



Written Testimony of

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Before the

**Congress of the United States**  
**House of Representatives**  
**Committee on Energy and Commerce**  
**Subcommittee on Communications and Technology**

Regarding

**“Legislating to Connect America: Improving the Nation’s Broadband Maps”**

September 11, 2019

Chairman Doyle, Ranking Member Latta, Chairman Pallone, Ranking Member Walden and esteemed members of the subcommittee, thank you for inviting me to testify. I'm here today as Policy Manager for Free Press and Free Press Action, on behalf of our 1.4 million members in all fifty states, the District of Columbia and Puerto Rico. We agree that the time has come to close the digital divide so that all our communities may reap the benefits of a robust, affordable broadband connection to the internet. We support H.R. 4229, the Broadband DATA Act, introduced last week by Representatives Loeb and Latta; and H.R. 4227, the MAPS Act, introduced at that same time by Representatives McEachin and Long. Yet we also note that the task of bridging the digital divide will require far more than improving the detail of our nation's broadband deployment maps.

**Form 477 Data Is Not As Inaccurate As Many Fear, But Could Still Be Improved.**

In an ongoing effort to promote universal broadband internet access service in this country, federal policymakers on both sides of the aisle have focused on potential errors and overstatements in the Federal Communications Commission's National Broadband Map and the underlying data collection for that map known as Form 477. There are indeed opportunities to improve the granularity and accuracy of the Commission's Form 477 data, though the issues may be significantly smaller than some stakeholders fear, at least with regards to fixed broadband deployment.

During the Broadband Mapping Consortium's pilot project managed by CostQuest Associates in Virginia and Missouri,<sup>1</sup> the creation of a broadband serviceable location fabric suggested that for these two states "38% of additional rural locations are unserved in census blocks

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<sup>1</sup> See Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from USTelecom, ITTA, and WISPA (together, the "Broadband Mapping Consortium") *Ex Parte*, WC Docket Nos. 19-195, 19-126, 11-10, 10-90 (filed Aug. 20, 2019); see also Broadband Mapping Initiative: Proof of Concept Report, submitted as an attachment thereto ("Proof of Concept Report").

that would have been reported as ‘served’ in today’s FCC Form 477 reporting approach.”<sup>2</sup> Though USTA did not disclose the total number of locations in their pilot, the FCC’s Form 477 data projects that as of year-end 2017 there were a total of 6.31 million housing units (and 5.6 million households) in these two states combined.<sup>3</sup> Thus, the pilot suggests an error rate for the Form 477 data of approximately 7 percent.

However as the Consortium notes, not all ISPs participated in the pilot project.<sup>4</sup> What’s more, the Census data showing 6.31 million total housing units in these two states does not include business locations, so the percentage of locations counted as served in Form 477 but not served according to the pilot may in fact be lower than what USTA reported. Regardless, the error rate is still significant, indicating (if that rate were to hold nationally) that there could be potentially 7 million additional unserved rural households nationwide currently not identified as unserved in the Form 477 data.<sup>5</sup> That is certainly an issue worth fixing, but the number is far fewer than some may expect.

It’s worth clearing up any misunderstandings of what the Form 477 data is, and what it does and does not show. Certain parties have cited disparities between the Form 477 deployment data and those parties’ studies on broadband speeds and performance, and wrongly concluded that

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<sup>2</sup> Proof of Concept Report at 3.

<sup>3</sup> We provide data on “households” and on “housing units” because the Census defines these two things differently and it is not clear which one the Consortium used as the denominator in the Proof of Concept Report. The FCC’s block-level housing and population estimates also report a total of 1.87 million rural housing units (1.57 million rural households) in these two states combined, with 1.28 million rural housing units (1.1 million rural households) reported as being located in census blocks with one or more fixed terrestrial ISP offering a 25 Mbps/3 Mbps minimum service.

<sup>4</sup> Proof of Concept Report at 4.

