

RESEARCH & POLICY

# INSIGHTS



## Who is Currently Served by Broadband in Indiana?

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# Meet the Author



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Roberto Gallardo is the Vice President for Engagement at Purdue University. He is also an Agricultural Economics associate professor. Gallardo has worked with regions and communities—relying on bidirectional engagement—for 20 years conducting local & regional community economic development. He has authored more than 100 articles and reports including peer-reviewed and news-related regarding trends, socioeconomic analysis, industrial clusters, the digital divide, and leveraging broadband applications for community economic development. Dr. Gallardo and his team also played a critical role in developing Indiana's first digital equity plan and in evaluating the impact of multiple place-based development programs.

# Who is Currently Served by Broadband in Indiana?

## // ABSTRACT

As states start investing the funds from the \$42 billion Broadband Equity, Access, and Deployment (BEAD) program, the focus has been on unserved (locations lacking access to 25 Mbps download speed/3 Mbps upload speed) and underserved (locations lacking access to 100/20 Mbps). However, no analysis has been done to better understand who is currently served (locations with access to at least 25/3 Mbps). This article utilizes the revamped national broadband map to conduct descriptive analysis of those locations considered served. Findings indicate the urban-rural divide continues and that different areas of the state are served by different technologies. Insights provided by this analysis should help practitioners and policymakers better understand their served landscape, its potential, and its shortcomings.

## // INTRODUCTION

During the COVID-19 pandemic it became very clear that the digital divide is an issue that needs to be addressed. Several federal programs were included in major acts like the Coronavirus Aid, Relief, and Economic Security Act (CARES) and the American Rescue Plan Act (ARPA) to help address the digital divide. The latest and largest effort is called the Broadband Equity, Access, and Deployment (BEAD) program, part of the Infrastructure Investment and Jobs Act (IIJA), which allocated \$42 billion for broadband infrastructure deployment, mapping, and adoption.

BEAD prioritizes high-cost areas as well as unserved (lacking access to 25/3 Mbps service) and underserved (lacking access to 100/20 Mbps) locations to receive funding. As part of this effort, the Federal Communications Commission (FCC) revamped its national broadband map and data collection by gathering more granular data. The previous broadband map focused on Census blocks, which in turn could contain multiple housing units and other structures and categorized each block as served based on a single unit with access within the block. This resulted in overestimating broadband availability.

The newest map focuses on what are called broadband serviceable locations or BSLs. BSLs include residences, businesses, or both. Internet service providers (ISPs) report broadband technologies available and maximum advertised speeds for each BSL. Because of this, the newest broadband map delineates unserved and underserved BSLs, which in turn will dictate where BEAD funds are invested.

While the discussion has centered around the unserved and underserved, no descriptive analysis has been completed to better understand who is currently served (with access to a minimum of 25/3 Mbps), by what technology, and where. This is important to understand because it can shed light on areas that may be served by BEAD's standards today but may provide inadequate service in the future. It can also shed light on which areas of the country have access to multiple technologies and which have access to only one broadband technology.

This analysis conducted a descriptive analysis of served BSLs in Indiana to contribute to the ongoing discussion on the digital divide and an up-to-date snapshot on who, where, and what type of broadband—as defined by BEAD.

