

The Digital Divide: Income-Based Disparities in Internet Access

A Longitudinal Analysis from 2000 to 2025

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Abstract

This report examines the evolution of the digital divide in the United States over a 25-year period (2000-2025), with particular emphasis on income-based disparities in internet access and broadband adoption. Drawing on primary data from the Pew Research Center, the National Telecommunications and Information Administration (NTIA), the Federal Communications Commission (FCC), and the U.S. Census Bureau's American Community Survey, we document significant progress in closing access gaps while identifying persistent inequalities. Overall internet use increased from 52% of U.S. adults in 2000 to 96% in 2025, while income-based gaps in broadband adoption have narrowed but remain substantial: 54% of households earning less than \$30,000 have home broadband compared to 94% of those earning \$100,000 or more.

1. Introduction

The term "digital divide" gained prominence in the late 1990s through a series of reports from the U.S. Department of Commerce's National Telecommunications and Information Administration (NTIA). The first major report, "Falling Through The Net: A Survey of the 'Have Nots' in Rural and Urban America" (1995), revealed alarming disparities in computer and Internet use by ethnicity, education, and income level. The NTIA subsequently defined the digital divide as "one of America's leading economic and civil rights issues" in their 1999 report.

President Bill Clinton referenced the digital divide in his 2000 State of the Union Address and allocated \$2.34 billion to address the issue, marking a significant federal commitment to digital inclusion. Since then, researchers, policymakers, and advocacy organizations have tracked the evolution of internet access disparities, noting both substantial progress and persistent gaps.

This report synthesizes primary research data to provide a comprehensive longitudinal analysis of how the digital divide has evolved from 2000 to the present, with particular focus on income-based disparities.

2. Primary Data Sources and Datasets

The following primary data sources provide the foundation for analyzing the digital divide:

2.1 NTIA Internet Use Survey (1994-Present)

The NTIA has sponsored data collection on Internet use as a supplement to the Census Bureau's Current Population Survey (CPS) since 1994. This survey represents the premier federal data source for in-depth information on who uses the Internet, what technologies they use, and barriers to adoption. The most recent survey was fielded in November 2023, showing that 83% of people ages 3 and older used the Internet, up from 80% in 2021—the

largest increase since the 2015-2017 period. Datasets are publicly available at ntia.gov/data in Stata, CSV, and raw formats.

2.2 Pew Research Center Technology Surveys (2000-Present)

Pew Research Center has systematically tracked Americans' internet usage since 2000 through nationally representative surveys. Their methodology shifted in 2023 from phone-based surveys to web and mail-based collection. The Center provides detailed demographic breakdowns including income, education, age, race/ethnicity, and geographic location. Data are available through their Internet & Technology portal with downloadable datasets.

2.3 U.S. Census Bureau American Community Survey (2013-Present)

The Broadband Data Improvement Act of 2008 directed the Census Bureau to add questions about household computer use and Internet subscribership to the American Community Survey (ACS). These data, available since 2013, provide county-level and tract-level estimates of broadband adoption. The ACS offers the largest sample sizes for geographic analysis of digital inclusion.

2.4 FCC Broadband Deployment Reports and Form 477 Data

The FCC collects broadband deployment data through Form 477, which all facilities-based broadband providers must file twice yearly. The FCC's Broadband Data Collection initiative and National Broadband Map provide information about internet services available at individual locations. The Measuring Broadband America program (2011-2023) provided performance studies using automated measurements from thousands of volunteer households.

2.5 Additional Research Datasets

- **Microsoft USBroadbandUsagePercentages:** County-level broadband usage estimates available on GitHub
- **Arizona State University Broadband Data Portal:** County time series from 1997-2018 with demographic breakdowns
- **Purdue Digital Divide Index:** County-level composite measure of digital inclusion

3. Baseline Conditions: The Digital Divide Circa 2000

3.1 Overall Internet Access

In 2000, approximately 52% of U.S. adults reported using the internet (Pew Research Center). Broadband adoption was minimal, with only 1% of adults subscribing to home broadband services. The vast majority of internet users relied on dial-up connections.

3.2 Income-Based Disparities in 2000

Income was identified as the most significant factor predicting physical internet access. According to Pew Research Center data:

- Households earning \$75,000+: 81% internet use
- Households earning \$50,000-\$74,999: 72% internet use
- Households earning \$30,000-\$49,999: 58% internet use
- Households earning less than \$30,000: 34% internet use

This represented a 47 percentage point gap between the highest and lowest income groups.