<sup>5</sup> We note that this 7 million estimate nationwide is consistent with the Proof of Concept Report’s finding that “as many as 38% of additional rural locations are unserved in census blocks that would have been reported as ‘served’ in today’s FCC Form 477 reporting approach.” *Id.* at 3. The total number of households located in rural census blocks is 25 million, with 18.5 million reported as served at 25 Mbps/3 Mbps in the most recent Form 477 deployment data. If an additional 38 percent of those 18.5 million are in fact unserved the total number of households reported as incorrectly served in Form 477 data would be approximately 14.8 million. This would correspond to approximately 12 percent of the U.S. population being unserved by a fixed terrestrial ISP offering 25 Mbps/3 Mbps service.

these disparities somehow “prove” there are massive overstatements and flaws in the Form 477 deployment data. In particular, Microsoft released a study suggesting that 162.8 million people do not use the internet at what the Federal Communications Commission typically considers “broadband speed,” that is, 25 megabits per second (“Mbps”) downstream and 3 Mbps upstream.<sup>6</sup> Microsoft concludes, somewhat incongruently, that while these results align well with the Commission’s broadband subscription data, they somehow also indicate a dramatic overstatement of 25/3 Mbps broadband deployment within the Form 477 data. But this wrongly equates Microsoft’s performance metrics with the Commission’s deployment metrics.

The Microsoft study does not account for how many of its self-selected users may choose to subscribe to a slower speed tier, even when 25/3 Mbps speeds are deployed and available. Research indicates that many price-sensitive broadband subscribers will opt for slower speeds where those speeds come with a lower price tag. And the Commission’s broadband subscription data for recent years backs this up, as Microsoft seems to concede, by illustrating that in 2017 some 29 percent of fixed terrestrial line subscriptions are for tiers offering less than 25/3 Mbps.<sup>7</sup> Furthermore, whether or not these connections are sold as being capable of 25/3 Mbps transmission speeds, there may be a variety of reasons that a specific test returns a result below that level, many of which (such as problems upstream from the ISP’s network, or issues with the customer’s WiFi router) are outside the ISP’s control and do not indicate any deployment flaws. This kind of conflation of performance data and deployment data suggests a much larger problem than likely exists with current Form 477 deployment data and reporting requirements.

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<sup>6</sup> See Microsoft, “An Update on Connecting Rural America: The 2018 Microsoft Airband Initiative” (Dec. 2, 2018).

<sup>7</sup> See “Internet Access Services: Status as of December 31, 2017,” Federal Communications Commission, Industry Analysis Division, Office of Economics & Analytics, at 26 (Aug. 2019).

Still, there are some key areas where collection of deployment data could be improved. Particularly in rural areas, reporting fixed broadband deployment by Census blocks can be too imprecise to efficiently and effectively target USF support and funds from other rural-focused deployment programs. Similarly, the Commission's current standard for determining deployment is too vague and lends itself to potential over-reporting by providers that insist they "could" deploy broadband to an area, "without an extraordinary commitment of resources." The Commission's deployment data should reflect reality instead. Limiting this over-broad concept of areas and households that could be served is a good idea. The Broadband DATA Act does this with its "standard broadband installation" definition in Section 2, counting only locations that could be served within ten business days. Another useful idea is instituting more granular reporting requirements, especially in rural areas where Census blocks can cover sprawling geographic areas improperly considered "served" in their entirety when only a portion of the block is served. Both steps would likely reduce overstatement in the fixed broadband deployment data, especially in rural areas.

Mobile broadband deployment maps are far more ripe for critique than the Commission's fixed broadband deployment data. There is likely an unacceptable level of overstated availability on wireless maps. This is largely a function of the inherent differences in determining where a mobile signal will be available versus where a wired line is buried or strung. Unlike wired deployment data, mobile deployment data is only 100 percent certain at the tower or small-cell level. Everywhere else it is a map of propagation probabilities. Accurately assessing how a signal will propagate from a tower or small cell presents a more challenging puzzle, as the results of the Mobility Fund Phase II ("MF-II") reverse auction suggest. Last December, the Commission launched an investigation "into whether one or more major carriers violated the MF-II auction's

mapping rules and submitted incorrect coverage maps.”<sup>8</sup> That one or more “major” mobile carriers in a market with only four national carriers may have submitted incorrect maps illustrates the complexities in accurately defining mobile coverage. But there is simply no evidence that the same issues exist for fixed line deployment mapping data.