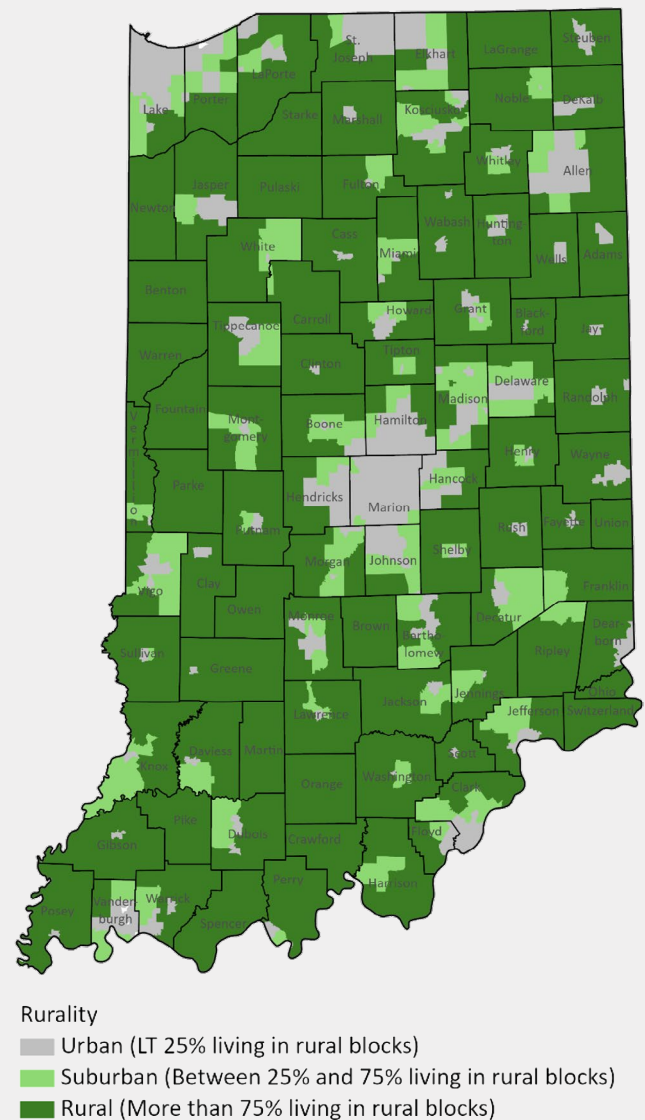
## // DATA & METHODS

Data was obtained from the December 2023 FCC national broadband map<sup>1</sup> and aggregated to Census blocks and tracts for analysis. Variables included total BSLs, served, unserved, and BEAD broadband technologies<sup>2</sup> including digital subscriber line (DSL), fixed wireless, cable, and fiber-optic. Types of served BSLs (residential or business) were also included along with the BEAD technologies available. This dataset is updated every six months after incorporating or resolving challenges submitted by both ISPs and residents.

To better understand the digital divide in terms of rurality, **Figure 1** shows Census tracts in Indiana grouped into urban, suburban, and rural based on the tract's share of rural population. Urban tracts (gray) had less than 25% of their population living in rural areas; suburban tracts (light green) had between 25 and 75% of their population living in rural areas; and rural tracts (dark green) had more than 75% of their population living in rural areas.

The share of the population living in rural areas at the tract level was calculated using 2020 Decennial Census blocks. Only four out of 1,692 tracts in the state were not categorized due to missing Census block data. Based on this definition of rurality, a little more than 67% of Indiana's 2020 decennial census population lived in urban tracts, 8.7% in suburban tracts, and 23.7% in rural tracts.

**Figure 1. Indiana Census Tracts by Rurality Category**



<sup>1</sup> [Home | FCC National Broadband Map](#)

<sup>2</sup> Satellite and unlicensed fixed wireless were not included.

