11.3: The Digital Divide

The Digital Divide

As the Internet continues to make inroads across the world, it also creates a separation between those with access to this global network and those without access. This separation, called the "digital divide," is of great concern. Kilburn (2005) summarizes this concern in his article Crossroads:

Adopted by the ACM Council in 1992, the ACM Code of Ethics and Professional Conduct focuses on issues involving the Digital Divide that could prevent specific categories of people - those from low-income households, senior citizens, single-parent children, the undereducated, minorities, and residents of rural areas — from receiving adequate access to the wide variety of resources offered by computer technology. This Code of Ethics positions the use of computers as a fundamental ethical consideration: "In a fair society, all individuals would have equal opportunity to participate in, or benefit from, the use of computer resources regardless of race, sex, religion, age, disability, national origin, or other similar factors." The article discusses the digital divide in various forms and analyzes reasons for the growing inequality in people's access to Internet services. It also describes how society can bridge the digital divide: the social gap between information "haves" and "have-nots."

Have a look at this infographic (Xanthios, 2017), which was created to educate students about the main groups that are digitally divided.

An introduction to the DIGITAL DIVIDE #EID100

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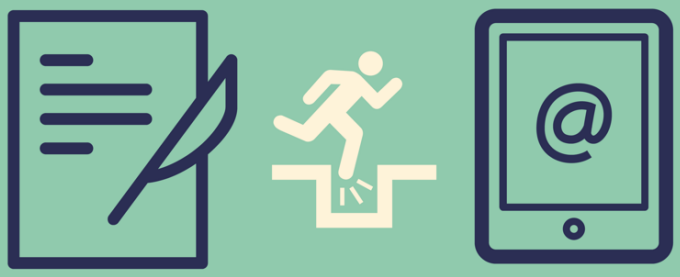
WHAT is it?

Definition: The gap between demographics and areas that have access to modern information & communications technology from those who don't.



WHO does it effect?

OLD VS. YOUNG

ABLE-BODIED VS. DISABLED

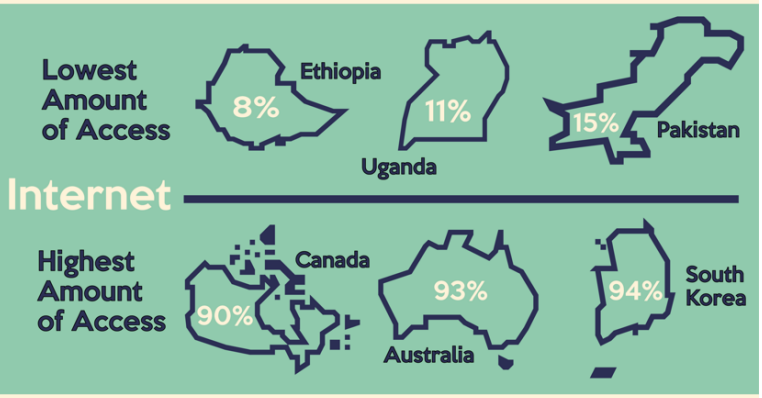
WEALTHY VS. POOR

- 62% of households making >30k use the internet.
- 77% of older people require a walkthrough to set up a device.
- 27% of disabled adults have never used the internet.
- In the U.S., 75% of urban residents use the internet, compared to 69% of rural residents.

RURAL VS. URBAN

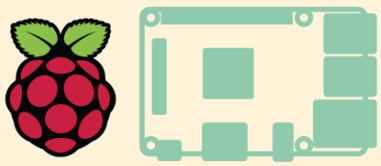
WHERE is it located?

- 31% of the world does not have 3G coverage,
- 15% of the world has no electricity.
- South Koreans pay as much as half of what Americans pay for internet that is 200 times faster in speed.



HOW can we fix it?

that the :



The Rasperry Pi Foundation is dedicated to creating affordable solutions in computer technology.

Google labs has researched and tested Project Loon, a state-of-the-art balloon technology that brings internet to the masses.

Learn more more about other solutions, such as new political policies, for the digital divide here:

Figure 11.3.1: An introduction to digital divide by Xanthios, S retrieved from https://medium.com/@spirosx/an-introduction-to-the-digital-divide-33dc670f8c16.