Fortunately, the Commission’s pending rulemaking proposes to address all of the justified critiques in a way that will likely produce more accurate information. Additionally, we are optimistic about this legislation’s proposal to improve granularity and accuracy by requiring the submission of service area polygons to be overlaid on a national Broadband Serviceable Location Fabric (“Fabric”), though we believe the precise methodology proposed here and the relationship between the carriers’ inputs and the creation of the Fabric is worth further investigation. Lastly, we support the Broadband DATA Act’s call for reporting additional “quality of service” metrics, and consider the current definition in that bill the minimum in terms of what would suffice in this regard. ISPs already do provide information on offered speed tiers – and in fact, they must do so if they are to demonstrate that they provide service that qualifies as “broadband” under the Commission’s current speed threshold (or any threshold, for that matter). As indicated below, however, Congress and the Commission also need better data on broadband pricing, performance, and competition if they are truly intent on connecting people and bridging the entire digital divide rather than just addressing the mapping and deployment issues.

**Better Maps Must Not and Need Not Sacrifice Public Transparency.**

Importantly, any and all improvements to the Commission’s deployment data collection process must not come at the cost of public transparency for the raw data, public usefulness of the data and maps, or comparability with historical 477 data. Both Congress and the Commission have

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<sup>8</sup> Press Release, Federal Communications Commission, “FCC Launches Investigation Into Potential Violations of Mobility Fund Phase II Mapping Rules” (Dec. 7, 2018).

long recognized the value of ensuring maximal transparency and public availability of the full underlying deployment data sets. And Free Press (among others) has made extensive use of them.

Such uses include analysis of Form 477 deployment data to study the racial and economic disparities in broadband deployment,<sup>9</sup> to evaluate the rhetoric around supposed changes in deployment following the 2015 *Open Internet Order*,<sup>10</sup> and to shine a light on the recent case of massive over-reporting by a small ISP called BarrierFree.<sup>11</sup> In December 2017, BarrierFree mistakenly reported newly deploying service at fiber-to-the-home (“FTTH”) speeds in every single Census block in each of the eight states in which it claimed to have a footprint – an error that the Commission failed to notice. BarrierFree’s initial, massive overstatement saw it mistakenly claiming to roll out new FTTH service to nearly 20 percent of the U.S. population in less than six months time,<sup>12</sup> when in fact BarrierFree apparently serves a much smaller number of potential customers in just New York State – not the 62 million in eight states its initial filing suggested.

While this example necessarily shows the potential fallibility of current 477 data collection – or more to the point, flaws in its analysis by the Commission – it illustrates even more clearly the value of making deployment data publicly available. The Commission can and should improve quality controls for its analysis, but there will always remain a strong need for outside oversight. If this legislation contemplates a challenge process with any true corrective power, people and researchers conducting such outside oversight must be empowered with access to data. Attempts

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<sup>9</sup> See S. Derek Turner, Free Press, *Digital Denied: The Impact of Systemic Racial Discrimination on Home-Internet Adoption*, 105-119 (2016) (“*Digital Denied*”).

<sup>10</sup> See Letter from Matthew F. Wood, Policy Director, Free Press, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 17-108, at 3 (filed Oct. 25, 2017); Reply Comments of Free Press, WC Docket No. 17-108 (filed Aug. 30, 2017); Comments of Free Press, WC Docket No. 17-108 (filed July 17, 2017) (utilizing extensive analysis of Form 477 data to demonstrate the deeply flawed underpinnings of the Commission’s “harm to investment” claims).

<sup>11</sup> See Letter from S. Derek Turner, Research Director, Free Press, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 18-238, at 1, 3-5 (Mar. 5, 2019).

<sup>12</sup> *Id.* at 1.

to improve our national broadband maps must ensure that the basic data on where carriers offer service remains publicly available, in forms easily accessible by the public and by researchers. The language in the Broadband DATA Act at introduction, in Section 3(a) on the “dissemination of granular data” and then again in Section 3(c), goes a long way towards this goal, though we would welcome amendments to clarify that the appropriate “balances” described in the bill could not support treating deployment data (as opposed to subscription data) as confidential or proprietary.

It is also valuable to retain the ability for researchers to analyze the data at the Census block-level, even while improving granularity. Without preventing collection of more granular data, preserving the potential to aggregate such data and continue study of trends at the Census block-level will maintain comparability to an abundance of historical data. It will also continue to facilitate rich analysis by enabling the integration of deployment data sets with the wealth of granular demographic and economic information collected by the Census Bureau. Again, the Broadband DATA Act’s command in Section 3 that the Fabric “be compatible with commonly used GIS software” should suffice to ensure this compatibility with Census block-level data.

