user journey, from mobile ownership through to regular mobile internet use. We explore how mobile ownership varies by disability type, as well as the barriers to ownership and the perceived benefits of mobile. We analyse the gaps in mobile internet adoption and use between persons with disabilities and non-disabled persons, and the importance of accessibility features. Finally, we provide recommendations to address the mobile disability gap, which are applicable both in Sri Lanka and globally.

Methodology

This report is based on quantitative survey research in Sri Lanka with 838 persons with disabilities and 612 non-disabled persons, as well as 22 qualitative interviews with expert stakeholders. The study was conducted between December 2020 and March 2021. The full methodology, including the limitations of the study, is described in the Appendix.

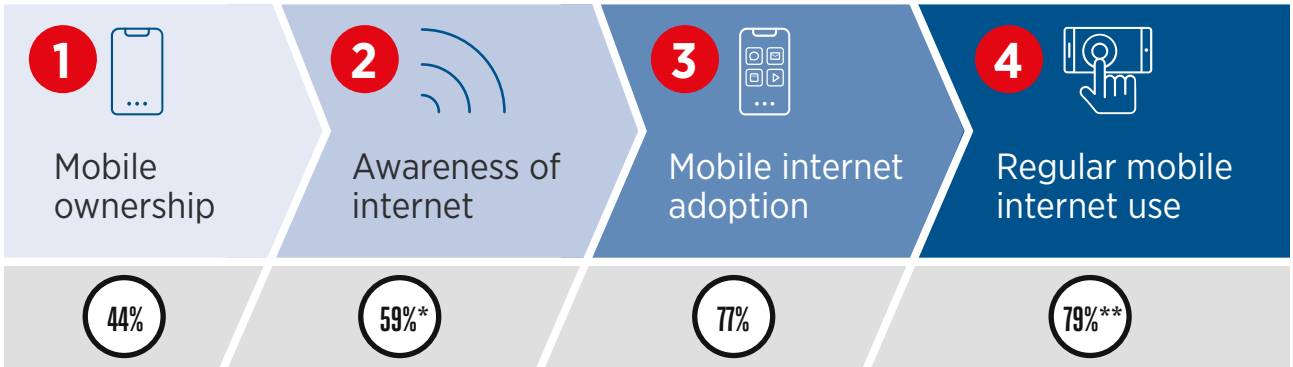
The mobile disability gap in Sri Lanka

There is a substantial mobile disability gap in Sri Lanka. According to our survey, respondents with disabilities were 44 per cent less likely to own a mobile phone than non-disabled respondents. This is in line with GSMA research conducted in other LMICs, including neighbouring countries in South Asia.[12]

To better understand the digital inclusion of persons with disabilities, the GSMA mobile internet user journey provides a useful framework to identify and compare levels of mobile adoption and use among persons with disabilities and non-disabled persons. The user journey consists of four stages: mobile phone ownership, including smartphones; awareness of the internet; adoption of mobile internet; and regular use of mobile internet services. As Figure 1 shows, the mobile disability gap widens as users progress along the user journey.

Figure 1

The mobile internet user journey



Base: Survey respondents 18+ years old. Respondents were asked if they owned a mobile phone. n=838 for persons with disabilities and n=612 for non-disabled persons.
* For awareness of the internet, respondents were asked, "Do you know what the internet is?"
** The gap in regular mobile internet use is the average disability gap in weekly use of mobile internet to search for information, use of instant messaging apps, social media apps, infotainment and apps for transportation services. Mobile money services were excluded due to small sample sizes for both persons with disabilities and non-disabled persons. Results are not nationally representative.

Mobile phone ownership among persons with disabilities

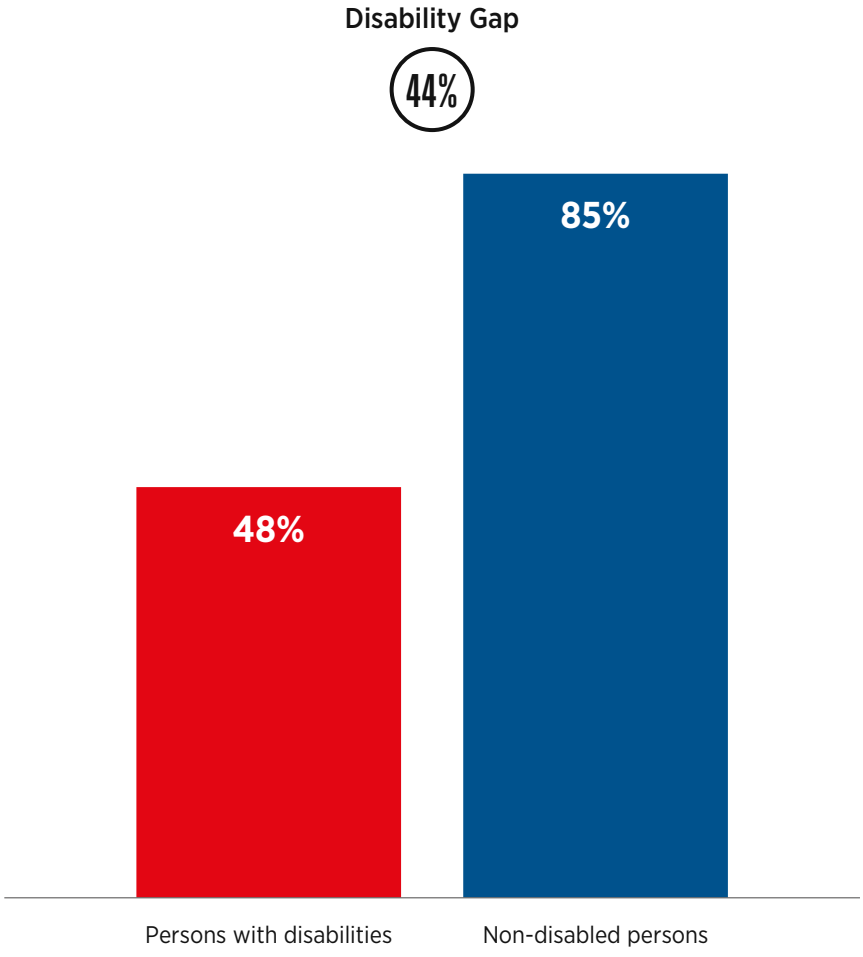
Less than half of respondents with disabilities own a mobile phone

Mobile is an important enabler of digital inclusion, but many people are still not reaping the benefits, especially persons with disabilities. As in many LMICs, there is a wide disability gap in mobile ownership in Sri Lanka where only around half of respondents with disabilities own a mobile phone compared to 85 per cent of non-disabled respondents. This difference results in persons with disabilities being 44 per cent less likely to own a mobile phone than non-disabled persons (Figure 2).

Figure 2

Mobile ownership among persons with disabilities and non-disabled persons

Percentage of the total population



Base: Survey respondents 18+ years old. Respondents were asked if they personally owned a mobile phone.
n=838 for persons with disabilities and n=612 for non-disabled persons

BOX 1

Persons with disabilities who are young, elderly, live in rural areas or are unemployed are even less likely to own a mobile

Globally, persons with disabilities tend to be discriminated against and do not have equal access to the same opportunities as non-disabled persons. These inequalities are exacerbated by other factors, such as employment, education, gender and age.[13] Women in particular can be affected negatively by gendered social norms that lead to lower mobile ownership levels.[14] This intersection of disability and other factors often affects people's access to mobile.

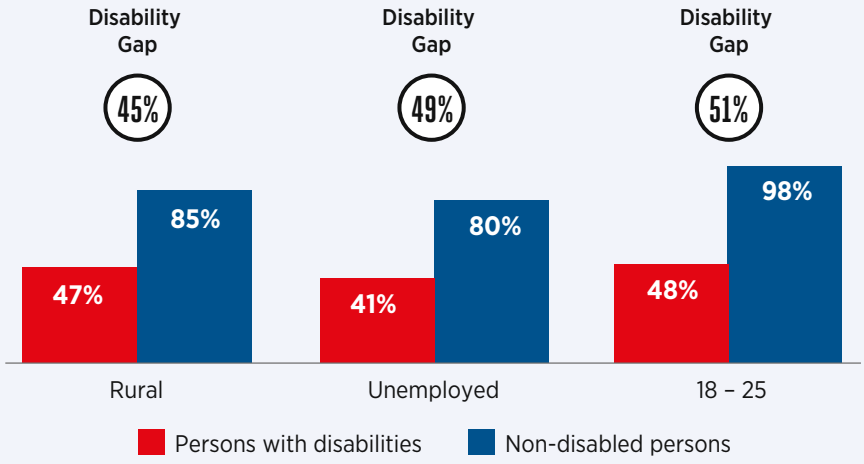
In Sri Lanka, 47 per cent of rural respondents with disabilities own a mobile phone compared to 85 per cent of non-disabled rural respondents. Similarly, respondents with disabilities who are unemployed are half as likely to own a mobile than non-disabled unemployed respondents, 80 per cent of whom are mobile owners.

Age is also a substantial factor affecting mobile ownership for persons with disabilities. Young, non-disabled respondents between the ages of 18 and 25 have the highest levels of mobile ownership by age, while young people with disabilities report substantially lower ownership levels (Figure 3). Young people with disabilities are 51 per cent less likely to own a mobile than non-disabled young people, the widest mobile disability gap by age group. Interestingly, for respondents with disabilities, mobile ownership levels increase for those aged 35 to 45, and decline significantly for those older than 45. By contrast, for non-disabled persons, mobile ownership declines gradually after the age of 25.

Figure 3

The disability gap in mobile ownership among different demographic groups

Percentage of the total population



Base: All survey respondents. Respondents were asked if they owned a mobile phone. n=457 for urban persons with disabilities; n=381 for rural persons with disabilities; n=313 for urban non-disabled persons; n=299 for rural non-disabled persons; n=656 for unemployed persons with disabilities; n=182 for employed persons with disabilities; n=341 for unemployed non-disabled persons; n=271 for employed persons with disabilities; n=96 for persons with disabilities aged 18–25; n=363 for persons with disabilities aged 25–55; n=379 for persons with disabilities aged 56 and over; n=107 for non-disabled persons aged 18–25; n=379 for non-disabled persons aged 25–55; and n=126 for non-disabled persons aged 56 and over.