The digital divide is categorized into three stages: the economic divide, the usability divide, and the empowerment divide (Nielson, 2006)

- **The economic divide** is usually called the digital divide: some people can afford a computer and Internet access while others cannot. Because of Moore's Law (see Chapter 2), the price of hardware has continued to drop, and, at this point, we can now access digital technologies, such as smartphones, for very little. This fact, Nielsen asserts, means that the economic divide is a moot point for all intents and purposes, and we should not focus our resources on solving it.
- **The usability divide** concerns that "technology remains so complicated that many people couldn't use a computer even if they got one for free." And even for those who can use a computer, accessing all the benefits of having one is beyond their understanding. Included in this group are those with low literacy and seniors. According to Nielsen, we know how to help these users, but we are not doing it because there is little profit.
- **The empowerment divide** is the most difficult to solve. It is concerned with how we use technology to empower ourselves. Very few users genuinely understand the power that digital technologies can give them. In his article, Nielsen explains that his (and others) research has shown that very few users contribute content to the Internet, use advanced search, or even distinguish paid search ads from organic search results. Many people do not see themselves in online spaces and don't feel they can inhabit those spaces without help and training - they are not ready for it. They do not have sufficient skills, understanding, and trust in the process or system to interact with the technology. Thus, they will limit what they can do online by accepting their computer's default settings and not understanding how they can truly be empowered.

Understanding the digital divide using these three stages provides an approach to developing solutions and monitoring our progress in bridging the digital divide gap.

The Digital Divide Between Geographies

The digital divide refers to the gulf between those with ready access to modern information and communications technology and those without. This divide can occur between countries and regions, cities, or even neighborhoods nearby. There may be pockets with little or no reliable Internet access in many US cities, while high-speed broadband is ubiquitous just a few miles away.

As of January 2023, Statista.com reports there were five billion Internet users worldwide, with China leading at 1.05 billion Internet users, more than three times the US's, with about 311 million Internet users. It also reported in 2023 that about 89% of Europeans have access to the Internet compared to 40% of the African population.