The Commission has already taken some promising steps while respecting these principles of transparency and comparability in its most recent rulemaking, and this legislation promises to build on that progress – especially so long as it retains language like that in Section 3(b)(6)(A)(i) that directs the Commission to “reform” Form 477 “in a manner that enables the comparison of data and coverage maps produced before the implementation of this act with data and coverage maps produced after the implementation of this act.”

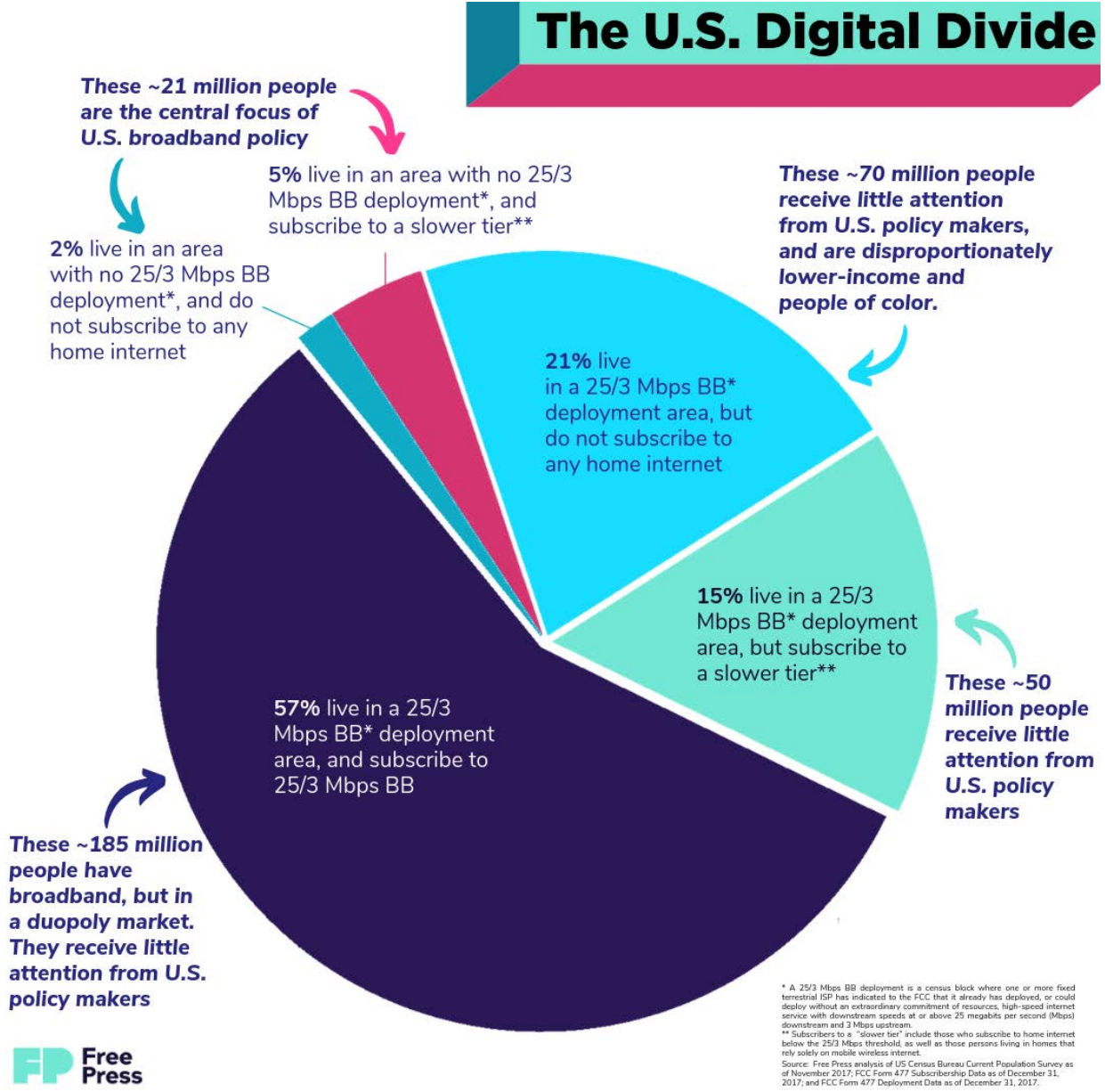


## **Better Maps Are Only One Step Towards the Larger Goal of Closing the Digital Divide.**

While these bills generally take good strides towards improving the granularity and accuracy of broadband deployment data, that alone should not be the goal or sole preoccupation of this subcommittee. At their best, maps are useful because they help us get where we're going. The National Broadband Map in particular is meant to chart a course for policymakers and stakeholders seeking to close the digital divide.