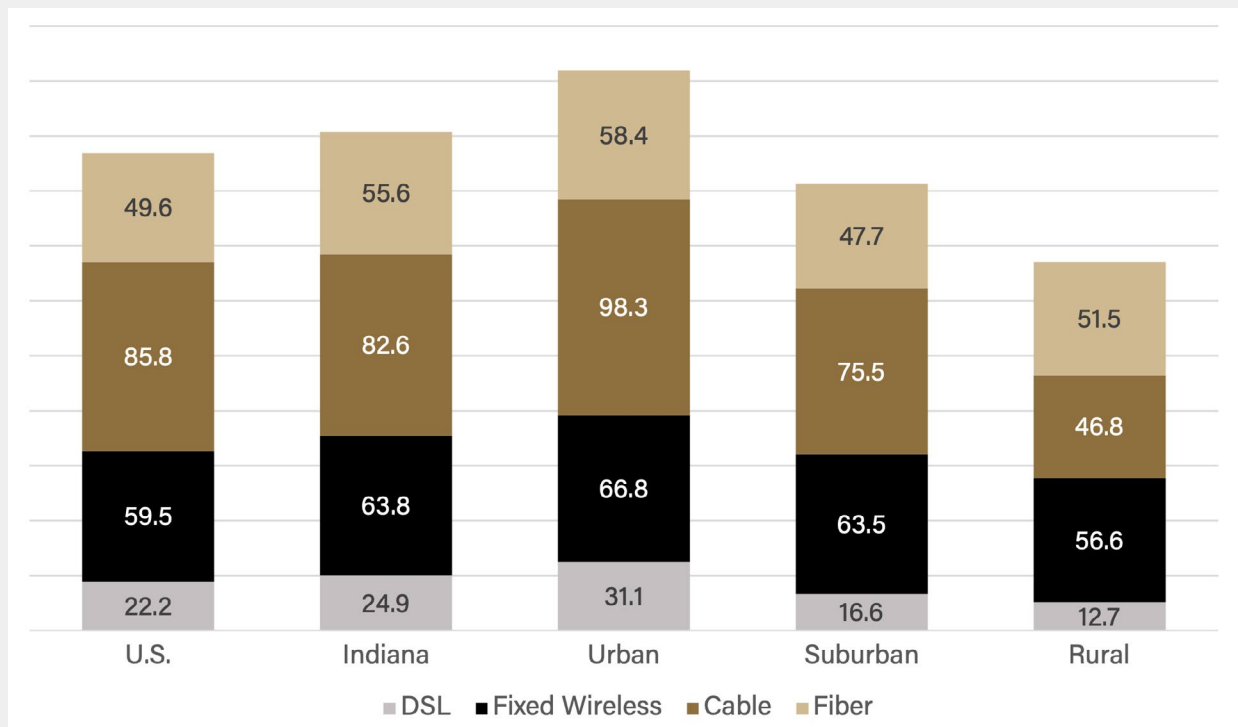
## // RESULTS

A total of 2.72 million BSLs were reported in Indiana based on the national broadband map as of December of 2023. Of these, roughly 2.59 million or 95% were considered served. Remember that served are BSLs with access to a minimum of 25/3 Mbps service within the BEAD technologies (DSL, fixed wireless, cable, and fiber-optic). The share of served BSLs in urban tracts was 99%, 95% in suburban tracts, and 85% in rural tracts. Given these high percentages, it is important to understand who is served by what.

**Figure 2** breaks down the percent of served BSLs by technology and rurality category. In the U.S., a little more than one-fifth of served BSLs had access to DSL, close to 60% had access to fixed wireless, more than 85% to cable, and slightly less than half to fiber-optic. Note these will add up to more than 100% because these technologies are not mutually exclusive.

In Indiana, close to one-quarter of served BSLs had access to DSL, almost 64% to fixed wireless, 82% to cable and 55% to fiber-optic. The share of urban tracts in Indiana with access to cable, for example, was more than double the share in rural tracts. Likewise, the share of urban BSLs served by DSL was also more than double the share in rural tracts. Regarding fiber-optics, a little more than half of rural BSLs had access compared to 47% in suburban tracts and close to 60% in urban tracts.

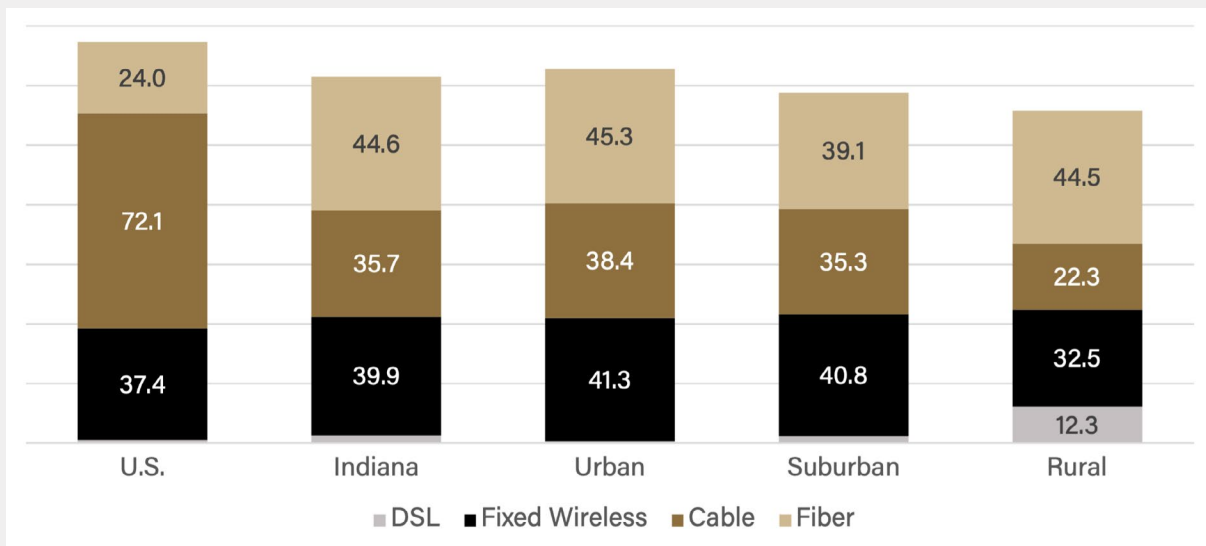
**Figure 2.** Percent of Served BSLs by Technology and Rurality Category