Smartphone ownership can enable greater digital inclusion, but there is a wide disability gap

For persons with disabilities, owning a smartphone can be life changing as it offers important accessibility features and access to apps that enable them to use the internet autonomously. This includes screen readers, text magnifiers, sign language video content and object recognition. This section examines the mobile disability gap in smartphone ownership.

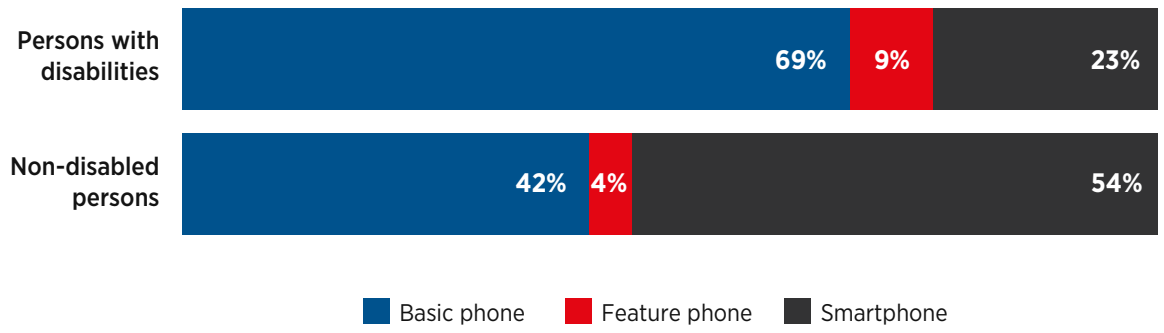
> ***"Now during the pandemic, the use of smartphones has become very useful and helpful. For example, I can stay in my own chair or bed and still communicate with the entire world. I do not have to take a three-wheeler and spend around 1,000 rupees to go to a meeting. I can do the meeting virtually on my phone. So, in that sense technology is actually more useful to persons with disabilities as it makes life easy for us."***
>
> – Expert stakeholder with disabilities, Sri Lanka

The disability gap in mobile ownership varies by handset type. As shown in Figure 4, a higher proportion of persons with disabilities own a basic mobile phone (69 per cent). Despite the potential that smartphones offer for persons with disabilities, only 23 per cent of mobile owners with disabilities own one, compared to 54 per cent of non-disabled mobile owners. This results in a wide disability gap in smartphone ownership: mobile owners with disabilities are 58 per cent less likely to own a smartphone than non-disabled persons. As societies become more digitised, addressing the gap in smartphone ownership is critical for the digital inclusion of persons with disabilities.

Figure 4

Handset ownership by type, among persons with disabilities and non-disabled persons

Percentage of mobile phone owners



Base: Respondents who own a mobile. n=391 for persons with disabilities and n=537 for non-disabled persons
Respondents were asked which type of mobile phone they owned. Respondents could have more than one answer (i.e., multiple phone owners), but were categorised by the most advanced device they owned and were only included in one category. Smartphone owners who also owned a basic or feature phone were counted only as smartphone owners.

BOX 2

The type of handset owned differs by type of disability

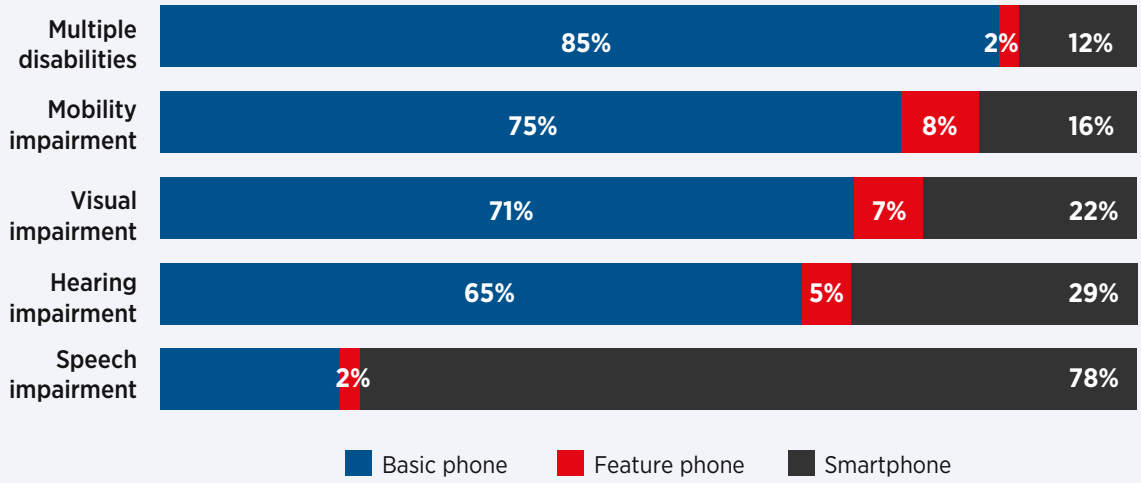
Around one in four mobile owners with disabilities own a smartphone. However, when disaggregated by disability type, a different pattern emerges (Figure 5).

Seventy-eight per cent of mobile owners with speech impairment own a smartphone[15] while only around 30 per cent of mobile owners with hearing impairment do. However, smartphone ownership is substantially lower for those with mobility impairment or multiple disabilities.

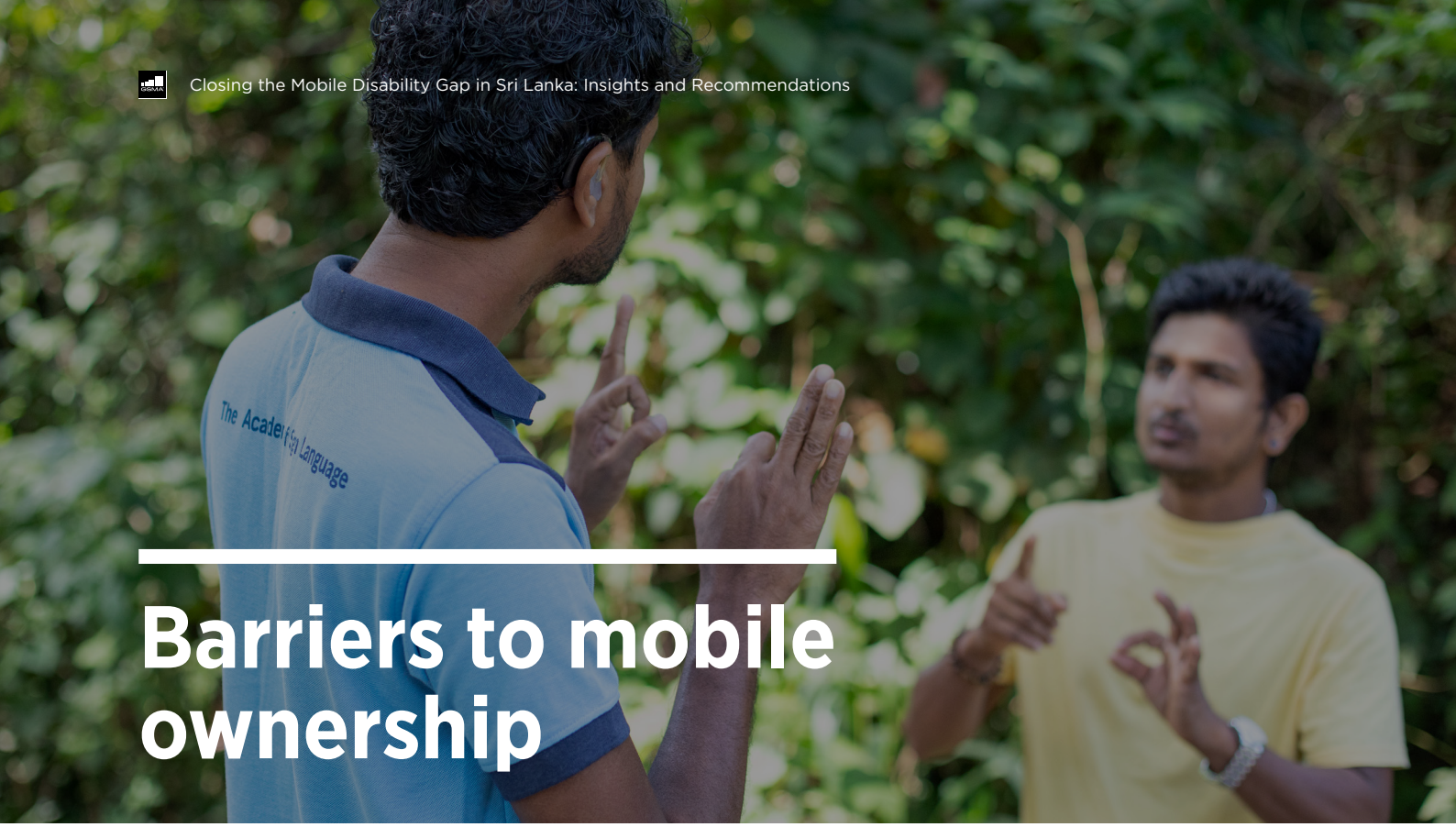
Figure 5

Types of handsets owned by mobile owners with disabilities

Percentage of mobile phone owners with disabilities



Base: Respondents who own a mobile phone. Respondents were asked which type of mobile phone they owned. Respondents could have more than one answer (i.e., multiple phone owner), but were categorised by the most advanced device they own and were only included in one category. Smartphone owners who also own a basic or feature phone were counted only as smartphone owners. n=146 for people with visual impairment; n=110 for people with hearing impairment; n=74 for people with speech impairment; n=182 for people with mobility impairment; n=170 for people with multiple disabilities.



Barriers to mobile ownership

Addressing the disability gap in mobile ownership is fundamental to ensuring equal access to digital technology for all. This requires understanding the barriers to ownership experienced by persons with disabilities. This section examines the factors limiting the ability of persons with disabilities and non-disabled persons to own a mobile phone.