Perhaps the most frequently discussed aspect of the digital divide is the one that stands to benefit most from deployment mapping reforms: Communities and individuals who do not have the option to subscribe to broadband because it is not available where they live. Yet there is good reason to suspect that these completely unserved individuals make up a relatively small portion of the approximately 141 million people who do not subscribe to fixed home internet at the 25/3 Mbps speed threshold typically favored by the Commission. Data from the current Form 477 collection suggest that only 7 percent of people in the U.S. live in an area where no fixed broadband option is available at the 25/3 Mbps speed tier. While this proportion may in fact be larger, given the admitted potential for overstatement in the current deployment data collection process, as discussed above there is little to no evidence suggesting that any such overstatement in the number of served locations is enough to surpass the sizable 36 percent who reportedly do have access to 25/3 Mbps fixed broadband and either choose to subscribe to a slower tier or no service at all (see Figure 1 below).

**Figure 1. Percentage of People Subscribing to Broadband by Level of Deployment**



Regardless of the exact proportion, it is undeniable based on Form 477 data that at least 7 percent do not have 25/3 Mbps fixed broadband deployed where they live, and many of those are in more rural or insular areas. Much has been written about the economic and engineering challenges of offering broadband service in rural areas where the population is less dense, making the potential subscriber base smaller, and topographical features may present unique barriers to

deployment. Free Press research suggests that for some rural communities, getting broadband deployed may be even harder than it is for others. Our report *Digital Denied* found that members of marginalized racial and ethnic groups are more likely than their white counterparts to have no wired ISPs serving their homes, a disparity that is particularly acute in rural areas. While 20 percent of the rural white population has no available wired provider even at downstream speeds of just 3 Mbps, 32 percent of the rural Census-identified Hispanic population, 22 percent of the rural Black population, and 43 percent of rural American Indian/Alaska Natives are completely unserved by any wired ISP even at that relatively low speed.<sup>13</sup> At downstream speeds of 25 Mbps and higher, 40 percent of the rural white population is unserved by a wired provider, compared to 52 percent of the rural Hispanic population, 45 percent of the rural Black population, and 67 percent of the rural American Indian/Alaska Native population.<sup>14</sup> Such small but significant racial differences in rural deployment hold true even when we account for differences in income.<sup>15</sup>

Industry rightly views accurate and granular broadband maps as a tool for more efficiently targeting additional USF support, including Mobility Fund and Rural Digital Opportunity Fund spending, to these completely unserved communities. Accurate deployment data also serves as a way for policymakers to ensure that these efforts are not under-spending, over-spending, or misdirecting ratepayers' money to line the pockets of providers who are not actually equipped to deploy service in these areas. Yet improving our national broadband map is just a means to an end.

That end goal cannot simply be more deployment. If we are truly to close the digital divide, it must include more affordable and universal adoption. When it comes to broadband dreams, "If

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<sup>13</sup> *Digital Denied* at 109.

<sup>14</sup> *Id.*

<sup>15</sup> *Id.* at 119.

you build it, they will come” just isn’t true. It would be more accurate to say, “If you build it, they will come...but only if they can afford to pay the price, or find some other way to get in the game.”

Even if the bills under consideration here today and the Commission’s actions implementing them resulted in completely perfect, error-free maps, and even if those maps enabled complete national broadband deployment, the digital divide would persist. It’s extremely likely that even with new deployment filling any existing gaps, currently unserved and underserved communities in rural and urban areas alike would still face steep prices and other barriers to adopting. According to Free Press research, only 5 percent of non-adopters living outside of metropolitan areas cite lack of available service as a reason they do not subscribe to broadband.<sup>16</sup> The other 95 percent cite a host of other reasons, including high prices.