3.3 Racial and Ethnic Disparities

In 2000, significant racial disparities existed: 50% of Whites had internet access compared to 43% of Hispanics and 34% of African Americans (Wikipedia citing NTIA data). These gaps were closely correlated with income differences.

3.4 Geographic Disparities

Urban areas led in connectivity with 53% internet use, compared to 56% in suburban areas and 42% in rural areas. The NTIA's "Falling Through the Net" reports documented that central city and rural households consistently lagged behind suburban areas in both computer ownership and internet access.

4. Evolution of the Digital Divide (2000-2025)

4.1 Phase 1: Rapid Growth Period (2000-2010)

This decade saw dramatic expansion of internet access across all demographic groups. Overall internet use grew from 52% (2000) to 76% (2010). Broadband adoption increased rapidly from 1% (2000) to approximately 60% (2010). The NTIA's 2000 report "Falling Through the Net: Toward Digital Inclusion" documented that internet access was "no longer a luxury item" and noted double-digit growth in household access.

Key developments:

- President Clinton allocated \$2.34 billion for digital inclusion initiatives (2000)
- Gates Foundation contributed \$250 million to install computers in 11,000 libraries (2003)
- Broadband Data Improvement Act mandated improved data collection (2008)

By 2010, the income gap narrowed: 95% of those in \$75,000+ households used the internet compared to 61% in households earning less than \$30,000—a 34 percentage point gap, reduced from 47 points in 2000.

4.2 Phase 2: Broadband Transition (2010-2019)

This period was characterized by the transition from basic internet access to broadband connectivity as the new standard. By 2019, 90% of U.S. adults used the internet. Home broadband adoption reached 73%. Smartphone ownership emerged as an alternative pathway to connectivity.

The concept of "smartphone-only" internet users emerged as a significant pattern. By 2019, 26% of adults in households earning less than \$30,000 relied solely on smartphones for internet access, compared to only 6% of those in households earning \$100,000 or more. This phenomenon highlighted that while the access gap was narrowing, a new divide in quality of access was developing.

Broadband adoption by income (2019):

- \$75,000+: 92% home broadband
- \$30,000-\$49,999: 72% home broadband
- Less than \$30,000: 56% home broadband

4.3 Phase 3: COVID-19 Pandemic and Digital Equity Focus (2020-Present)

The COVID-19 pandemic transformed the digital divide from a policy concern to an urgent crisis. With schools, workplaces, healthcare, and social services shifting online, the consequences of digital exclusion became immediately apparent. The FCC's Emergency

Connectivity Fund (\$7.17 billion) and Affordable Connectivity Program were established to address these needs.

According to NTIA's 2023 survey, 83% of people ages 3 and older used the Internet—13 million more users than in 2021. Notably, internet adoption increased among American Indians and Alaska Natives from 75% to 83%, and among those in households earning less than \$25,000 from 69% to 73%.

The Infrastructure Investment and Jobs Act (2021) included the largest federal investment in broadband infrastructure, with programs focused on both deployment and digital equity.

5. Current Status (2025)

5.1 Internet Use and Broadband Adoption by Income

Based on Pew Research Center data from 2025:

Income Level	Internet Use	Home Broadband
Less than \$30,000	91%	54%
\$30,000-\$69,999	96%	75%
\$70,000-\$99,999	98%	88%
\$100,000+	99%	94%

Source: Pew Research Center, *Internet/Broadband Fact Sheet*, November 2025

5.2 Smartphone Dependency

A critical dimension of the current digital divide is "smartphone dependency"—adults who own a smartphone but lack home broadband. In 2025, 16% of U.S. adults fall into this category. However, the rate varies dramatically by income: 34% of adults in households earning less than \$30,000 are smartphone-dependent, compared to only 4% of those earning \$100,000 or more.

5.3 The Homework Gap

According to FCC data, nearly 17 million school children lack internet access at home. A 2023 Connected Nation report found that 22% of low-income households with children do not have home internet access. The National Center for Education Statistics reported that as of the 2023-24 school year, while 95% of public schools provide digital devices to students who need them, only 44% provide internet at home.