The most frequently reported barrier to mobile ownership for persons with disabilities is that their condition limits their ability to use a phone, with 35 per cent reporting this (Figure 6). Given that awareness of accessibility features is low among persons with disabilities (see section on barriers to mobile use), it is perhaps not surprising that this is reported as a key barrier.

> ***"A key challenge is that most mobile phones and apps are designed for non-disabled persons. If mobile phones were more user-friendly, they could help persons with disabilities."***
>
> – Expert stakeholder, Sri Lanka

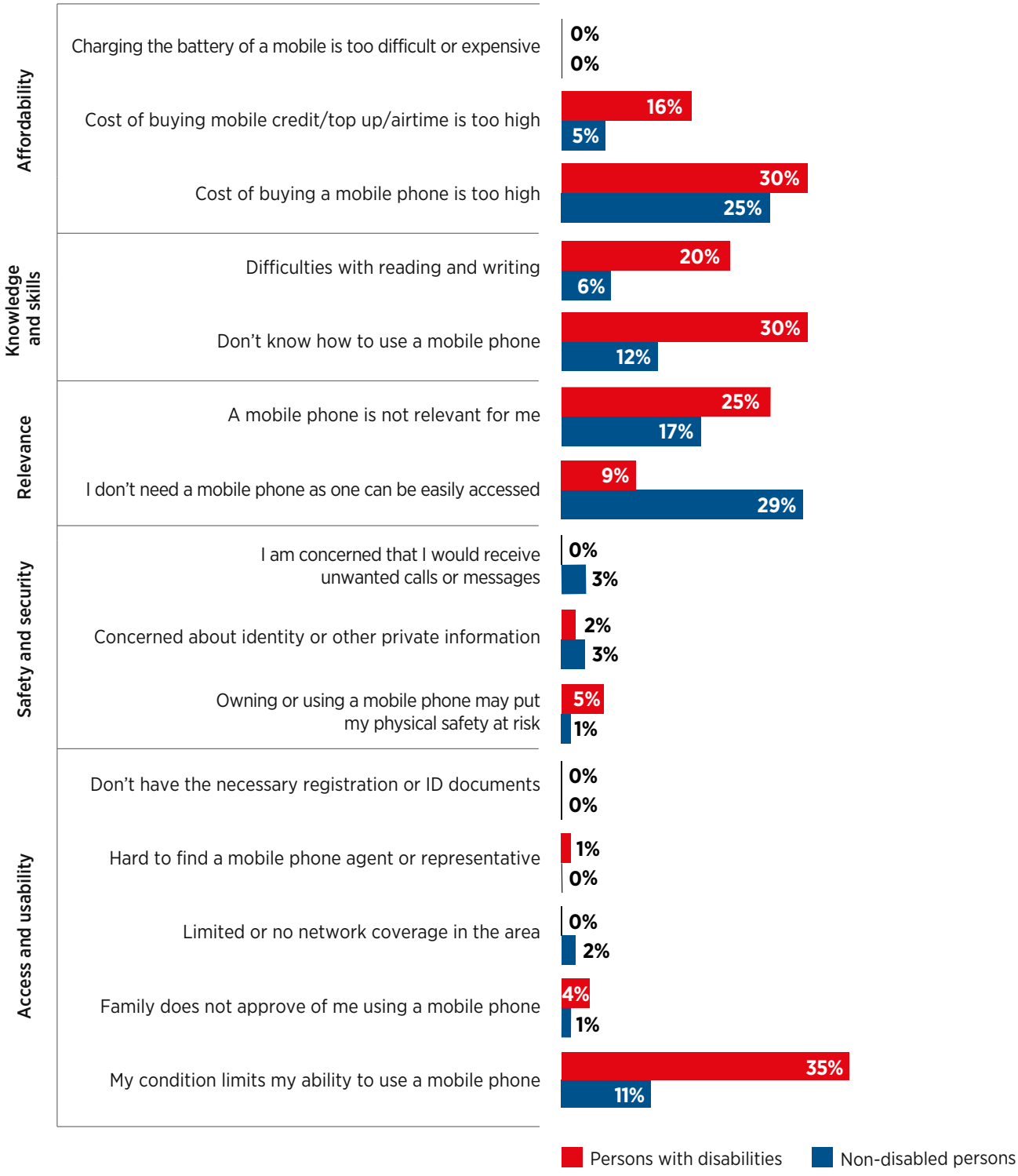
The cost of buying a mobile phone and not knowing how to use a mobile were the second most-reported barriers to mobile phone ownership among persons with disabilities (30 per cent for both). Persons with disabilities are more likely to require sophisticated handsets with accessibility features, which are also more expensive. A quarter of respondents thought that owning a mobile was not relevant for them personally. Given the statistics on discrimination in education for persons with disabilities, it is perhaps not surprising that 20 per cent also report difficulties with reading and writing as barrier to owning a mobile.

> ***"...[affordability is a barrier] because for a smartphone that is very accessible, fully accessible, the cost is high."***
>
> – Expert stakeholder, Sri Lanka

Figure 6

Barriers to mobile ownership among persons with disabilities and non-disabled persons

Percentage of respondents who do not own a mobile phone



Base: Survey respondents who do not own a mobile phone. Respondents were asked the reasons why they did not own a phone. n=447 for non-owners with disabilities and n=75 for non-disabled non-owners. Multiple responses were allowed.

BOX 3

Barriers to mobile ownership by disability type

Persons with disabilities have different technology needs depending on the disability type, which means that the barriers to ownership they experience also differ.

For instance, 49 per cent of persons with speech impairment and 39 per cent of persons with hearing impairment do not own a phone because they do not know how to use one. Difficulties with reading and writing are also a significant barrier for more than a third of persons with speech or hearing impairment.

Our analysis revealed that when disability data is disaggregated by type of impairment, it is more nuanced and provides a better understanding of the barriers to ownership for persons with different types of disability. It can also inform targeted interventions to address the mobile disability gap, such as digital skills training or innovative solutions for those with low or no literacy.

Figure 7

Barriers to mobile ownership by disability type

		Visual impairment	Hearing impairment	Speech impairment	Mobility impairment	Multiple disabilities
ACCESS AND USABILITY	My condition limits my ability to use a mobile phone	38%	42%	35%	35%	39%
AFFORDABILITY	Cost of buying a mobile phone is too high	26%	30%	25%	25%	31%
	Cost of buying mobile credit/ top up/airtime is too high	15%	16%	8%	13%	17%
KNOWLEDGE AND SKILLS	Don't know how to use a mobile phone	29%	39%	49%	24%	32%
	Difficulties with reading and writing	20%	33%	37%	15%	21%
RELEVANCE	A mobile phone is not relevant for me	24%	27%	20%	30%	25%

Base: Survey respondents who do not own a mobile phone. Respondents were asked the reasons why they did not own a phone. n=154 for people with visual impairment; n=158 for people with hearing impairment; n=177 for people with speech impairment; n=204 for people with mobility impairment; and n=279 for people with multiple disabilities.

Mobile internet adoption and use

Previous research by the GSMA has shown that in many LMICs, persons with disabilities are less likely to use mobile internet.[16] Similarly, this research in Sri Lanka has shown that persons with disabilities are less likely to use mobile internet than non-disabled persons.

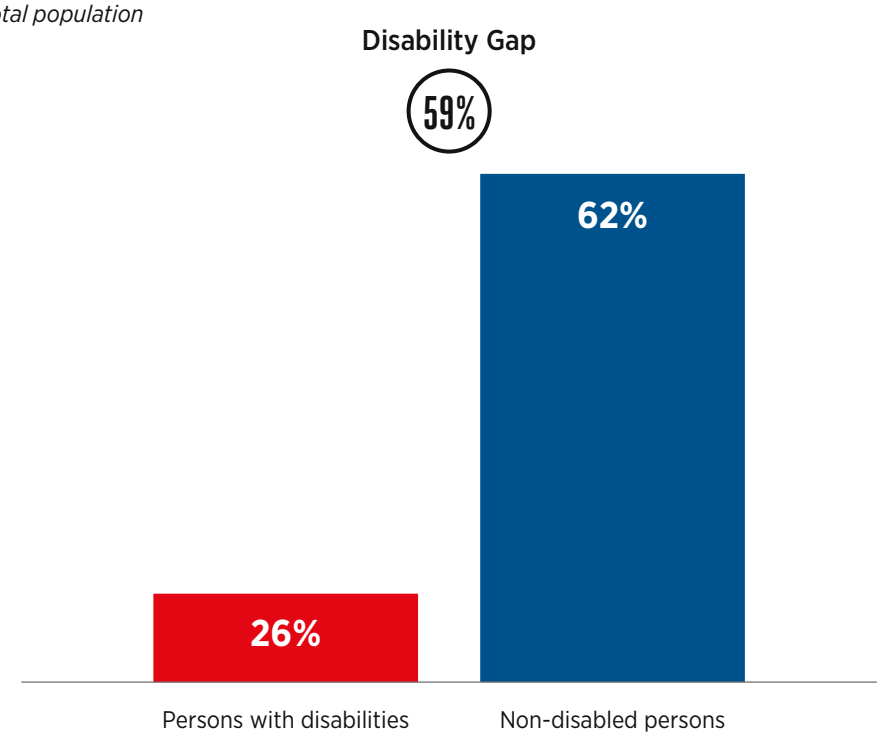
Persons with disabilities have low awareness of the internet

Awareness of the internet is a critical step in the mobile internet user journey. In this survey, persons with a disability were 59 per cent less likely to be aware of the internet than non-disabled persons. Almost three-quarters of persons with disabilities are not aware of the internet, which poses a significant barrier to digital inclusion in Sri Lanka (Figure 8).

Figure 8

Awareness of the internet among persons with disabilities and non-disabled persons

Percentage of total population



Base: All survey respondents. Respondents were asked if they know what the internet is. n=838 for persons with disabilities and n=612 for non-disabled persons.

