

What Is Broadband?

This is one of a series of short explainers about high-speed Internet access issues. The full series is available [here](#).

BACKGROUND

The word “broadband” is an umbrella term that can be used to describe any reliable Internet connection that is always on that can support commonly used applications. In the simplest terms, broadband is high-speed Internet access.

According to a [report](#) published by Older Adults Technology Services (OATS) from AARP’s Aging Connected initiative, more than 21 million seniors in the United States lack wireline broadband access to the Internet. Online connectivity for older adults has become a necessity particularly as a result of the pandemic as more services have moved online. Online connectivity is essential for access to public health information, telehealth appointments, grocery shopping, financial security services, and staying connected to loved ones.

Many millions of children [lack home broadband Internet access](#), which is crucial for homework at almost all ages. Additional fact sheets in this series cover some of the reasons why households are not using broadband—including the lack of [availability](#), [affordability challenges](#), [access challenges](#), [lacking devices](#), and the [need to develop digital skills](#).

Whether an Internet connection is considered to be broadband typically depends on the speed at which the connection can download (receive) and upload (send) data, and the overall reliability of the Internet connection. However, broadband has been defined differently over time and in different contexts. Even experts have a hard time defining broadband because different governments and other entities use different definitions.

Most definitions center on different speed thresholds. Internet speed measurements convey how many bits of data (or 1s and 0s) an Internet connection can transmit per second on your network. Bits are the atoms of computers—everything is built upon them. Internet speed is measured in bits per second: 1,000,000 bits = 1,000 kilobits = one megabit. You can measure your Internet connection by conducting a [Speed Test via M-Lab](#) or similar sites.

AGING CONNECTED:

[Exposing the Hidden Connectivity Crisis for Older Adults](#) reveals that more than 21 million American seniors lack wireline broadband access at home, with people who have functional impairments being twice as likely to be left behind. You can learn more and read the report at www.agingconnected.org.

THE PROBLEM

The definition(s) of broadband set by federal and state agencies are important because once a geographic area is considered to be served by broadband, the region is often no longer eligible to apply for state or federal funding opportunities for broadband expansion. Government typically prioritizes those lacking broadband availability for subsidies, so small changes in the definition have real-world impact.

Having too slow of an Internet connection means that some applications—like phone and video chat, or remote work software—will work poorly or not at all.

Some connections might be quite fast, but unreliable, leaving households unable to access the Internet at all for a substantial number of hours or days each month. At-home broadband subscriptions can be expensive, especially at quality streaming speeds, and older adults with limited monthly incomes cannot allocate a large proportion of their budget to Internet access.

There is [widespread expert agreement](#) that the federal government’s current minimum speed threshold—at 25 Megabits per second (Mbps) download and 3 Mbps upload—is [too slow](#) considering the rise of remote work,

distance learning, telemedicine, and video streaming applications. In March of 2021, **four U.S. Senators called on** the United States Department of Agriculture and the Federal Communications Commission, federal agencies tasked with accelerating the deployment of broadband, to update their definitions of broadband, stating in **their letter** “Many networks fail to come close to ‘high-speed’ in the year 2021. For any of these functions (online banking, telemedicine, precision agriculture, telework, remote learning), upload speeds far greater than 3 Mbps are particularly critical.”

The Department of Agriculture updated its broadband definition in November of 2021, when the agency announced that the next round of broadband expansion funding available through the **ReConnect Loan and Grant Program** will target areas in which 90 percent of the population lacks Internet service at speeds of **at least 100 Mbps download and 20 Mbps upload**. This is a considerable change from the USDA’s previous definition of broadband, which targeted areas lacking Internet connections capable of delivering 10 Mbps download and 1 Mbps upload.

INTERNET ACCESS TECHNOLOGIES

The definition(s) of broadband held by federal and state agencies are also important because they affect what Internet access technology can be deployed with public subsidies. Recent federal programs have required technologies capable of much greater throughput than the broadband definition requires in order to ensure public dollars are not spent on obsolete investments—a concept known as “future proofing.”

There are two main types of Internet access technology: fixed and mobile. Fixed broadband is typically wired but sometimes uses stationary antennas. Examples include coaxial cable, fiber, and fixed wireless. Mobile broadband (e.g. 4G LTE, 5G) is commonly used on devices like cellular phones and tablets and is wireless, which means the devices can move around and connect to one or more wireless access points.

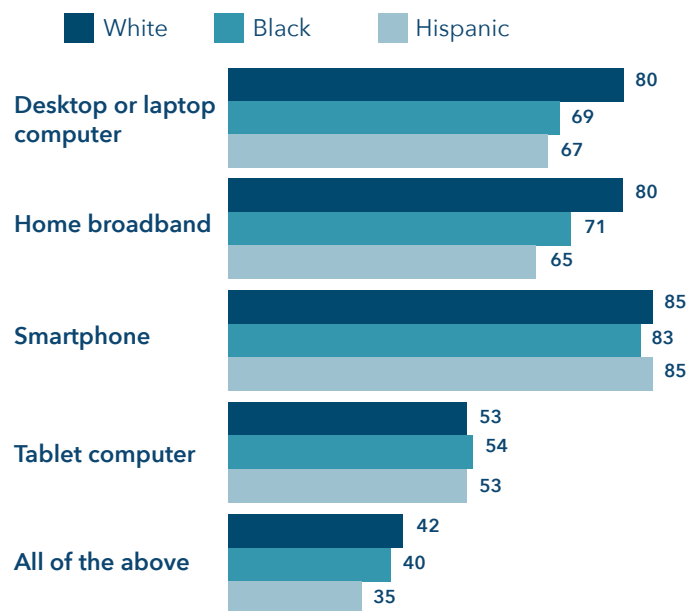
Early Internet connections in the 1990s started with dial-up modems and moved to DSL and coaxial cable. DSL is largely considered obsolete now due to limitations in its capacity and reliability. Most federal broadband subsidies now go to projects deploying fiber-optic cable all the way to the home.

