Broadband Myths: Do ISPs Engage in “Digital Redlining?”

JOE KANE AND JESSICA DINE | APRIL 2022

Geographic differences in broadband deployment exist, but ITIF’s analysis of Census data and facts on the ground show they are best explained by income variations and barriers to adoption, not by racial discrimination.

KEY TAKEAWAYS

- A recent trend of accusations equates disparities in broadband access with historical racial redlining, but critics fail to recognize that income and demand are the factors driving connectivity.
- To contend that disparities in broadband availability are rooted in racially motivated decisions by broadband companies, as financial redlining was with banks, is to misdiagnose the problem in a way that is counterproductive to solving it.
- In market after market, there is almost no statistical relationship between the racial composition of a neighborhood and connectivity. There is, however, a correlation between income and broadband connectivity.
- High-speed Internet is widely available in areas with high non-White populations. The best-connected area in a broad study is majority non-White, and individual homes in majority non-White neighborhoods have fast broadband available.
- Barriers to adoption limit actual use of broadband connectivity even if a network has been deployed and service is available—and lack of perceived relevance is a larger barrier than price.
- To address remaining broadband inequities, policymakers should provide support that targets the causes of unequal connectivity, such as deficits in digital literacy and hardware accessibility.

OVERVIEW

As broadband Internet access becomes increasingly critical to both business operations and our everyday lives, disparities in broadband availability can lead to social and economic inequalities. Finding and addressing the causes of broadband deployment gaps is, therefore, a priority for many policymakers, companies, and activists. Recently, however, some activists have begun to frame location-based broadband discrepancies in racial terms, accusing Internet service providers (ISPs) of "digital redlining." "Redlining" hearkens back to the practice whereby certain lenders would not provide loans to people of color living in minority neighborhoods, regardless of their creditworthiness. These accusations have gathered steam. For example, the practice was included in the recent Infrastructure Investment and Jobs Act, and the Federal Communications Commission (FCC) is currently seeking to outlaw it.[1] If "digital redlining" were occurring as activists allege, then such an action might be warranted. But the Information Technology and Innovation Foundation (ITIF) has conducted an analysis of Census data and facts on the ground and has found that the "digital redlining" narrative—while an emotion-triggering term—does not stand up to scrutiny.

There are problematic gaps in availability that are sometimes, though rarely and weakly, correlated with racial inequities. But to contend that the source of the problem is racially motivated decisions by broadband companies, as was the case with financial redlining and banks, is to misdiagnose the problem in a way that is counterproductive to solving it.

THE USE OF REDLINING FOR POLICY GOALS

Accusations of digital redlining have come from different quarters. The National Digital Inclusion Alliance (NDIA) invoked the racial connotations of redlining when it accused a telecommunications company in Cleveland of not providing low-income areas with upgraded broadband service.[2] An FCC complaint from a Detroit lawyer accuses the same company of a "pattern of long-term, systematic failure to invest in the infrastructure required to provide [broadband service to low-income areas]."[3] Members of the Baltimore City Council accused broadband providers of ignoring the needs of Black, Brown, and low-income communities, and called for a full investigation into patterns and practices that constitute digital redlining.[4] Politicians on the national level have also taken up allegations of racial discrimination by ISPs for years.[5] These accusations often come with demands for expensive fiber deployments everywhere, and at the same time.

As a whole, the accusations and proposed solutions appear muddled in their invocations of racial animus and dismissive of the economic realities and enormous investments inherent to deploying broadband. In short, not only is race not the reason for any lack of broadband investment in particular areas, but it appears that most low-income, predominantly minority urban neighborhoods are already served by adequate broadband.

THE TERM "REDLINING" IS INAPT FOR BROADBAND

The term "digital redlining" derives its charge from the historical practice of using generalizations about attributes of people of a particular race to deny them housing loans.[6] Most notably, the evaluations used proxies for creditworthiness (e.g., race) that did not comport with the actual risks associated with the individuals being assessed by the lenders. The overgeneralization of individuals based on the racial composition of their neighborhood led to incorrect determinations of a potential creditor's qualifications. That is why initially some states, and ultimately Congress, rightly outlawed redlining.