Even fewer persons with disabilities use mobile internet

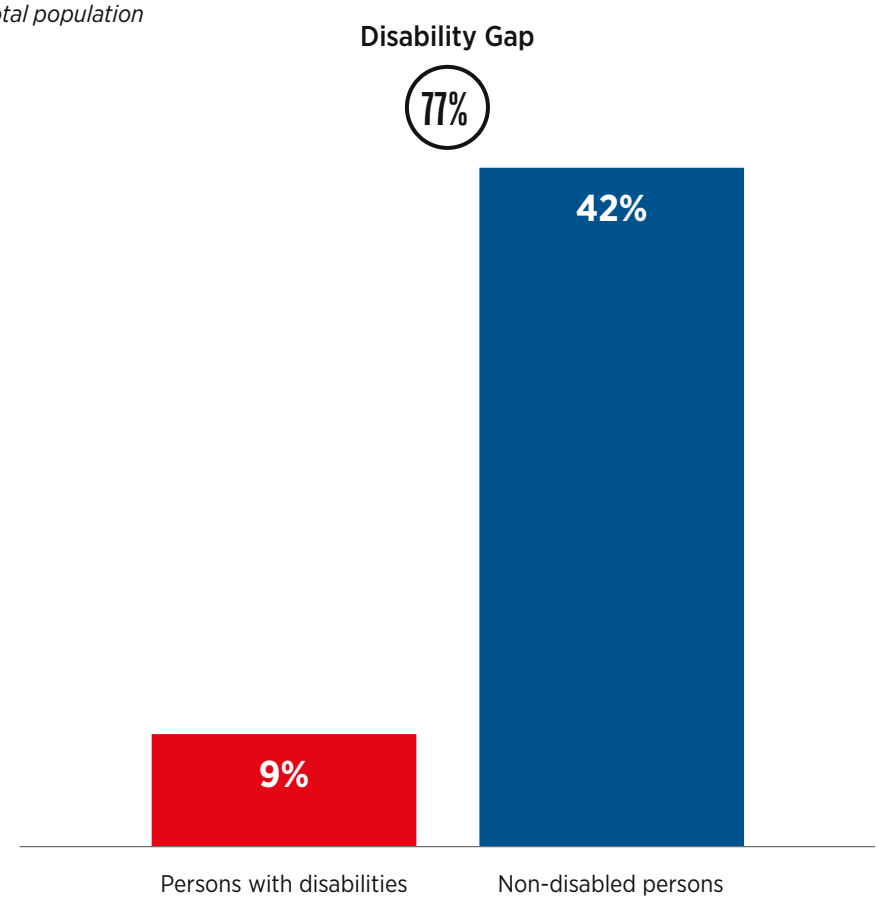
Given the awareness gap, it is perhaps not surprising that there is also a wide gap in mobile internet adoption. Only nine per cent of respondents with disabilities reported using mobile internet in the last three months, compared to 42 per cent of non-disabled respondents[17]. This means that persons with disabilities are 77 per cent less likely to use mobile internet than non-disabled persons (Figure 9). This was the largest mobile disability gap in this study.

Increasing mobile ownership is not enough to address the mobile disability gap. There also needs to be a substantial increase in awareness of the internet and targeted support for persons with disabilities to adopt mobile internet.

Figure 9

Mobile internet adoption among persons with disabilities and non-disabled persons

Percentage of total population



Base: All survey respondents. Respondents were asked if they have used internet on a mobile phone in the last three months. n=838 for persons with disabilities and n=612 for non-disabled persons.

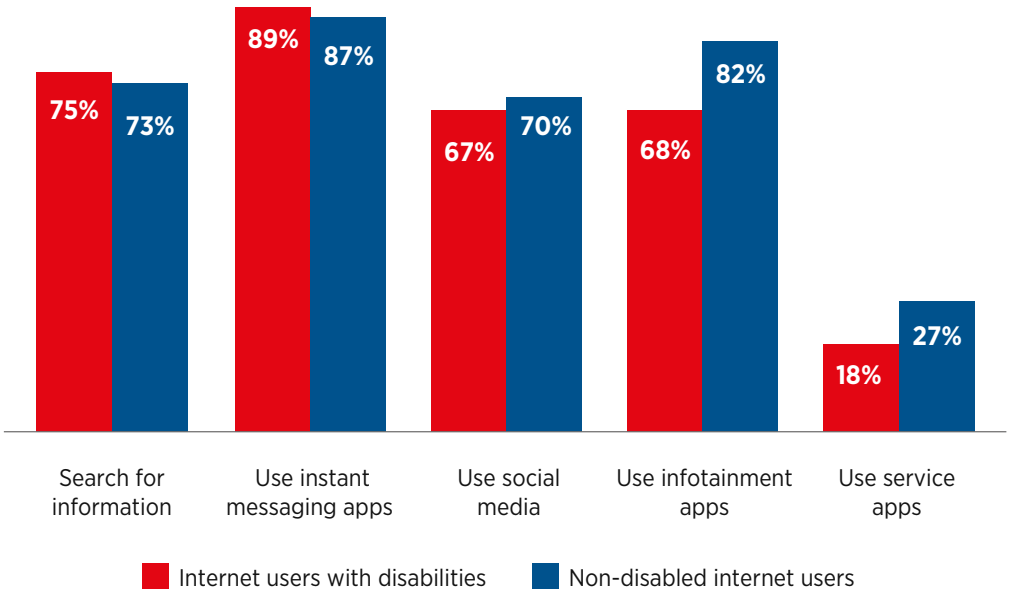
Among mobile internet users, persons with disabilities have similar usage

Encouragingly, the survey found that when a person with disabilities uses mobile internet, their weekly usage is comparable to, or higher than, that of non-disabled persons (Figure 10). These results are consistent with research findings in other LMICs.[18] Addressing the barriers that persons with disabilities face to mobile internet adoption has the potential to unlock significant social and commercial benefits.

Figure 10

Proportion of mobile internet users with disabilities and non-disabled mobile internet users who use internet-enabled services at least once a week

Percentage of mobile internet users using internet-enabled services once a week



Base: Respondents who use mobile internet. n=116 for persons with disabilities and n=290 for non-disabled persons. Respondents were asked if they have used internet on a mobile phone in the last three months. They were also asked how often they use the internet to search for information (visit websites/pages using Safari, Google Chrome, Mozilla, etc. – not an app), use instant messaging apps to communicate (WhatsApp, Facebook Messenger, Viber, etc.), use social networking/social media apps (Facebook, Twitter, LinkedIn, Instagram, TikTok, etc.), use infotainment apps that allow them to read the news, play games, watch videos, etc. (YouTube, news apps, gaming apps, etc.) or use apps that allow them to book transport, access maps, timetables, traffic information, etc. (Uber, PickMe, Google Maps, etc.).

Barriers to mobile use

It is important that everyone can access and use mobile content, products and services, including persons with disabilities. Inaccessible mobile services can inadvertently exclude persons with disabilities who may be disempowered if they cannot use services independently.

Internet users with disabilities find services less accessible than non-disabled users

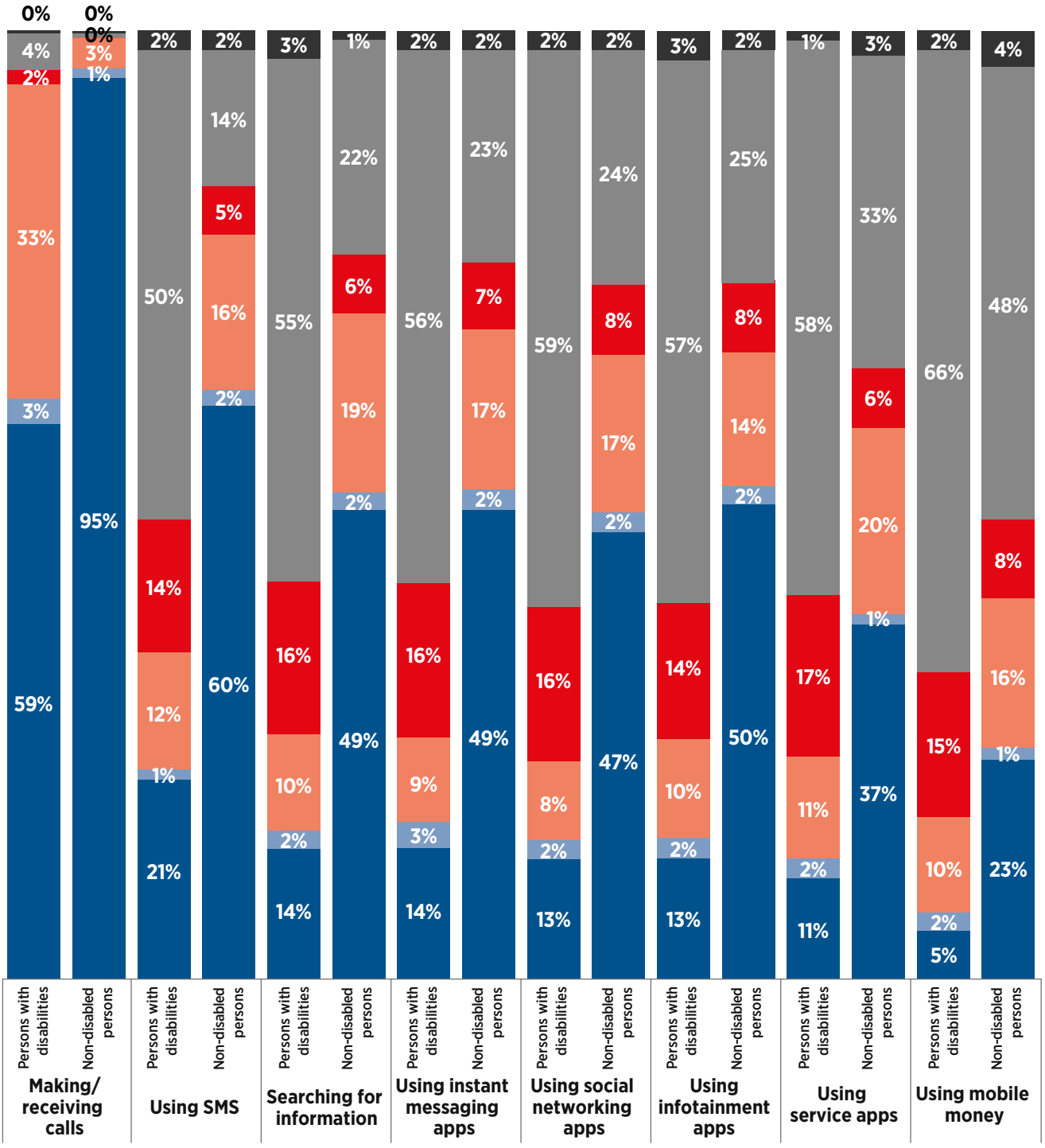
In this study, survey participants were asked if they were able to use different mobile services autonomously. This means being able to use a service without assistance from someone or a specific product or technology. Aside from making and receiving calls, autonomous use is low for persons with disabilities. For example, only 21 per cent of persons with disabilities reported that they can use SMS autonomously compared to 60 per cent of non-disabled respondents and only 14 per cent reported they can use instant messaging apps autonomously compared to 49 percent of non-disabled respondents. In fact, across all mobile-internet related services covered, fewer than 15 per cent of persons with disabilities reported that they can use these services autonomously. Both persons with disabilities and non-disabled persons report lower levels of autonomous use of mobile money.