6. Longitudinal Comparison: Key Metrics Over 25 Years

Metric	2000	2010	2020	2025
Overall Internet Use	52%	76%	~93%	96%
Home Broadband	1%	~62%	~77%	78%
Low-Income Internet Use (<\$30K)	34%	61%	~86%	91%
High-Income Internet Use (\$75K+/\$100K+)	81%	95%	~99%	99%
Income Gap (pp)	47	34	~13	8

Sources: Pew Research Center, NTIA Internet Use Survey. Note: pp = percentage points

7. Key Findings

7.1 Progress Made

- **Near-universal basic access:** 96% of U.S. adults now use the internet, up from 52% in 2000
- **Narrowing income gap in internet use:** The gap between highest and lowest income groups narrowed from 47 percentage points (2000) to 8 percentage points (2025)
- **Rural connectivity improvements:** Rural internet use increased from 42% (2000) to 94% (2025)
- **Racial gap reduction:** Internet use among Black Americans increased from 34% (2000) to 94% (2025)

7.2 Persistent Challenges

- **Broadband affordability gap:** 40 percentage point gap in home broadband between lowest (\$54%) and highest (\$94%) income groups
- **Quality of access divide:** 34% of low-income adults are smartphone-only internet users vs. 4% of high-income adults
- **The homework gap:** ~17 million school children lack home internet access
- **Digital skills divide:** Access does not guarantee effective use; disparities in digital literacy persist

8. Conclusions

The digital divide has evolved substantially over the past 25 years. The first-level divide—basic access to the internet—has largely been addressed, with 96% of Americans now online. However, the divide has shifted from questions of access to questions of quality, reliability, and meaningful use.

Income remains the most significant predictor of digital inclusion, particularly for home broadband adoption. While 99% of high-income households use the internet and 94% have home broadband, lower-income households continue to face barriers. The 40 percentage point gap in home broadband adoption between lowest and highest income groups represents the contemporary face of the digital divide.

The emergence of smartphone-only internet users as a significant population—particularly among lower-income Americans—represents a new form of digital inequality. While smartphones provide internet access, they limit users' ability to complete tasks that require larger screens, such as job applications, educational coursework, and productivity applications.

Research suggests that the digital divide has economic consequences. Counties with higher digital divides lost jobs between 2010 and 2020, while counties with lower digital divides saw 11% job growth. The share of digital economy jobs and remote-work-friendly occupations is substantially higher in areas with better digital connectivity.

9. Primary Data Sources and References

Government Data Sources

- National Telecommunications and Information Administration (NTIA). Internet Use Survey Data, 1994-2023. Available at: ntia.gov/data
- NTIA. "Falling Through the Net" report series (1995, 1998, 1999, 2000). Available at: ntia.gov

- U.S. Census Bureau. American Community Survey, Computer and Internet Use Tables. Available at: data.census.gov
- Federal Communications Commission. Broadband Deployment Reports and Form 477 Data. Available at: fcc.gov/BroadbandData
- FCC. Measuring Broadband America Reports (2011-2023). Available at: fcc.gov/general/measuring-broadband-america

Research Organizations

- Pew Research Center. Internet/Broadband Fact Sheet, 2000-2025. Available at: pewresearch.org/internet/fact-sheet/internet-broadband
- Pew Research Center. "Digital Divide Persists Even as Lower-Income Americans Make Gains in Tech Adoption." June 2021
- Purdue Center for Regional Development. "The State of the Digital Divide in the United States." Available at: pcrd.purdue.edu
- Arizona State University, Center on Technology, Data and Society. Broadband Data Portal. Available at: techdatasociety.asu.edu

Academic Literature

- van Dijk, J.A.G.M. (2006). "Digital Divide Research, Achievements and Shortcomings." *Poetics*, 34, 221-235
- Martin, S.P. & Robinson, J.P. (2007). "The Income Digital Divide: Trends and Predictions for Levels of Internet Use." *Social Problems*, 54(1), 1-22
- Hargittai, E. (2002). "Second-Level Digital Divide: Differences in People's Online Skills." *First Monday*, 7(4)

Downloadable Datasets

- NTIA Internet Use Survey datasets (Stata, CSV formats): ntia.gov/page/download-ntia-internet-use-survey-datasets
- FCC Form 477 broadband deployment data: fcc.gov/general/broadband-deployment-data-fcc-form-477
- Census Bureau ACS data: data.census.gov (Tables S2801, S2802)
- Microsoft US Broadband Usage Percentages: github.com/microsoft/USBroadbandUsagePercentages