Such practices are plainly different from alleged redlining in the context of broadband deployment today. For decisions to spend potentially millions of dollars to deploy broadband into a neighborhood, attributes of a given area and of the people in that area *are* relevant to the economic viability of deployment. Areas of high poverty or low digital literacy are going to, by definition, have lower broadband take-up rates than will areas with higher income and literacy rates. That has nothing to do with race, and everything to do with income and digital literacy levels. And that means, unless government responds with support for low-income households, broadband providers could very well lose money on their investment. At the outset, therefore, the invocation of the term "redlining" is inapt. Importing interpretative models from individual credit markets into regional broadband deployment will lead to inaccurate diagnoses of problems and misdirected solutions.

Providers Look at Expected Returns, Not Race

Looking beyond the unhelpful "redlining" framing, however, we can allow a more nuanced version of activists' claims: They believe ISPs are discriminating based on race in making deployment decisions. That hypothesis is testable and worthy of analysis.

We begin from the uncontroversial premise that broadband providers seek to maximize their profits. It is further obvious that, in order to survive as a business, the providers' revenue must at least match their costs, which include the costs of capital. In the case of broadband, the upfront costs of building a network are large. By one estimate, laying new fiber costs an average of $27,000 per mile.[7] Another estimate puts the cost of serving an 80-home neighborhood with one mile of fiber at $1,287 per household, even assuming every household buys the new service.[8] Therefore, we should expect broadband providers to ensure there are customers with sufficient income and willingness to buy their service before they make such significant fixed-cost investments.

Top-line data supports the hypothesis that income, rather than race, is the driving factor in broadband connectivity.

This basic premise of the broadband business model provides reason for skepticism of racial discrimination in broadband deployment. To say that a broadband provider is choosing where to deploy based on the irrelevant factor of residents' race is to say that the provider is no longer seeking to maximize profits. The claim that broadband providers are choosing to indulge racial animus at the expense of profits is absurd, especially as so many broadband activists decry private ISPs for seeking to maximize profits. Moreover, the assertions of racial discrimination are not borne out, at least by topline data.

NDIA regularly publishes an analysis of the most and least connected locations in the United States.[9] Though analyses such as these ultimately rely on residents' adoption of Internet service, broadband availability is still a necessary precursor to adoption. If racially driven discrimination were prevalent, we should expect the most connected areas to be the least racially diverse and the least connected areas to be predominantly minorities. But this is not the case. For example, Centreville, Virginia (whose major broadband providers include Verizon and Cox), was the best-connected city in the 2019 NDIA study, yet it is majority nonwhite. Indeed, four out of the top five best-connected places (Centreville, Virginia; Johns Creek, Georgia; Highlands Ranch, Colorado; San Ramon, California; and Redmond, Washington) are less than 52 percent white (Highlands Ranch is the exception at 81.7 percent white). This is not the result one would expect if an anti-minority bias were a significant factor in ISPs' choice of where to deploy.

Looking at these same locations through a different lens makes more sense of the data. The five highly connected populations are united by their low poverty rates and high incomes. Their average poverty rate is 4 percent, compared with the national average of 10.5 percent. For the five least connected places (Elizabeth, New Jersey; Daytona Beach, Florida; Tyler, Texas; Brownsville, Texas; and Pharr, Texas), the mean poverty rate was 26 percent.[10] Likewise, the most connected places had a mean per-capita income of $56,389; in the least connected places, it was $19,308. This top-line data supports the hypothesis that income, rather than race, is the driving factor in broadband connectivity.