In addition, very few persons with disabilities report using a product or technology to assist them to use a service (ranging from one to three per cent), which may be linked to low awareness of accessibility features. The high number of persons with disabilities who responded that they "do not know" if they can use these services autonomously highlights that the majority of persons with disabilities are not using them or are missing out on some of the key benefits of mobile (Figure 11). For example, using social media to connect with family and friends or using the internet or apps to access important information or health advice. These findings suggest that in addition to disability-specific accessibility challenges, there may be barriers relating to awareness and understanding of the services, as well as digital skills for using them. Although these barriers may also affect some non-disabled mobile users, they disproportionately affect persons with disabilities.

Figure 11

Autonomous use of mobile-enabled services

Percentage of respondents who own a mobile phone or have access to one



Base: Respondents who own or have access to a mobile phone. n=597 for persons with disabilities and n=595 for non-disabled persons. For different services, participants were asked how autonomously they could use each one.

Awareness and use of accessibility features are low among persons with disabilities

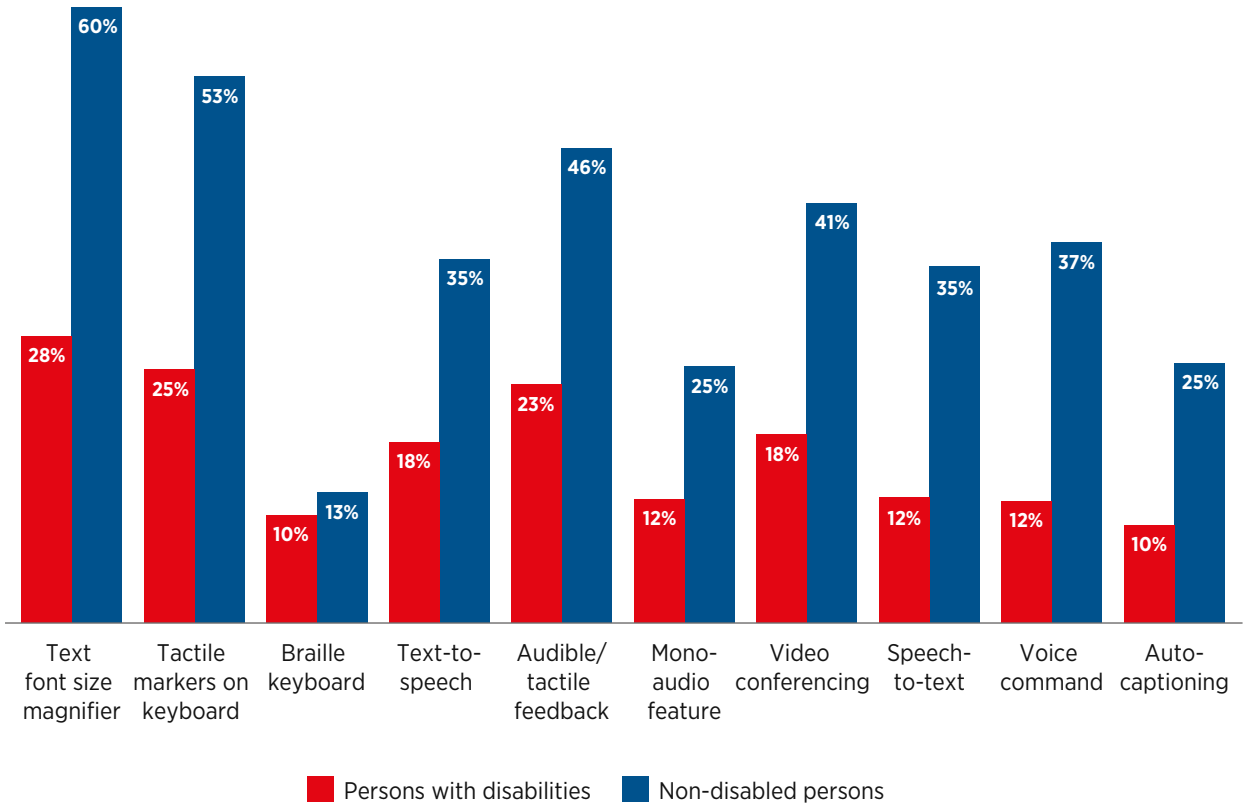
Accessibility features are important for increasing access and use of digital technologies among persons with disabilities. Accessibility features not only benefit persons with disabilities, but also others such as the elderly and those with low or no literacy.[19] However, previous studies by the GSMA have shown that awareness of the accessibility features on mobile phones and knowledge of how to use them are low among persons with disabilities in some LMICs.[20] Our data suggests this is also the case in Sri Lanka.

Awareness of accessibility features among persons with disabilities is low. When asked about their knowledge of different accessibility features on a mobile, persons with disabilities were much less likely to be aware of them than non-disabled persons. Those accessibility features where awareness among persons with disabilities was highest was the text font size magnifier which 28 per cent of persons with disabilities indicated they were aware of and tactile markers on keyboards and audible and tactile feedback which around a quarter reported awareness of. Only 18 per cent of respondents with disabilities knew about text-to-speech technology and video conferencing that allows the use of sign language for communication (e.g., video calls using WhatsApp or Zoom).

Figure 12

Awareness of accessibility features among mobile users with disabilities and non-disabled users

Percentage of mobile users



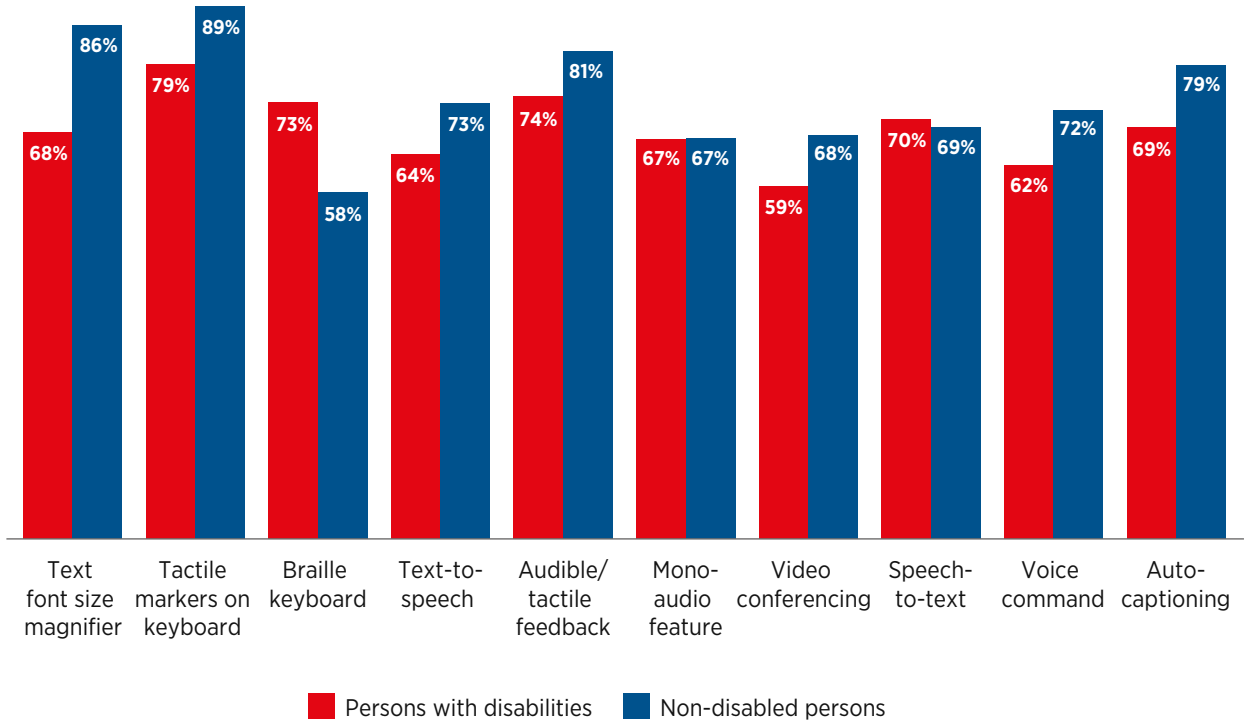
Base: Respondents who own or have access to a mobile phone. Respondents were asked if they were aware of different accessibility features in mobile phones. n=597 for mobile users with disabilities and n= 595 for non-disabled mobile users.