Source: FCC Broadband Map; December 2023

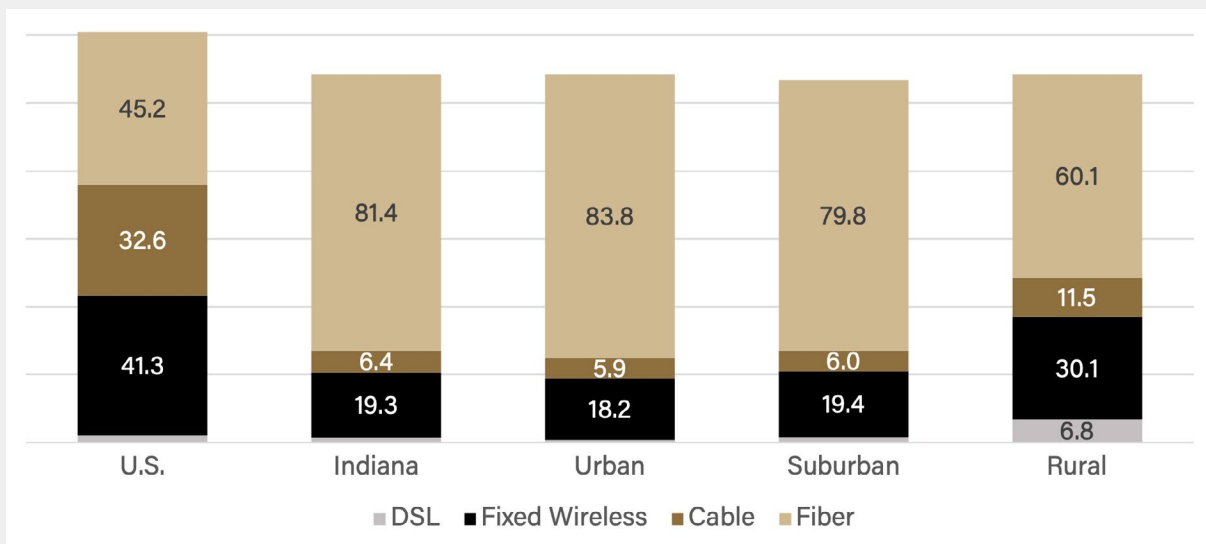
Regarding the type of BSLs, location, and technology, **Figures 3-4** show the percent of BSLs by type (residential or businesses) with access to BEAD technologies. In Indiana residences, cable had the highest share in urban and rural tracts while fixed wireless had the highest share in suburban tracts. For Indiana businesses, the share of those with access to fiber-optics is the highest regardless of rurality category. However, the share in rural tracts is 20 percentage points lower compared to urban businesses. Compared to the U.S., the share of served residential BSLs with access to cable was half the share in the U.S. (72% versus 35%). Moreover, the share of Indiana residences and businesses with access to fiber-optic was almost double compared to the nation's. This means that broadband investments in Indiana have resulted in a broader fiber-optic footprint compared to the country.