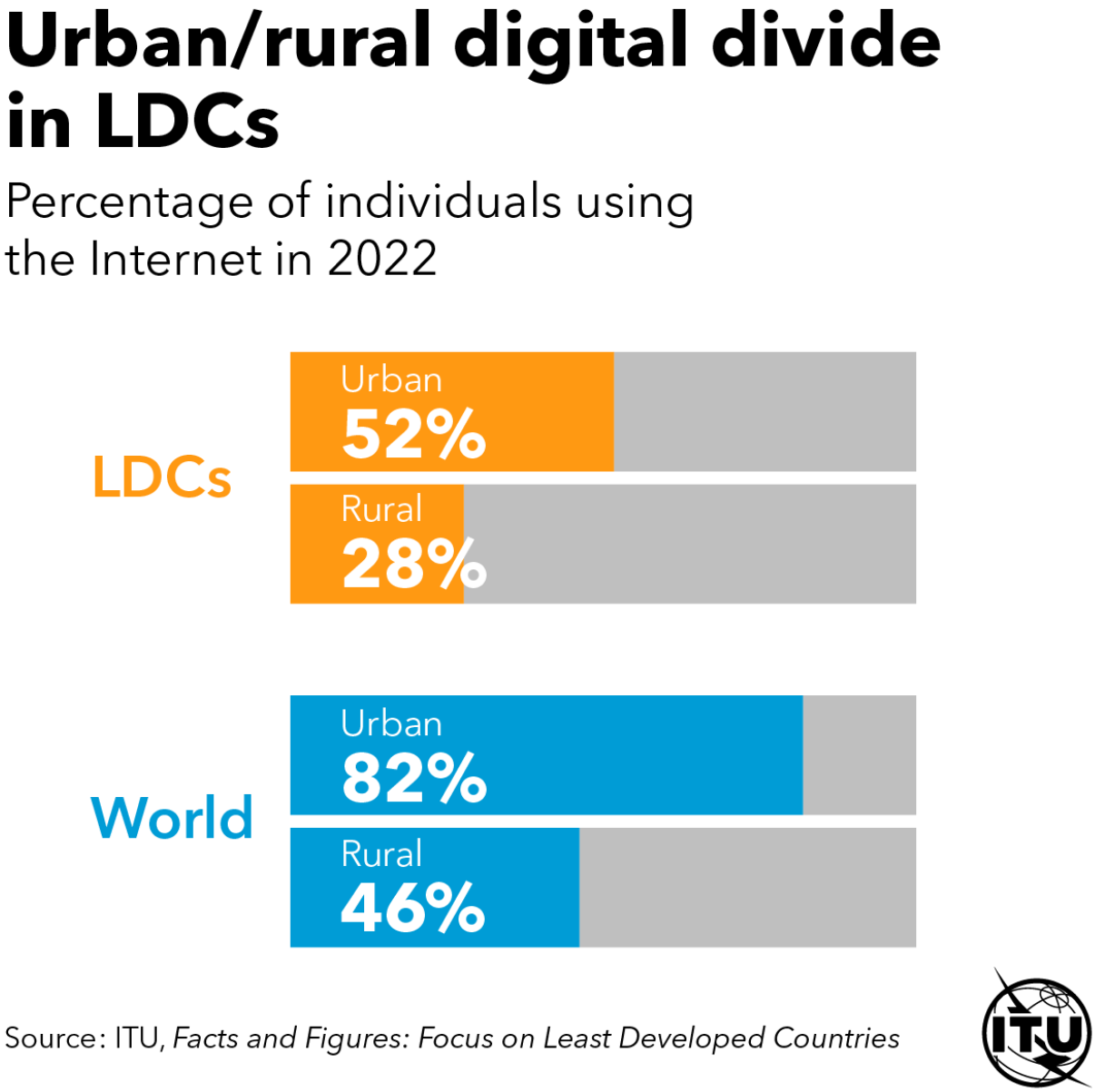


Figure 11.3.2 People online in Least Developed Countries in 2022, source: ITU Facts and figure

The reasons for these disparities can include factors like lower income levels, lack of technology infrastructure investment, and fewer educational opportunities. But the result is many groups being cut off from the benefits of digital connectivity, which in today's world are crucial for access to jobs, government services, healthcare, Education, and more. Bridging this geographical digital divide requires understanding where it exists and why.

The Rural-Urban Digital Divide in the US

The digital divide can occur between countries, regions, or even neighborhoods. There are pockets with little or no Internet access in many US cities, while high-speed broadband is standard just a few miles away.

According to data from the Federal Communications Commission (FCC) at the end of 2019, a substantial gap exists between rural and urban Americans' access to fixed broadband internet. 17% of people living in rural areas lacked access to download speeds of at least 25 megabits per second and upload speeds of at least three megabits per second. This compares to only 1% of Americans in urban areas that lacked access to this 25/3 Mbps high-speed broadband standard. Even when high-speed broadband internet is technically available in an area, many people still lack access due to affordability issues and a lack of digital skills. According to FCC data, around 31% of Americans have access to broadband speeds of at least 25/3 Mbps. However, they have not subscribed to those available services. Lower-income households are less likely to have a home broadband subscription, even if the fast internet option exists where they live. In other words, the cost of broadband and lack of digital abilities present additional barriers beyond just availability. Simply offering broadband in a community does not mean everyone can use it. In other words, those living in rural parts of the country are significantly less likely to have high-speed Internet available in their homes, exacerbating the rural-urban digital divide.

Due to the social distance or lockdown mandates, the COVID-19 pandemic has made Internet access an essential requirement and has spotlighted this issue globally.

? Exercise - FCC National Broadband Map 11.3.3

Go to https://broadbandmap.fcc.gov/home#/

Type in an address and press enter

Answer

You should see a brief report about the broadband and the providers of that address. Take a screenshot and share it with the class discussion.

Challenges and efforts to bridge the Digital Divide gap

Solutions to the digital divide have had mixed success over the years. Initial efforts focused on providing internet access and computing devices with some degree of success. However, providing Internet access and computing devices is insufficient to bring accurate Internet access to a country, region, or neighborhood.