So we must solve the deployment gap, but we can’t stop there. In reality the digital divide is broad and complex, and closing it necessarily involves addressing the complexities of promoting broadband affordability and competition. In addition to the millions of people living in the U.S. without access to 25/3 Mbps broadband deployment today, millions more live in an area where 25/3 Mbps broadband is deployed yet they can only afford a slower or less reliable connection. Perhaps tens of millions more can’t afford any broadband subscription at all, even though they live in areas where 25/3 Mbps broadband speeds are indeed available.

And the majority of the population lives in an area where 25/3 Mbps broadband is deployed, and they do subscribe to a speed tier at least that fast, but they still have few choices and face high prices. Competition is particularly lacking in the wired home broadband market, where no robust resale market exists. This is in part why it is possible for households to subscribe to mobile wireless services for less than 10 dollars per month, but virtually no similarly-priced

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<sup>16</sup> See “Current Population Survey, November 2017, Computer and Internet Use File: Technical Documentation, CPS-15” (2017) (“November 2017 CPS”).

option exists for wired home internet outside of discount programs only available to a limited selection of qualifying households. For example, in many markets Charter Communication's entry-level tier offers 200 Mbps downstream speeds for 70 dollars per month after introductory rates expire, a price that many low-income households will find out of their reach. Without resellers serving this overlooked section of the demand curve by offering lower rates for Charter's excess capacity, price-sensitive households have extremely limited choices if any for affordable wired broadband.

When families are forced to forgo other necessities like diapers and food so they can afford to keep paying their internet bill, when students are forced to research and write essays on mobile phones because their parents can't afford a fixed connection, when unemployed individuals are forced to hunt for jobs without the aid of broadband that's available right outside their door because the price is simply too high, we have an affordability problem.

Study after study has found that broadband adoption is closely correlated with income. As of year-end 2017, only 42 percent of households with annual family incomes below \$20,000 had fixed wired home internet service, compared to 83 percent of households with incomes above \$100,000.<sup>17</sup> Even among those with home internet, there is a strong relationship between income and the type of technology used. Internet-adopting households in the bottom-income quintile are more than 3 times as likely as those in the top quintile to live in a home with only mobile internet access.

Income inequality is not the only barrier to universal broadband adoption, however. People of color generally lag behind their white counterparts in terms of broadband adoption, with 84 percent of white people adopting home internet, compared to only 79 percent of Hispanic people,

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<sup>17</sup> November 2017 CPS.