**Figure 3. Percent of Served BSLs by Type, Technology, and Rurality Category – Residential**



Source: FCC Broadband Map; December 2023

**Figure 4. Percent of Served BSLs by Type, Technology, and Rurality Category – Businesses**

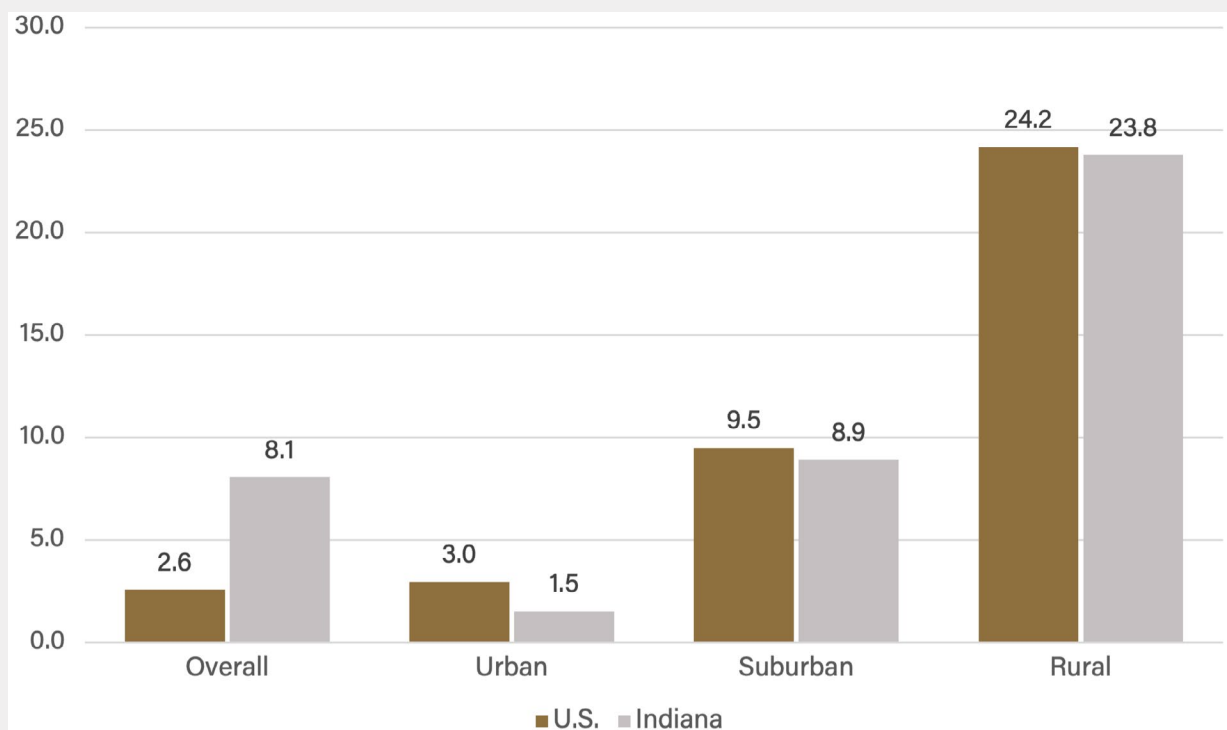


Source: FCC Broadband Map; December 2023



**Figure 5** shows the percent of served BSLs with access to only one BEAD technology by rurality categories. Understanding the options those served have is important because broadband technologies have different data transfer capabilities (download and upload speeds) and latency (responsiveness) that ultimately result in varying quality of service.

**Figure 5. Percent of Served BSLs by One BEAD Technology by Rurality Category**



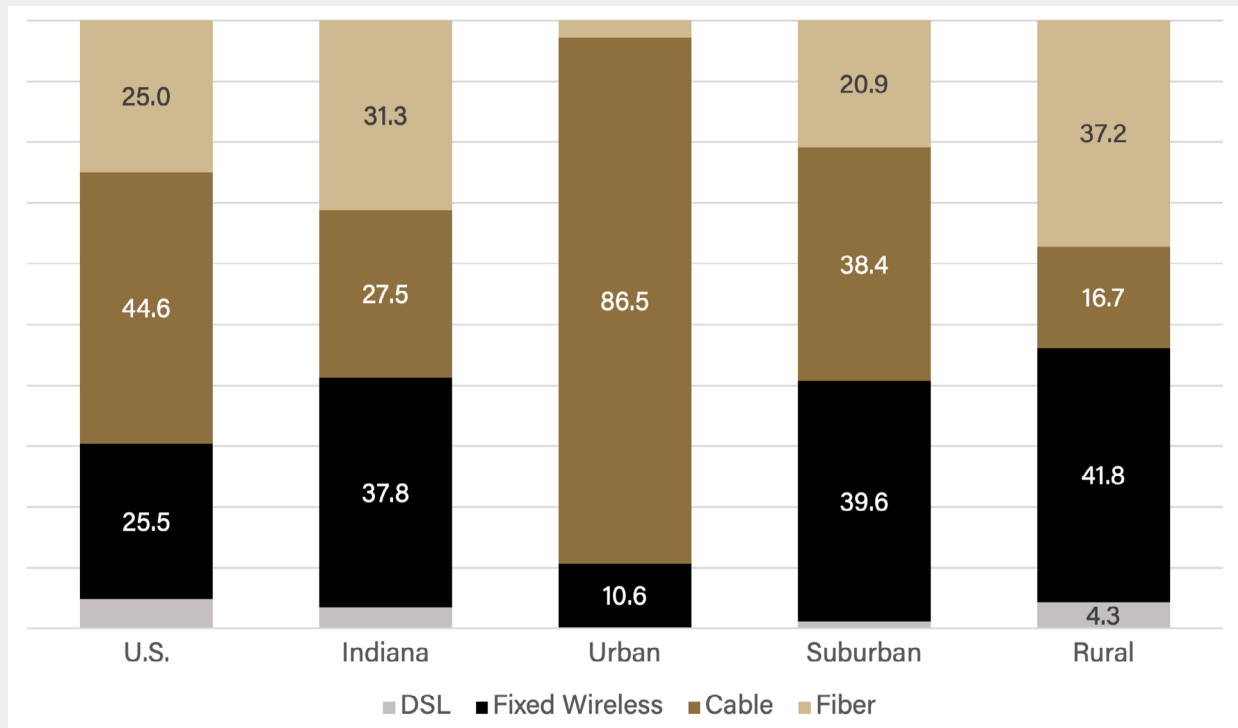
Source: FCC Broadband Map; December 2023