Local Data Belies Racial Discrimination Claims

To assess the strength and nature of the relationship between connectivity, income, and race, we collected a sample of neighborhood-level statistics from six major cities (many of which have been accused of "digital redlining"): Baltimore, Maryland; Cleveland, Ohio; New York, New York; Jersey City, New Jersey; San Antonio, Texas; and St. Louis, Missouri.[11] (See the appendix on page 7.) For each of the cities, we looked at census tracts within several neighborhoods (each census tract varies by size, but tracts generally cover an average of 4,000 people) to work with the most granular data available.

After collecting census tract data on percentage of non-Hispanic white residents, median household income, and percentage of the population with a broadband Internet connection, we ran a regression analysis on each. Again, percentage of broadband subscriptions, while ultimately reliant on residents' choice whether to purchase the service, is dependent on the availability of the service to begin with. The threshold for statistical significance was 0.05, which means we would expect a similar or more extreme result 5 percent of the time if the "null hypothesis" of no relationship were, in fact, true.

For four of the six cities (New York, Jersey City, San Antonio, and St. Louis), there was no statistically significant relationship between race and broadband connectivity, so we cannot reject the null hypothesis that race and connectivity are unrelated.

Given the tone of redlining accusations, we would have expected to find clear and obvious relationships at this most basic level of correlation between race and connectivity. Instead, we find the opposite: There is almost always no apparent relationship between race and connectivity.

The remaining cities, Cleveland and Baltimore, had statistically significant (at the .005 and .046 levels) but very weak, positive relationships between the percentage of white, non-Hispanic residents and the percentage of residents with a broadband connection. For both cities, a 1 percent increase in the white population is associated with a small (0.22 and 0.27 percent, respectively) increase in the percentage of broadband connectivity. Our data and analysis, however, do not permit any conclusion about the cause of even this weak correlation.

More to the point, in each of the six cities, higher income was associated with an increase in broadband connectivity, and this relationship was statistically significant for all but one city: St. Louis. Therefore, for those five cities, we can reject the null hypothesis that income and broadband connectivity are unrelated. And while this finding also does not directly permit causal inferences, it is consistent with the theoretical model and other data presented in which higher incomes provide a better business case for broadband deployment.

Admittedly, this analysis is limited by relatively small sample sizes and few variables. Given the tone of redlining accusations, however, we would have expected to find clear and obvious relationships at this most basic level of correlation between race and connectivity. Instead, we find the opposite: There is almost always no apparent relationship between race and connectivity. Income, on the other hand, appears to almost always be a significant factor in predicting broadband coverage.

ADDRESS-LEVEL AVAILABILITY

Rates of connectivity are determined by a variety of factors, some of which amount to a provider's choice of what services to offer in different locations. Other reasons for a lack of connectivity, however, are on the demand side and thus beyond ISPs' control.

Of course, it's a lack of access that makes the case for redlining by ISPs, so we conducted a survey of our own. We found 10 addresses each from low-income neighborhoods with high percentages of minority residents in the aforementioned cities: Artesia Community Guild, San Antonio; North Point, St. Louis; Ashburton, Baltimore; Corlett, Cleveland; Bergen-Lafayette, Jersey City; and West Farms, New York. Using those addresses, we searched for available services by some of the largest wireline providers for each household. The providers in the analysis were AT&T, Verizon, Charter, Cox, and Comcast; in the case of the New York neighborhood, we included that area's major provider, Optimum.

Every household in the analysis save one had at least one option for gigabit-level Internet service. Out of 60 households, 43 had a choice between at least two broadband providers, both of which offer gigabit service. The range of choices becomes wider once we include new wireless options such as in-home 5G, which are already expanding availability in the surveyed areas. For example, T-Mobile's home 5G service was available at every address in our analysis.

Every household in our analysis save one had at least one option for gigabit-level Internet service.

Our survey found that, in a few cases, different units within the same apartment building were offered different levels of service. We suspect this also makes our results a conservative estimate since the likely reason for this disparity is certain units never having had broadband installed by a particular provider, but service being available.