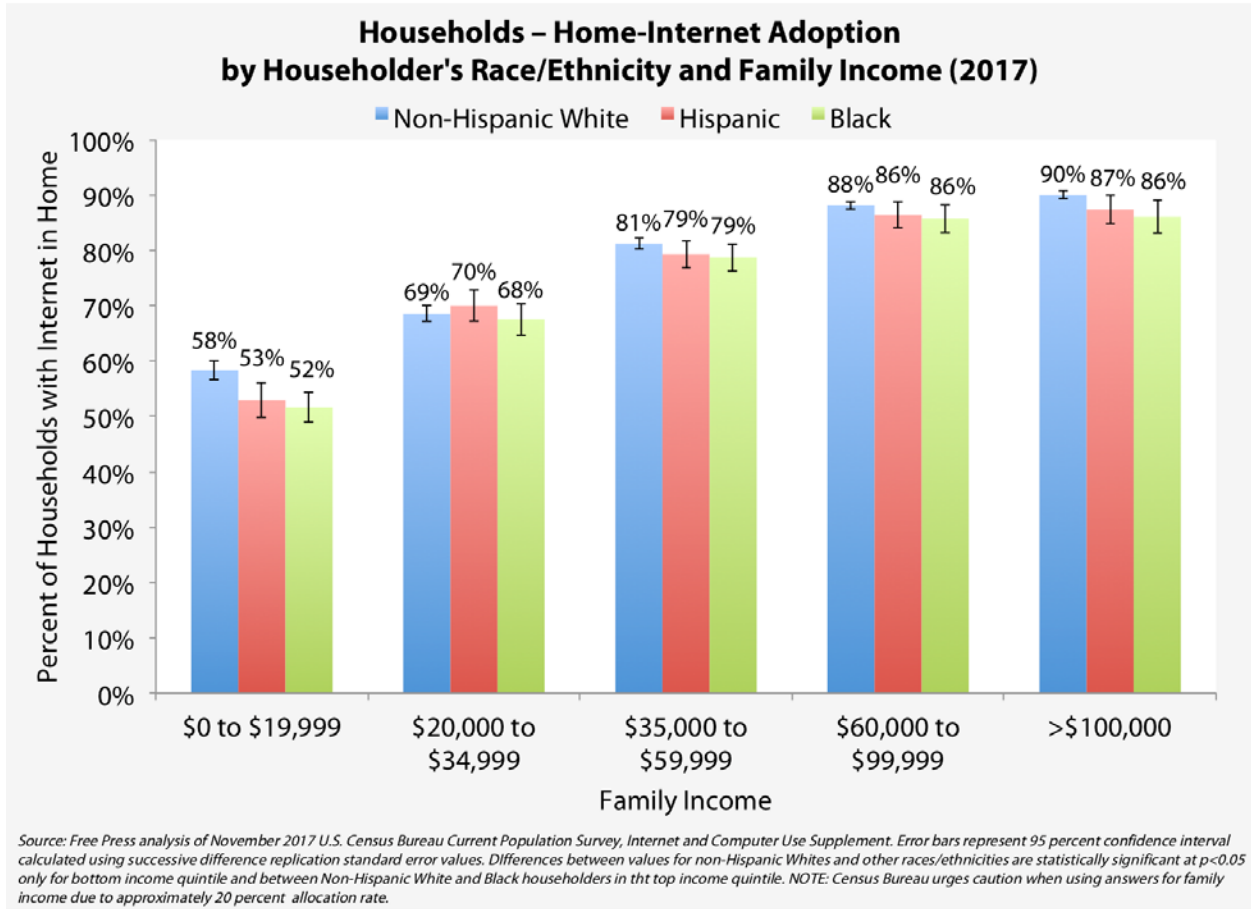
76 percent of Black people, 70 percent of American Indian/Alaska Natives, and 81 percent of Native Hawaiian/Pacific Islanders.<sup>18</sup> While these racial disparities in broadband adoption can be partially explained by regrettable income inequality along racial lines, meaning that white people continue to have far higher median incomes than people of color, differences in income across race and ethnicity do not completely account for this divide. Even when Free Press accounted for income differences and a host of other demographic factors including age, job, and education, many racial and ethnic groups continue to lag behind white people in home-internet adoption.<sup>19</sup> Figure 2 below shows the persistent broadband adoption gaps based on income as well as race and ethnicity.

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<sup>18</sup> November 2017 CPS.

<sup>19</sup> *Digital Denied* at 4.

**Figure 2. Home Internet Adoption by Householder’s Race/Ethnicity and Family Income**



Some observers have suggested that perhaps low-income communities and communities of color simply don’t see the value of broadband – but this idea is as demeaning as it is inaccurate. Lower income quintiles are far more likely than higher income quintiles to cite their inability to afford broadband as a primary reason for not adopting, with nearly 25 percent of non-adopting households making less than \$20,000 annually specifying lack of affordability as the most important reason.<sup>20</sup> Black and Hispanic households (at 29 percent and 26 percent respectively) are more likely than those in white households (19 percent) to say they would subscribe to broadband

<sup>20</sup> November 2017 CPS.

if it were available at a lower price, and also to seek out broadband service outside the home, for example in libraries and community spaces.<sup>21</sup>

Taken together, there is strong evidence that lack of affordability, lack of competition, and racial discrimination (that manifests not only as income inequality, but in other types of systemic discrimination too such as credit scoring, housing, and employment) each contribute to the digital divide keeping people offline. Better maps will help policymakers more effectively target public investments to improve broadband deployment, and that is important, but even the best maps would be insufficient on their own to bridge this divide. Much has been said about the importance of getting the best data in order to solve the deployment problem, and rightly so – but the Commission currently collects virtually zero useful data regarding broadband prices or affordability. These are not separate problems. Your unserved constituents will not thank you if we merely build them on-ramps to a digital superhighway they can't afford to ride.

That is why, while we support the bills subject to today's hearing as far as they go, we urge the subcommittee to see them as a stepping stone. Improving the accuracy of broadband mapping is valuable so long as policymakers stay true to the principles of ensuring maximal public availability of deployment data, and remember that the divide is much broader than maps or deployment alone.

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<sup>21</sup> November 2017 CPS.