A clear digital divide emerges—defined as those only having one option to BEAD technology—in Figure 5. The share of served BSLs in Indiana with access to only one BEAD technology was almost four times higher than the nation’s (8.1% versus 2.6%). In raw numbers, a little more than 209,000 BSLs in Indiana were served by one BEAD technology, of which 161,000 or 77% were rural BSLs. The share of urban BSLs in Indiana with access to only one BEAD technology was half compared to the nation’s. On the other hand, rural areas in both the U.S. and Indiana had a significantly higher share of served BSLs with access to only one BEAD technology compared to urban and suburban.

Diving deeper into the served by one BEAD technology BSLs in Indiana, **Figure 6** breaks down these by technology type and rurality category. One-quarter of served BSLs by one BEAD technology in the U.S. had access to fiber-optic, compared to a little less than one-third in Indiana. When looking at urban BSLs in Indiana, more than 85% had only access to cable compared to 16% in rural tracts. On the other hand, a little more than 40% of rural BSLs only had access to fixed wireless compared to 10% in urban BSLs. Lastly, more than one-third of rural tracts were served by only fiber compared to less than 3% in urban tracts.



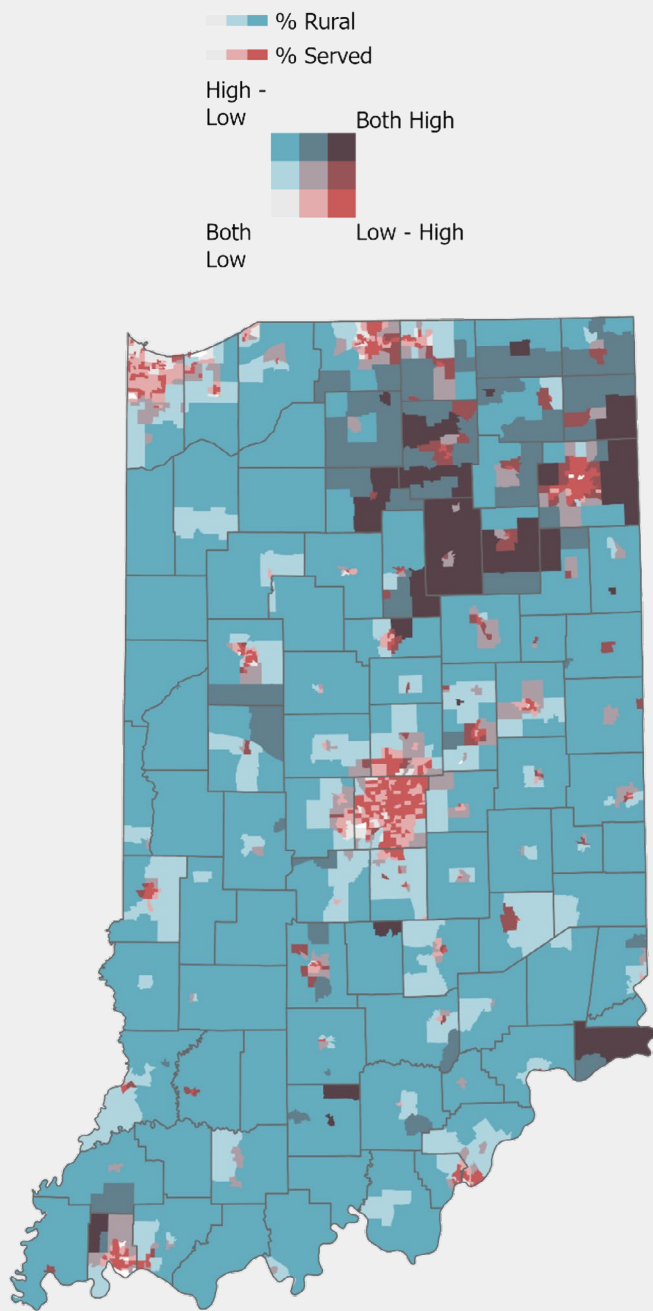
**Figure 6. Percent of Served BSLs by One BEAD Technology by Technology and Rurality Category**



