Executive Summary

Broadband Availability and Access in Rural Pennsylvania

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Over 800,000 Pennsylvania residents do not have access to broadband connectivity, according to the Federal Communications Commission (FCC). However, recent research has documented that these official estimates are downplaying the true state of the digital divide because they rely on self-reported data by Internet Service Providers (ISPs).

Therefore, informed policy requires systematic analysis to both verify the FCC's numbers and accurately determine the true state of broadband connectivity across Pennsylvania.

This research collected more than 11 million broadband speed tests from across Pennsylvania in 2018. These tests measured broadband speeds in every Pennsylvania county and found that median speeds across most areas of the state do not meet the FCC's criteria to qualify as broadband.

This research leveraged the expansive resources available via the Measurement Lab (M-Lab) platform, which is an open source project of researchers, industry and public-interest partners, and an international team of network researchers whose expertise span from Geographic Information System (GIS) visualization and telecommunications technologies, to federal, state, and municipal broadband policies. Over the course of the project, the research team developed a transparent and replicable methodology that used open source tools for collecting broadband data.

This year-long research effort focused on precisely measuring median broadband speeds within specific geographic areas, and on identifying the extent of variances between "official" estimates of broadband availability and broadband speed measurements gathered "from the field."

The main findings from these analyses have profound implications for existing and future efforts to bridge the digital divide. The key findings are:

1. The FCC's official broadband maps from December 2017 (updated May 2019) show 100 percent availability across all of Pennsylvania of broadband speeds that exceed 25 megabits per second (Mbps);
2. The research team collected more than 11 million broadband speed tests from across Pennsylvania in 2018 and found that median speeds across most areas of the state did not meet the FCC's criteria to qualify as a broadband connection;
3. At the county level, the 2018 data showed that there were 0 (zero) counties in Pennsylvania where at least 50 percent of the populace received "broadband" connectivity, as defined by the FCC;
4. Connectivity speeds were substantially slower

in rural counties than in urban counties; and

5. By combining 2018 data with a historical archive of an additional 15 million tests from Pennsylvania residents, the research team identified that, since 2014, the discrepancy between ISPs' self-reported broadband availability in the FCC's broadband maps and this research's speed test results collected via the M-Lab platform has grown substantially in rural areas, but not in urban areas; this may indicate a growing overstatement of broadband service availability in rural communities.

To enable further exploration and refinement of these data, the research team is freely and publicly releasing all of the data, mapping methodologies, scripts, and visualization tools.

This research provides a considerable level of documentation and insight into the state of broadband connectivity experienced by rural residents across Pennsylvania. Unfortunately, efforts to bridge the digital divide have, thus far, fallen far short of official broadband speed goals; and while these efforts have improved connectivity for many, the divide between rural and urban areas may be growing – a divide that is further clouded by the official FCC maps.

As a part of this project, the research team has produced an open, easily-reproducible methodology in collaboration with experts in the field. The goal has been to help create a new "gold standard" for this type of research – a methodology that can be generalized to other states and national efforts and one that represents a best practice for future efforts aimed at determining the extent of broadband access. This project has specifically explored the availability of 25/3 Mbps broadband across the state and provides options for government, community, and civic organizations that want to help support universal broadband availability.

The main implications stemming from the research findings are that successfully addressing the digital divide will require a variety of tactics, some old, but many new. Major investments in both the documentation of on-the-ground realities, as well as directly in infrastructure, should be considered.

Finally, the project team's archival research documents that broadband connectivity has been successfully deployed to previously underserved communities, both within Pennsylvania and across the country, using a diverse array of business models. Therefore, the research team recommends maximizing the options for service provision to ensure true broadband deployment across rural Pennsylvania.

For a copy of the report, *Broadband Availability and Access in Rural Pennsylvania,* visit www.rural.palegislature.us. For the live data, visit https://pa.broadbandtest.us.