To be sure, this analysis is nowhere near comprehensive, and it does not claim that there is no home whose speeds are slow or prices are high. What this analysis does do is shed some light on the actual options available to households in some of the areas that, if redlining narratives were true, we would have expected ISPs to skip. Our findings, therefore, suggest that low connectivity rates in urban neighborhoods are mostly due to a lack of uptake. For that, we need to turn to the demand side of the equation.

LACK OF ADOPTION IS OFTEN DUE TO FACTORS BEYOND ISPS' CONTROL

Connectivity requires adoption along with deployment, and these two sides of the market are self-reinforcing. It is, therefore, important to investigate the barriers to adoption consumers face, many of which are beyond the reach of ISP decision-making and, therefore, certainly not the result of racial discrimination by ISPs.

While cost is perhaps the most obvious barrier to adoption, polling consistently shows it is not the primary factor for individuals who do not use the Internet. In 2019, The National Telecommunications and Information Administration found that 60 percent of households that do not use the Internet at home cited "no need/interest" as the main reason, compared with 18.8 percent that cited "too expensive."[12] A similar finding comes from Pew Research Center's regular assessment of the state of the Internet in the U.S., according to which the price of a subscription ranks about as high as "my smartphone does everything I need" (20 percent versus 19 percent) as the most important reason consumers choose not to subscribe to a home Internet plan.[13] Other important factors in consumers' calculations were the cost of a computer or the availability of access outside the home, factors in which wireline home ISPs themselves play no part.

Perhaps most tellingly, of non-broadband users, 71 percent were uninterested in purchasing a broadband subscription in the future.[14] Barriers to home broadband adoption suggest there could be a chicken-and-egg problem for deployment: If many households do not buy home broadband service even if they can afford it, the lack of demand undermines the business case for deployment. But this is not an intractable problem for policymakers if they follow the evidence rather than dwelling on accusations of racial discrimination.

Since disparities in broadband connectivity are driven by differences in income and adoption, rather than race, attacking broadband providers as racists not only fails to solve the broadband problem, but also distracts from the underlying racial inequities that are at the root of downstream inequality.

POLICYMAKERS SHOULD ADDRESS SOLUTIONS TO THE REAL PROBLEMS

Since income and adoption, not race, are the more significant factors driving connectivity, policymakers should adjust their efforts to address those specific areas. Massive recent expenditures in broadband infrastructure will go a long way toward reaching previously unserved users, but the government still needs to evaluate how other programs could best adapt in the wake of that spending.[15] FCC Universal Fund Programs, for example, should shift away from paying ISPs to deploy infrastructure, since the funding for those projects is now more than adequate. Instead, the FCC should keep its focus on programs that support individuals, such as Lifeline and the Affordable Connectivity Program.[16] These programs could be worthy of expansion in terms of total funding, but also in terms of eligible participants and eligible uses for the money. Reducing the price of an Internet subscription is important for those who contend cost as their biggest barrier to adoption, but cost is not the primary barrier for most non-Internet users. Increasing the extent to which consumers can spend FCC support funds on hardware (e.g., computers) or digital literacy education (e.g., learning to use new programs) would target the lack of perceived relevance of the Internet by showing potential users how it can improve their lives.

CONCLUSION

Our findings do not mean that racial discrimination is not a problem. Indeed, income disparities are, in many ways, downstream of racial inequalities, including actual redlining. And racial minorities may disproportionately face other barriers that lead to a reduction in adoption.

Rather, the takeaway from these findings is that policymakers must be careful to target solutions at the right level of the problem. Since disparities in broadband connectivity are driven by differences in income and adoption, rather than race, attacking broadband providers as racists not only fails to solve the broadband problem, but also distracts from the underlying racial inequalities that are at the root of downstream inequality.

Furthermore, just because nonracial factors are the reason for connectivity disparities does not mean there is nothing to worry about. Policymakers have and should continue to work toward widely available broadband, providing financial assistance to augment individuals' ability to pay for the service they need. Focusing on how to structure assistance programs such that the funding does the most good for the most individuals, including those of minority races, is where policymakers should target their efforts.