The World Bank and International Monetary Fund (IMF), in their annual meeting in 2020, brought together global leaders and private innovators to discuss how to bridge the digital gap globally. Three challenges were identified:

1. Lack of infrastructure remains a significant barrier to connectivity
2. Greater collaboration is needed between the public and private sectors
3. Education and training to help connect people in underserved communities

In June 2020, the UN Secretary-General stated that the Digital Divide is now a Matter of Life and Death' amid the COVID-19 Crisis and called on global leaders for global cooperation to meet the goal: every person has safe and affordable access to the Internet by 2030.

With this challenge being acute due to the global pandemic of 2020 (COVID-19), many leaders have increased their investment to bridge this gap in their countries. For example, the IMF reported that countries like Kenya, Ghana, Rwanda, and Tanzania had made significant progress using mobile to connect their citizens to financial systems (IMF, 2020). Many states in the United States have increased their funding through public or private partnerships, such as the California Closing the Divide initiative (CA dept of Education, 2020).

Continued global investment to bridge this gap remains a critical need for the global world, both during and post-global pandemic.

Sidebar: Using Gaming to Bridge the Digital Divide

Paul Kim, the Assistant Dean and Chief Technology Officer of the Stanford Graduate School of Education, designed a project to address the digital divide for children in developing countries (Kim et al., 2011.) In their project, the researchers wanted to understand if children can adopt and teach themselves mobile learning technology without help from teachers or other adults and the processes and factors involved in this phenomenon. The researchers developed a portable device called TeacherMate, which contained a game designed to help children learn math. The unique part of this research was that the researchers interacted directly with the children; they did not channel the mobile devices through the teachers or the schools. Another essential factor to consider: to understand the context of the children's educational environment, the researchers began the project by working with parents and local nonprofits six months before their visit. While the results of this research are too detailed to go into here, it can be said that the researchers found that children can adopt and teach themselves mobile learning technologies.

What makes this research so interesting when thinking about the digital divide is that the researchers found that, to be effective, they had to customize their technology and tailor their implementation to the specific group they were trying to reach. One of their conclusions stated the following:

Considering the rapid advancement of technology today, mobile learning options for future projects will only increase. Consequently, researchers must continue to investigate their impact; we believe there is a specific need for more in-depth studies on ICT [information and communication technology] design variations to meet different localities' challenges. To read more about Dr. Kim's project, locate the paper referenced in the list of references.

References

ACM (2020). ACM Code of Ethics and Professional Conduct. Retrieved from acm.org, December 5, 2020.

Digital Divide 'a Matter of Life and Death' amid COVID-19 Crisis, Secretary-General Warns Virtual Meeting, Stressing Universal Connectivity Key for Health, Development. Retrieved from un.org, November 1, 2020.

Kiburn, Kim (2005). Challenges in HCI: Digital divide. Crossroads 12, 2 (December 2005), 2-2.

Kim, P., Buckner, E., Makany, T., & Kim, H. (2011). *A comparative analysis of a game-based mobile learning model in socioeconomic communities of India*. International Journal of Educational Development. doi:10.1016/j.ijedudev.2011.05.008.

Urban/rural digital divide in LDCs. Retrieved from itu.com, August 2023

National Strategy Needed to Guide Federal Efforts to Reduce Digital Divide Report (May 2022.) Retrieved from US Government Accountability Office, August 1, 2023.

Nielsen, J (2006). *Digital Divide: The 3 Stages*. Retrieved November 1, 2020, from http://www.nngroup.com/articles/digital-divide-the-three-stages/.

Statista. (2023). Internet usage in the United States. Retrieved from statista.com, April 2023.

Statista. (2023). Countries with the fastest average fixed broadband internet speeds as of April 2023*(in Mbps)*. Retrieved from statista.com, April 2023.

Statista. (2023). Internet penetration rate in rural and urban areas 2022, by region. Retrieved April 2023. Retrieved from statista.com, April 2023.

Xanthios, S (2017, April 7). *An Introduction to the Digital Divide*. Retrieved August 2023 from Medium.