Very rural settings have also used satellite technology to connect to the Internet, using the older geostationary technology and newer low-earth orbit technology. Geostationary systems put a satellite 23,000 miles away, which creates lag that makes video or telephone discussions impractical or impossible due to the time required for a signal to transmit back and forth. Low-earth orbit systems are being deployed now and have faster connections and much less lag but are expensive and currently unable to offer highly reliable connections.

Households lacking broadband access tend to be economically vulnerable groups from historically marginalized communities, including Black and Hispanic communities as well as seniors and households with low incomes, as demonstrated by this research from Pew Research Center.

Black and Hispanic adults in U.S. are less likely than White adults to have a traditional computer, home broadband

% of U.S. adults who say they have the following



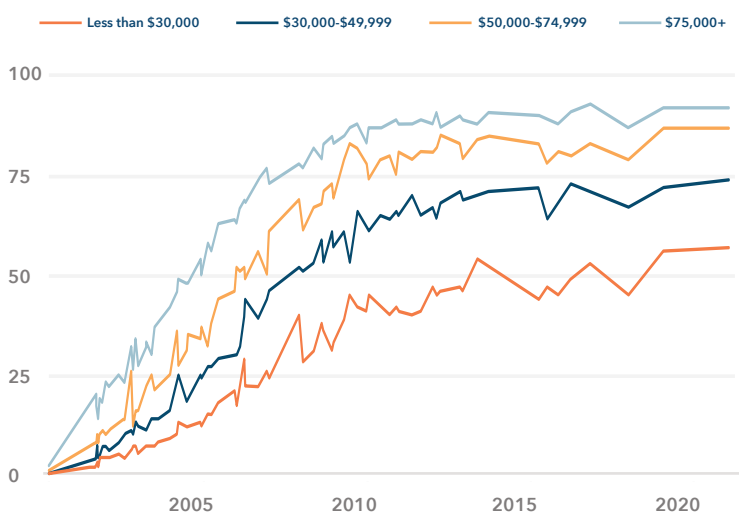
Note: Respondents who did not give an answer are not shown. White and Black adults include those who report being only one race and are not Hispanic. Hispanics are of any race. Source: Survey of U.S. adults conducted Jan. 25-Feb. 8, 2021.

Sara Atske and Andrew Perrin, "Home broadband adoption, computer ownership vary by race, ethnicity in the U.S.," Pew Research Center (July 2021)

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Home broadband connection by annual household income

% of U.S. adults who say they have a broadband connection at home, by annual household income



Note: Respondents who did not give an answer are not shown. The Center has used several different question wordings to identify broadband users in recent years, which may account for some variance in broadband adoption figures between 2015 and 2018. Our survey conducted in July 2015 used a directly comparable question wording to the one conducted in January 2018. Source: Surveys of U.S. adults conducted 2000-2021.

Pew Research Center, "Internet/Broadband Fact Sheet" (April 2021)

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ACTION STEPS

States can set their own definitions for what constitutes broadband as they wait for the Federal Communications Commission to increase its definition beyond 25/3 Mbps. Some states have moved to 100/100 Mbps and others 100/20 Mbps. Long before the pandemic, Canada **set its goal** in 2016 at 50/10 Mbps. When designing broadband Internet infrastructure subsidy programs, state and local governments can choose to only support projects that deliver ambitious capacity well beyond current needs to ensure public dollars are spent effectively.

ABOUT ILSR

The Institute for Local Self-Reliance (ILSR) is a 48-year-old national nonprofit research and educational organization. ILSR's mission is to provide innovative strategies, working models, and timely information to support strong, community rooted, environmentally sound, and equitable local economies. To this end, ILSR works with citizens, policymakers, and businesses to design systems, policies, and enterprises that meet local needs, to maximize human, material, natural, and financial resources, and to ensure that the benefits of these systems and resources accrue to all local citizens. Learn more at www.ilsr.org.

ABOUT AARP

AARP is the United States' largest nonprofit, nonpartisan organization dedicated to empowering people 50 or older to choose how they live as they age. With nearly 38 million members and offices in every state, Washington D.C., Puerto Rico and the U.S. Virgin Islands, AARP strengthens communities and advocates for what matters most to families, with a focus on health security, financial stability and personal fulfillment. The AARP Livable Communities initiative supports the efforts of local leaders and residents throughout the nation to make their communities more livable and age-friendly. Its programs include the AARP Network of Age-Friendly States and Communities and the annual AARP Community Challenge "quick-action" grant program. Learn more at AARP.org/Livable and by signing up for the free, weekly AARP Livable Communities e-Newsletter at AARP.org/LivableSubscribe.

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