It is important to note that once persons with disabilities are aware of accessibility features, usage is high, suggesting that awareness is the main barrier. Figure 13 shows that more than half of mobile users with disabilities who are aware of accessibility features report using them. Tactile markers on keyboards, audible and tactile feedback, speech-to-text and braille keyboards are used by most accessibility-aware mobile owners. Tackling the mobile disability gap will require raising awareness of these accessibility features, which make mobiles easier to use for many persons with disabilities. Interestingly, a high number of non-disabled persons also make use of accessibility features; more than 75% reported using the text font magnifier, tactile markers on keyboard, audible or tactile feedback and auto-captioning on calls or video platforms. This demonstrates the value of built-in accessibility features for all mobile users.

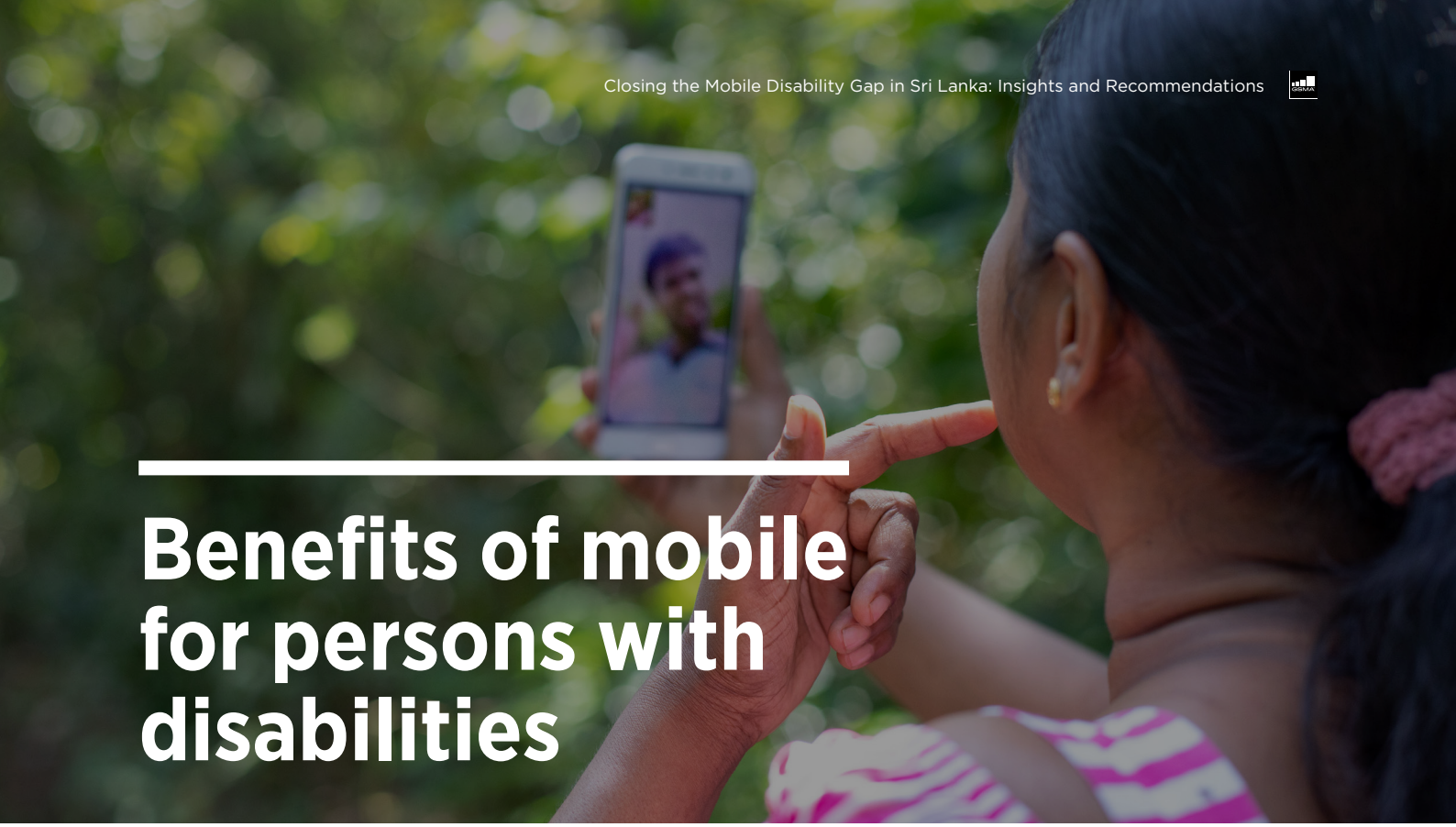
Figure 13

Use of accessibility features by mobile users with disabilities and non-disabled users who are aware of them

Percentage of mobile users that are aware of each accessibility feature



Base: Respondents with disabilities who are aware of accessibility features. n=63 to 214 for persons with disabilities and n=89 to 386 for non-disabled persons. Respondents were asked if they were aware of and used various accessibility features on mobile phones.



Benefits of mobile for persons with disabilities

Mobile phones can help people meet their needs, goals and aspirations by providing access to useful information and services. This section outlines how persons with disabilities in Sri Lanka perceive the benefits of mobile in their daily lives. This evidence can be used to inform the design of products and services that better meet the needs of users with disabilities.

Mobile phones help persons with disabilities carry out a range of activities, although to a lesser extent than non-disabled persons

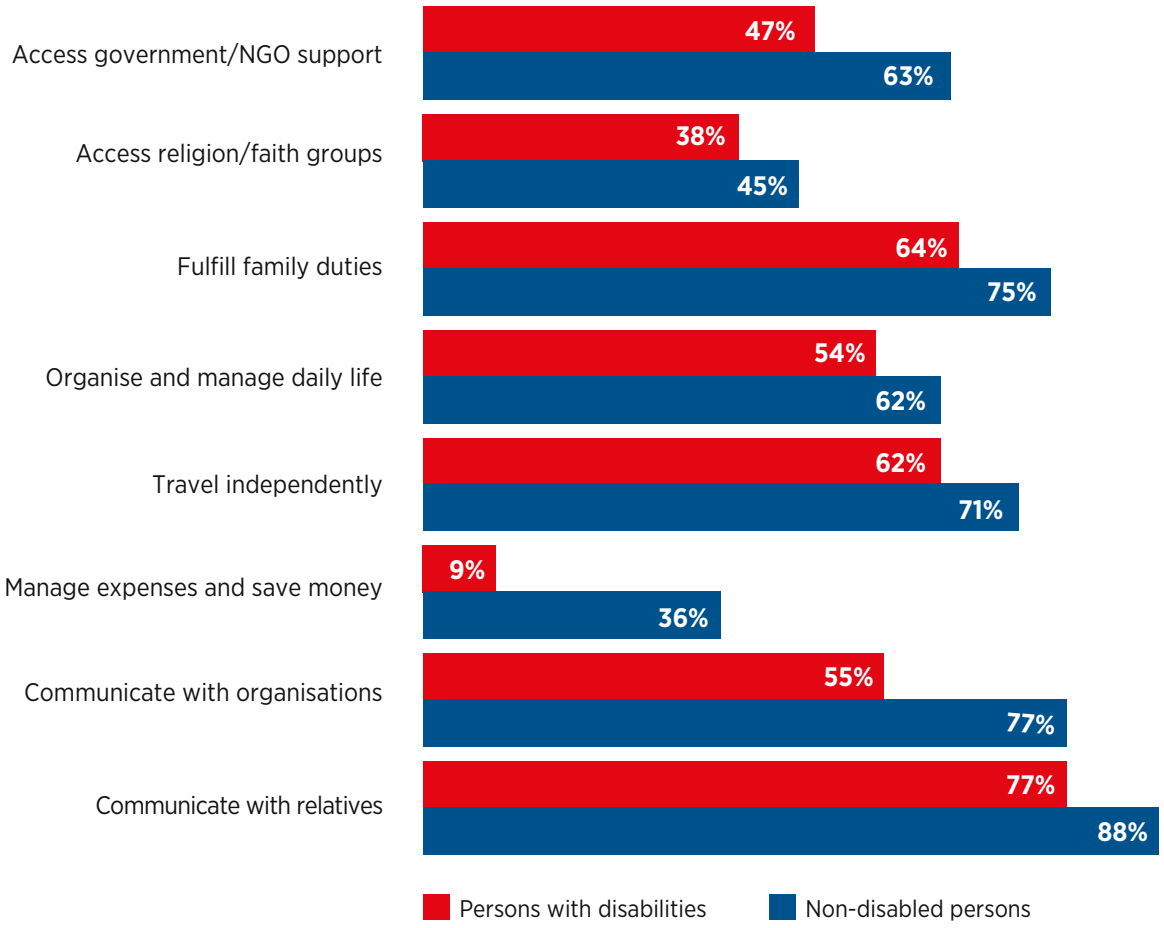
Across all survey categories, non-disabled persons perceived more benefits to using mobile than persons with disabilities (Figure 14). However, a significant proportion of persons with disabilities reported that mobile was important in carrying out a range of activities. In fact, more than half of all mobile users with disabilities reported that mobile supported their daily lives by enabling them to communicate, fulfil family duties, travel independently, and organise and manage their day.

The greatest difference in perceptions between persons with disabilities and non-disabled persons was the benefit of using mobile to manage money, which was rated the lowest of all categories by persons with disabilities. This indicates a missed opportunity for persons with disabilities to use mobile-enabled financial services and warrants further research to understand why.

Figure 14

Percentage of persons with disabilities and non-disabled persons who perceive mobile as important in supporting different activities

Percentage of mobile users



Base: Survey respondents who own or have access to a mobile phone. Respondents were asked about the importance of mobile in carrying out different activities. The chart includes individuals who responded that without mobile they would not be able to do the task, or that they could do it without a mobile, but it would be less convenient. n=597 for persons with disabilities and n=595 for non-disabled persons.