Inequalities that cause income and other social measurements to mirror racial delineations remain a significant issue, but evidence for racial discrimination in broadband deployment is lacking.

APPENDIX: RESULTS OF STATISTICAL ANALYSIS

ITIF used Census Bureau data from the American Community Survey to perform a multivariate regression analysis of six major metropolitan markets.

The analysis found no statistically significant relationship between race and percentage of broadband connectivity in four of the six cities. However, we found a statistically significant, positive relationship between income and percentage of broadband connectivity in all of the cities but one.

The statistical summary for each market follows, and the full dataset is available for download alongside this report on ITIF's website.[17]

Baltimore

Table 1: Summary output

Regression Statistics	
Multiple R	0.839
R Square	0.704
Adjusted R Square	0.664
Standard Error	0.104
Observations	18

Table 2: ANOVA

	df	SS	MS	F	Signif. F
Regression	2	0.387	0.194	17.811	0.000
Residual	15	0.163	0.011		
Total	17	0.550			

Table 3: Regression coefficients

	Coef.	SE	t Stat	P-val.	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.468	0.051	9.252	0.000	0.360	0.576	0.360	0.576
% White, Non-Hispanic	0.270	0.124	2.174	0.046	0.005	0.535	0.005	0.535
Income	0.000	0.000	2.434	0.028	0.000	0.000	0.000	0.000

Cleveland

Table 4: Summary output

Regression Statistics	
Multiple R	0.757
R Square	0.573
Adjusted R Square	0.555
Standard Error	0.091
Observations	51

Table 5: ANOVA

	df	SS	MS	F	Signif. F
Regression	2	0.531	0.266	32.143	0.000
Residual	48	0.397	0.008		
Total	50	0.928			

Table 6: Regression coefficients

	Coef.	SE	t Stat	P-val.	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.478	0.028	17.364	0.000	0.423	0.533	0.423	0.533
% White, Non-Hispanic	0.216	0.073	2.953	0.005	0.069	0.363	0.069	0.363
Income	0.000	0.000	2.977	0.005	0.000	0.000	0.000	0.000

Jersey City

Table 7: Summary output

Regression Statistics	
Multiple R	0.713
R Square	0.508
Adjusted R Square	0.456
Standard Error	0.065
Observations	22

Table 8: ANOVA

	df	SS	MS	F	Signif. F
Regression	2	0.083	0.041	9.801	0.001
Residual	19	0.080	0.004		
Total	21	0.163			

Table 9: Regression coefficients

	Coef.	SE	t Stat	P-val.	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.676	0.033	20.525	0.000	0.607	0.745	0.607	0.745
% White, Non-Hispanic	0.012	0.140	0.086	0.933	-0.281	0.305	-0.281	0.305
Income	0.000	0.000	3.163	0.005	0.000	0.000	0.000	0.000

New York

Table 10: Summary output

Regression Statistics	
Multiple R	0.789
R Square	0.623
Adjusted R Square	0.569
Standard Error	0.056
Observations	17

Table 11: ANOVA

	df	SS	MS	F	Signif. F
Regression	2	0.073	0.036	11.566	0.001
Residual	14	0.044	0.003		
Total	16	0.117			

Table 12: Regression coefficients

	Coef.	SE	t Stat	P-val.	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.646	0.030	21.679	0.000	0.582	0.709	0.582	0.709
% White, Non-Hispanic	0.069	0.092	0.750	0.466	-0.128	0.265	-0.128	0.265
Income	0.000	0.000	3.552	0.003	0.000	0.000	0.000	0.000

San Antonio

Table 13: Summary output

Regression Statistics	
Multiple R	0.890
R Square	0.793
Adjusted R Square	0.767
Standard Error	0.090
Observations	19