Fewer persons with disabilities perceive mobile as a helpful tool to access important services

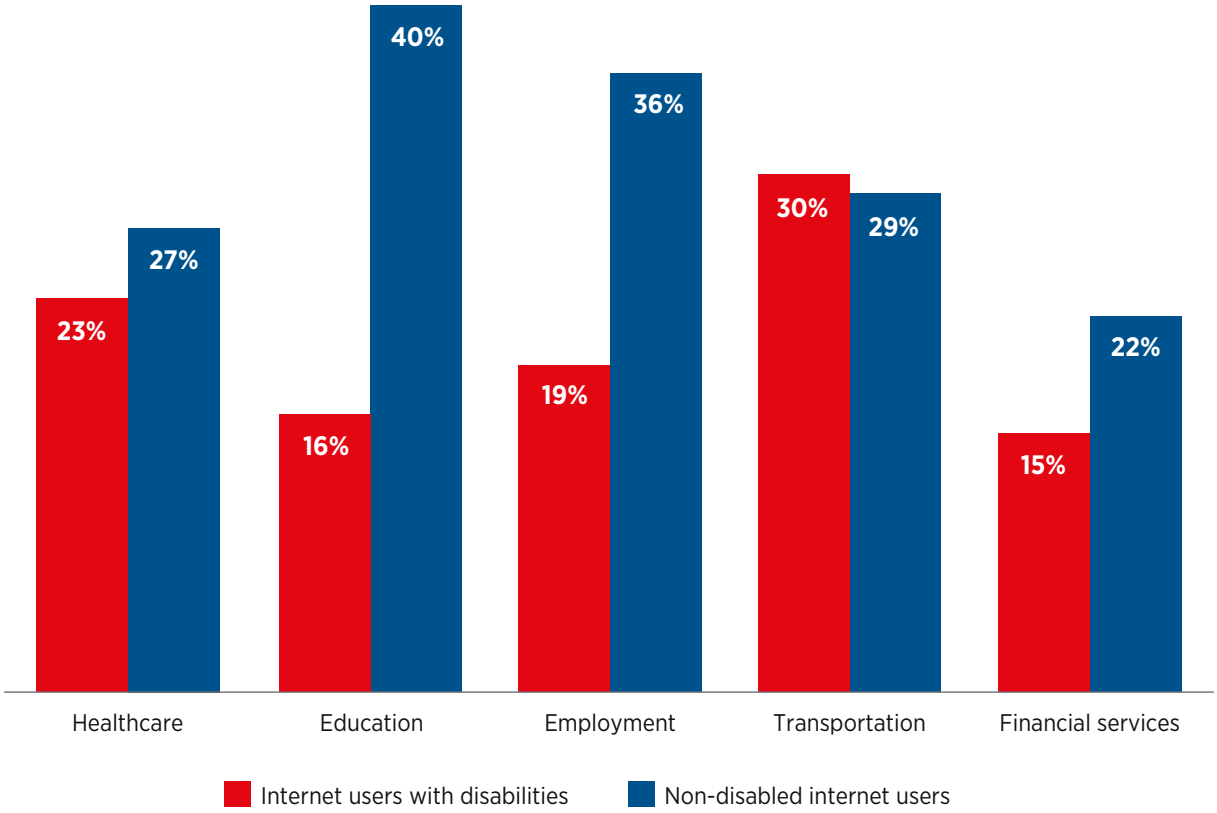
The digitisation of services, including public services, accelerated during the COVID-19 pandemic.[21] In Sri Lanka, while many respondents perceived mobile as helpful in accessing important services, fewer respondents with disabilities agreed. This difference in perception was especially striking for access to education and employment. This suggests that non-disabled persons were able to leverage mobile to access these services during lockdowns and social distancing restrictions to a much greater extent than persons with disabilities (Figure 15).

This is important because it highlights how the transition to digital can further marginalise persons with disabilities. As outlined in the introduction, persons with disabilities in Sri Lanka are already significantly disadvantaged in terms of access to education and income-generating opportunities. Unless these barriers to access are addressed and persons with disabilities become more aware of digital services and how to use them, digital solutions risk inadvertently entrenching inequitable access.

Figure 15

Percentage of persons with disabilities and non-disabled persons who perceive mobile as very helpful in accessing basic services

Percentage of mobile users



Base: Survey respondents who own or have access to a mobile phone. Respondents were asked to rate from 1 (not helping at all) to 3 (helping very much) to what extent mobile phones are helping them access basic services. The chart represents respondents answering "helping very much". n=597 for persons with disabilities and n=595 for non-disabled persons.

Recommendations

This research has provided evidence of a mobile disability gap, barriers to mobile ownership and the use and perceived benefits of mobile use among persons with disabilities in Sri Lanka. The findings highlight that persons with disabilities are at a disadvantage at every stage of the mobile user journey. However, when data is disaggregated by disability type, it becomes clear that persons with disabilities are not a homogeneous group and that their technology needs and access to mobile vary. A nuanced analysis of the use of mobile products and services provides important insights into how to address the disability gap more effectively. Most importantly, the research highlights the significant social and commercial opportunity of greater digital inclusion. When persons with disabilities use mobile internet, they do so at similar or even greater levels as non-disabled persons.

Several stakeholders have critical roles to play in closing the mobile disability gap and ensuring digital inclusion for all. These include policymakers, international organisations, NGOs, organisations for persons with disabilities (OPDs), mobile network operators (MNOs), device manufacturers and ecosystem players, such as start-ups.

The following are recommendations for these stakeholders to address the mobile disability gap in Sri Lanka and in other contexts where there are gaps and similar barriers for persons with disabilities:

- **Collect data to understand the requirements, barriers and views of persons with disabilities and design relevant and accessible products and services.**

  Accurate disability-disaggregated data, including data disaggregated by disability type, is crucial for stakeholders to address the mobile disability gap because it creates a better understanding of the needs of persons with different disabilities and the barriers they face to digital inclusion. However, in Sri Lanka and many other LMICs, disability-disaggregated data on the access and use of mobile-enabled products and services is still lacking. This report is a first step in providing mobile related disability disaggregated data.

  It is critical that stakeholders from both the public and private sectors invest in and collaborate on accurate, ethical and effective data collection. Such data, disaggregated by disability type, will enable the design and innovation of products and services tailored to different types of disabilities.

- **Collaborate to raise awareness of mobile phones and mobile internet and its benefits for persons with disabilities.**

  Mobile internet can enable persons with disabilities to live independent lives. However, the data from Sri Lanka shows that awareness of mobile internet is low among persons with disabilities, which limits uptake and use. To unlock this potential, MNOs should collaborate with Organisations for Persons with Disabilities (OPDs) and other relevant stakeholders on marketing and targeted campaigns to raise awareness among persons with disabilities about mobile solutions, such as apps and accessibility features available on handsets. These marketing campaigns should feature persons with disabilities, to position them as valued consumers of mobile services.

- **Build the digital skills of persons with disabilities, including the use of mobile phones and accessibility features.**

  One of the main barriers identified in this research by persons with disabilities was the lack of knowledge and skills to use mobile phones and mobile internet, and the perception that their disability makes it more difficult to use mobile products and services. Digital skills training on the use of mobile products, services and accessibility features can help address these barriers.

  Stakeholders can deliver mobile digital skills programmes that train persons with disabilities (and their caregivers/ relatives) to use mobile internet safely to meet their own and their family's needs. MNOs can also explore partnerships with OPDs or other organisations that are already reaching persons with disabilities. Together, they can teach persons with disabilities how to access and use accessibility features and mobile-enabled products and services. Training facilities should be accessible for persons with disabilities. Stakeholders can also take advantage of existing training resources and content for digital skills initiatives, such as the GSMA's Mobile Internet Skills Training Toolkit (MISTT), which includes a module on accessibility features.[22]

- **Ensure smartphones are affordable for persons with disabilities.**

  Smartphones typically provide the most accessibility features and drive substantially higher mobile internet use, but persons with disabilities often report that smartphones are not affordable. To address this barrier, it is important that stakeholders consider how to make smartphones more affordable for persons with disabilities, for example, by providing innovative financing models, creating partnerships to offer smartphones with accessibility features at a lower cost or rolling out accessible "data-light" versions of accessible mobile apps.

A more detailed set of recommendations for the mobile industry can be found in the GSMA Principles for Driving the Digital Inclusion of Persons with Disabilities.[23]

Appendix

Detailed methodology

Qualitative methodology: Stakeholder interviews

A total of 22 semi-structured interviews were conducted with key informants, including MNOs; government bodies in charge of providing basic services to persons with disabilities; tech players in the country active in disability inclusion; and OPDs. These interviews were conducted virtually from December 2020 to February 2021. The interviews lasted an average of 60 minutes.

Table 1

Stakeholder interview sample

Category	No of Interviews
Government Organisations	5
Mobile Network Operators	3
Other tech players	4
Organisations for persons with disabilities	4
Non-Governmental Organisations	6
TOTAL	**22**

Data analysis

Data collected from stakeholder interviews was recorded with the consent of respondents. Verbatim transcripts of the recorded interviews were compiled for analysis. The research team used inductive thematic coding for qualitative data analysis. A coding scheme was developed based on the research objectives and the relevant salient themes emerged from the transcripts. However, several codes were predetermined based on a literature review. The analysts examined the evidence that supported each of them by qualitatively considering the context of the codes. All transcripts were analysed using Atlas.ti software.

Quantitative methodology: Survey research

The original study design and methodology was designed by LIRNEasia in August 2020. It aimed to ensure national representation of persons with disabilities in Sri Lanka, based on a survey design previously conducted in 2019. Unfortunately, due to Sri Lanka's second wave of infections during the COVID-19 pandemic in September 2020, the original methodology was not feasible. Since the safety of respondents, field staff and all involved was a priority, compromises on design had to be made to ensure the data was collected within the project timelines.

Sampling

The primary sampling unit (PSU) was the Grama Niladhari Division (GN), which is the smallest administrative division in Sri Lanka as per official administrative demarcations. The sample frame used was the most recent population data available from the Department of Census and Statistics of Sri Lanka.[24] The sample frame was split into urban and rural GNs, and sampling was carried out for each stratum using the probability proportionate to size (PPS) technique. The selected GNs were strictly adhered to and not replaced unless there were valid reasons to do so, such as localised quarantines, lockdowns or other.

Sample size

A sample size of 800 persons with disabilities and 600 non-disabled persons was chosen for the study. The distribution of persons with disabilities among the four disability types included in the study were based on quotas shown in Table 2.