Table 14: ANOVA

	df	SS	MS	F	Signif. F
Regression	2	0.492	0.246	30.612	0.000
Residual	16	0.129	0.008		
Total	18	0.621			

Table 15: Regression coefficients

	Coef.	SE	t Stat	P-val.	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.374	0.043	8.701	0.000	0.283	0.465	0.283	0.465
% White, Non-Hispanic	0.059	0.178	0.329	0.746	-0.319	0.437	-0.319	0.437
Income	0.000	0.000	5.674	0.000	0.000	0.000	0.000	0.000

St. Louis

Table 16: Summary output

Regression Statistics	
Multiple R	0.868
R Square	0.754
Adjusted R Square	0.718
Standard Error	0.090
Observations	17

Table 17: ANOVA

	df	SS	MS	F	Signif. F
Regression	2	0.344	0.172	21.408	0.000
Residual	14	0.112	0.008		
Total	16	0.456			

Table 18: Regression coefficients

	Coef.	SE	t Stat	P-val.	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.444	0.080	5.539	0.000	0.272	0.616	0.272	0.616
% White, Non-Hispanic	0.216	0.196	1.100	0.290	-0.205	0.637	-0.205	0.637
Income	0.000	0.000	1.190	0.254	0.000	0.000	0.000	0.000

About the Authors

Joe Kane is director of broadband and spectrum policy at ITIF. Previously, he was a technology policy fellow at the R Street Institute, where he covered spectrum policy, broadband deployment and regulation, competition, and consumer protection. Before that, he was a graduate research fellow at the Mercatus Center, where he worked on Internet policy issues, telecom regulation, and the role of the FCC. Kane is currently finishing a J.D. from The Catholic University of America, during which time he has interned in the office of FCC Chairman Ajit Pai, SES, and the Satellite Industry Association. Prior to law school, Kane interned at the Competitive Enterprise Institute and the American Action Forum. He also holds a master's in economics from George Mason University and a bachelor's in political science from Grove City College.

Jessica Dine is a research assistant for broadband policy at ITIF. She holds a B.A. in economics and philosophy from Grinnell College.

About ITIF

The Information Technology and Innovation Foundation (ITIF) is an independent, nonprofit, nonpartisan research and educational institute focusing on the intersection of technological innovation and public policy. Recognized by its peers in the think tank community as the global center of excellence for science and technology policy, ITIF's mission is to formulate and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress.

For more information, visit itif.org.

ENDNOTES

1. The Infrastructure Investment and Jobs Act of 2021, which allocates over $65 billion to address issues of broadband access and affordability, H.R.3684 - 117th Congress (2021–2022); Infrastructure Investment and Jobs Act, H.R.3684, 117th Cong. (2021), https://www.congress.gov/bill/117th-congress/house-bill/3684/text; "Preventing Digital Discrimination in Broadband Access," FCC, February 23, 2022, https://www.fcc.gov/document/preventing-digital-discrimination-broadband-access; see also the Federal Communications Commission, "Implementing the Infrastructure Investment and Jobs Act: Prevention and Elimination of Digital Discrimination" GN Docket No. 22-69, https://www.fcc.gov/document/fcc-initiates-inquiry-preventing-digital-discrimination.
2. Bill Callahan, "AT&T's Digital Redlining Of Cleveland" (National Digital Inclusion Alliance, March 2017), https://www.digitalinclusion.org/blog/2017/03/10/atts-digital-redlining-of-cleveland/.
3. John Eggerton, "Broadband Redlining Complaint Filed Against AT&T at FCC" (Next TV, August 2017), https://www.nexttv.com/news/broadband-redlining-complaint-filed-against-att-fcc-168100; see also the FCC complaint, In the Matter of *Joanne Elkins, Hattie Lanfair, and Rachelle Lee v. AT&T Corp*, Proceeding Number 17-223, https://ecfsapi.fcc.gov/file/1092355565047/Final%20Elkins%20Lee%20Lanfair%20vs%20ATT%20Redlining%20Cleveland_updated_9.22_v3.pdf.
4. Morgan Eichensehr, "Baltimore City Council members, 92 other officials call on FCC to address 'digital redlining'," *Baltimore Business Journal*, March 2021,

https://www.bizjournals.com/baltimore/news/2021/03/16/city-council-asks-fcc-to-tackle-digital-redlining.html.