These quotas were applied to ensure a sufficient number of each disability type was included in the sample for statistical analysis. The distribution of GNs selected for the survey by household size is shown in Table 3.

Table 2

Sample composition

Sample segment	Proposed sample size	Achieved sample
Persons with disabilities sample	**800**	**838**
Visually impaired (V1)	200	300
Hearing impaired (HI)	200	268
Speaking impaired (SI)	200	251
Mobility impaired (MI)	200	386
Non-disabled persons sample	**600**	**612**
TOTAL		**1,450**

Note: Final sample sizes for each impairment type do not add up to 838 due to multiple impairments.

Table 3

Number of households by GN in the sample

	GN size by number of households				
	<300	**300-500**	**500-1500**	**>1500**	**Total**
Urban	4	4	32	10	50
Rural	22	14	13	1	50
TOTAL	**26**	**18**	**45**	**11**	**100**[25]

Data collection

In the original proposed study design, we planned to conduct a listing exercise to identify persons with disabilities and randomly select persons with disabilities and households to identify non-disabled persons in randomly selected GN divisions. However, pilot tests conducted by LIRNEasia and the field team indicated that listing a segment in randomly selected GN divisions would not be possible as listing the households would result in widespread refusal of cases and many sample GNs would likely have to be replaced. Therefore, slightly modified methodologies were used to select persons with disabilities and non-disabled persons. The data collection was done in different stages.

- **Identifying respondents with disabilities in selected GN divisions.** A few different approaches were used to identify persons with disabilities in randomly selected GN divisions. The research team approached Grama Niladhari officers and Divisional secretariat offices to obtain a list of persons with disabilities living in the selected GNs. The field team encountered some issues,[26] but managed to obtain about 60 lists. These lists had many biases and other issues.[27] Since there were not enough persons with disabilities on the lists to select for the survey (mainly for visual, hearing and speaking impairments), snowballing and other convenient sampling techniques were used to find persons with disabilities to match the quotas set by the design. This introduced some further biases to the sample. Even with the snowballing techniques the field team still could not find the required number of persons with disabilities who had visual, hearing and speaking impairments in certain GN divisions. In those instances, the field team was permitted to go to adjacent GNs to find the required number of persons with disabilities. All respondents had visual, hearing and speaking impairments and two mobility-impaired respondents per GN were selected randomly from those 60 lists. Persons with disabilities selected in the third stage were interviewed (with the help of a household member if needed) during the survey. The interview was conducted using computer-assisted personal interviewing (CAPI) devices.

- **Identifying and selecting non-disabled persons in selected GN divisions.** A random starting point was selected using Google Maps to identify the first sample persons-without-disabilities household in a selected GN. The GPS coordinates were sent to the relevant enumerators and supervisors. The enumerator selected the closest household to the random GPS point provided by the research team. Then, the enumerators selected every twentieth household using the right-hand rule until they enumerated six households per randomly selected GN. After selecting the households, a short interview was conducted with the household head or a suitable alternative to obtain household-level information. All household members aged 18 and over were listed in a household roster and one respondent was randomly selected using the CAPI device for the interview. Similar to interviews with persons with disabilities, they were conducted using CAPI devices.

Weighting

The data was weighted using 2011 Sri Lanka population and housing data. Weighting techniques using selection probabilities could not be used due to the changes made to the original study design. The two datasets were weighted using slightly different techniques.

The dataset of persons with disabilities was weighted using 2011 Sri Lanka national population census data on disability. The purpose of the weighting was to correct for the oversampling of the urban PSUs and disability type quotas set at the design stage. The data set was weighted only for urbanity, gender and disability types using rake weights, using the 2011 Sri Lanka national population census data. This was the most granular level of census data on disability for Sri Lanka. This weighting will only correct for the marginal totals at above-mentioned levels.

The non-disabled persons dataset was weighted using sample weights derived from selection probabilities. The weighting was mainly used to correct for the oversampling of urban PSUs in the design.

Even though the dataset is weighted, that does not make the sample data set representative of either the population of persons with disabilities or persons without a disability in Sri Lanka.

Survey deployment

Pilot testing of the questionnaire and enumerator training

The translated questionnaire was pilot tested among a total of two persons with disabilities and five non-disabled respondents in a GN division in the Galle area. The pilot test was conducted in the Sinhala language using tablet-based questionnaires (i.e., CAPI). The fieldwork was conducted by field staff who had undergone training in basic code of conduct of field personnel and the CAPI system, specific to the research instruments (questionnaire, screener, listing questionnaire, etc.) used in the survey. This was a full-day online training programme.

Study limitations

This research has some limitations due to the methodology design. Since it focused on four types of disabilities – visual impairment (VI), hearing impairment (HI), speaking impairment (SI) and mobility impairment (MI) – analysis of the different disability groups were limited to one level of tabulation. Some interviews were conducted by proxy (11 per cent) and others with the support of someone else (36 per cent). This was only to support the communication of responses and not to respond on the respondent's behalf. In those cases, certain biases may be introduced at the expense of including persons with disabilities in the sample. Since the survey was conducted during a pandemic, additional biases were introduced (e.g., due to higher-than-normal levels of refusal, non-response and non-completion, as well as perceptions of well-being being affected by the pandemic, etc.).

Limitations

Conducting research during the COVID-19 pandemic created numerous challenges, which resulted in the research not being nationally representative. Therefore, the findings in this report represent the views of survey respondents only. A list of persons with disabilities provided by Grama Niladhari (GN) officers[28] and Divisional Secretariat Offices was used to identify persons with disabilities, but this included only those receiving social welfare support from the government. To prevent the sample from being skewed heavily to poorer households, additional persons with disabilities were identified through non-probabilistic convenience sampling. However, this introduced additional interviewer bias to the dataset. It should also be noted that the sample of persons with disabilities represents an older demographic. Forty-seven per cent were over 55 years old (of which 30 per cent were over 65 years old) compared to 21 per cent for non-disabled respondents. While efforts were made to design an inclusive approach, only participants who could provide informed consent were included, which meant persons with severe cognitive impairment were excluded from the research.

Endnotes

1. World Health Organization (WHO). (24 November 2021). *"Disability and health"*.
2. The Washington Group is a United Nations Statistics Commission City Group that aims to develop methods to improve statistics on persons with disabilities globally. It is comprised of representatives of national statistical offices with input from other UN agencies, international agencies, OPDs and researchers. The Short Set of Questions can be accessed at: https://www.washingtongroup-disability.com/question-sets/wg-short-set-on-functioning-wg-ss/
3. WHO. (24 November 2021). *"Disability and health"*.
4. GSMA. (2021). *The Mobile Disability Gap Report 2021*.
5. Department of Census and Statistics – Sri Lanka. (2012). *Census of Population and Housing 2012*.
6. Disability Organizations Joint Front. (2017). *UN Universal Periodic Review – Sri Lanka 2017*.
7. World Health Organisation (2018) https://www.who.int/news-room/fact-sheets/detail/assistive-technology
8. Savage, M. et al. (2020). *Product Narratives: Digital Assistive Technology*. AT2030 programme & ATscale Global Partnership for Assistive Technology.
9. GSMA. (2021). *The Mobile Disability Gap Report 2021*.
10. LirneAsia (2020). *ICT Access and Use by Persons with Disabilities (PWD) in Sri Lanka* (Presentation).
11. Ibid.
12. GSMA. (2021). *The Mobile Disability Gap Report 2021*.
13. United Nations Department of Economic and Social Affairs. (2018). *Disability and Development Report*.
14. GSMA. (2021). *The Mobile Gender Gap Report 2021*.
15. Note low base (n=74)
16. GSMA. (2021). *The Mobile Disability Gap Report 2021*; GSMA. (2019). *Understanding the mobile disability gap*.
17. As a comparison, internet use via any means, was 14 per cent for persons with disabilities and 49 per cent for non-disabled persons.
18. GSMA. (2021). *The Mobile Disability Gap Report 2021*; GSMA. (2019). *Understanding the mobile disability gap*.
19. W3C. (2021). *Mobile Accessibility at W3C*.
20. GSMA. (2019). *Understanding the mobile disability gap: Insights on mobile phone access and usage by persons with disabilities in Kenya and Bangladesh*.
21. OECD. (2020). *Digital Transformation in the Age of COVID-19: Building Resilience and Bridging Divides – Digital Economy Outlook 2020 Supplement*.
22. GSMA Mobile Internet Skills Training Toolkit (MISTT): https://www.gsma.com/mobilefordevelopment/mistt.
23. GSMA. (2020). *Principles for Driving the Digital Inclusion of Persons with Disabilities (the "Principles")*.
24. This data can be found in the *Sri Lanka Census of Population and Housing, 2012*. The dataset contains the following variables: province, district, DS division, GN division, GN number, GN code, urban/rural and the number of occupied housing units.
25. The number of households in a GN division is considered the size of the GN. Fifty GNs from urban areas and 50 GNs from rural areas were selected using the PPS sampling technique.
26. Issues include: some GN officers were reluctant to provide the list of persons with disabilities; such lists were not available from some GN officers; some field teams were asked to get authorization to obtain the list from divisional secretariat offices, which took a lot of time to obtain; or the GN office was not functioning at usual capacity due to the COVID-19 pandemic.
27. Biases include: the GN officers' lists of persons with disabilities are to disburse state welfare payments and, typically, persons with disabilities from wealthier families are less likely to be registered; the list is biased towards poorer persons with disabilities and does not always include all persons with disabilities living in a particular GN; most of the lists were incomplete and a lot of important information needed to locate the respondents (such as address) was not available; some lists were outdated and some respondents no longer lived in that GN; the lists were heavily biased towards persons with disabilities with mobility impairment.
28. GN officers are public officials appointed by the government to manage duties in a Grama Niladhari, or GN, division. The GN divisions are rural administrative systems overseen by the Ministry of Home Affairs. To view the Grama Niladhari Division of Sri Lanka, see: http://moha.gov.lk/web/index.php?option=com_content&view=article&id=43&Itemid=175&lang=en.

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