5. Stephen Babcock, “With help from Baltimore leaders, US Rep. Yvette Clarke is introducing the Anti-Digital Redlining Act of 2021,” Technical.ly, August 2021, https://technical.ly/civic-news/anti-digital-redlining-act/; “Broadband ‘Redlining’ Issue Raised In Fiber Deployment,” Network Computing, February, 2005, https://www.networkcomputing.com/networking/broadband-redlining-issue-raised-fiber-deployment.
6. Britannica, The Editors of Encyclopaedia. "redlining". Encyclopedia Britannica, September 11, 2014, accessed March 21, 2022, https://www.britannica.com/topic/redlining.
7. Sally Aman, “Dig Once: A Solution for Rural Broadband,” US Telecom, April 2017, https://www.ustelecom.org/dig-once-a-solution-for-rural-broadband/.
8. OTELCO, “High Speed Fiber Infrastructure: Where, when, why, and how” (June 2018), https://www.otelco.com/fiber-infrastructure/.
9. National Digital Inclusion Alliance, “Worst Connected Cities 2019,” https://www.digitalinclusion.org/worst-connected-cities-2019/. This study chose census data for only large and medium-sized cities.
10. Emily Shrider et al., “Income and Poverty in the United States: 2020” (United States Census Bureau, September 2021), https://www.census.gov/library/publications/2021/demo/p60-273.html.
11. Morgan Eichensehr, “Baltimore City Council members, 92 other officials call on FCC to address ‘digital redlining’”; Bill Callahan, “AT&T’s Digital Redlining Of Cleveland”; John Eggerton, “Broadband Redlining Complaint Filed Against AT&T at FCC”; see also the FCC complaint, In the Matter of *Joanne Elkins, Hattie Lanfair, and Rachelle Lee v. AT&T Corp*, Proceeding Number 17-223; Finally, despite the existence of FCC coverage maps, we elected not to rely on them because of their well-known inaccuracy and overrepresentation of coverage in certain areas. Instead, we used U.S. Census Bureau data on the percentage of households with a broadband subscription per census tract. U.S. Census Bureau (2019 Five Year Estimates), S2801, Types of Computers and Internet Subscriptions, https://data.census.gov/cedsci/table?q=S2801&tid=ACSST5Y2020.S2801.
12. National Telecommunications and Information Administration, “Digital Nation Data Explorer” (NTIA, June 2020), https://www.ntia.gov/data/digital-nation-data-explorer#sel=noNeedInterestMainReason&demo=&pc=prop&disp=chart.; see also Doug Brake and Alexandra Bruer, “Broadband Myths: Are High Broadband Prices Holding Back Adoption?” (ITIF, February 2021), https://itif.org/publications/2021/02/08/broadband-myths-are-high-broadband-prices-holding-back-adoption.
13. Andrew Perrin, “Mobile Technology and Home Broadband 2021” (Pew Research Center, June 2021), https://www.pewresearch.org/internet/2021/06/03/mobile-technology-and-home-broadband-2021/.
14. Ibid.
15. Joe Kane and Jessica Dine, “Comments to the FCC on the Future of the Universal Service Fund” (ITIF, February 2022), https://itif.org/publications/2022/02/17/comments-fcc-future-universal-service-fund.
16. Ibid.
17. Joe Kane and Jessica Dine, “Broadband Myths: Do ISPs Engage in ‘Digital Redlining?’” (ITIF, April 2022), https://itif.org/publications/2022/04/13/broadband-myths-do-isps-engage-digital-redlining.