Source: FCC Broadband Map; December 2023

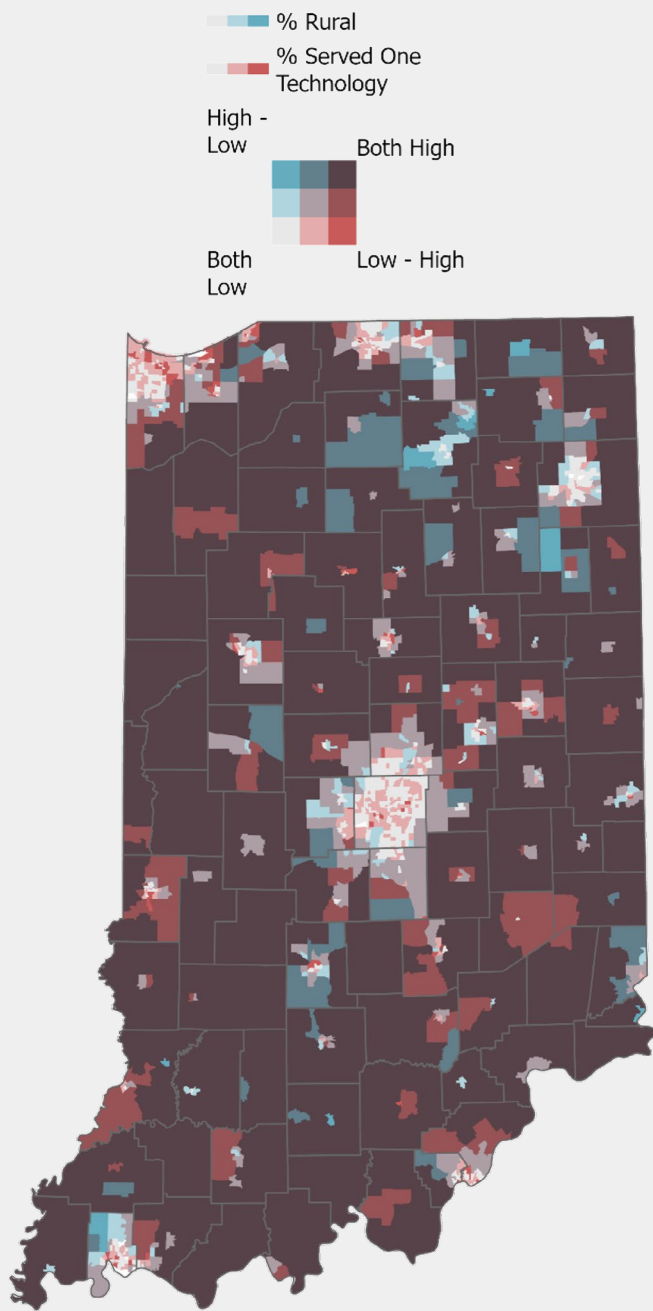
To wrap-up the results, **Figures 7-8** show two “bivariate” maps of Indiana. The first one (Figure 7) maps the share of the rural population and the share of served BSLs by Census tracts. The darker purple color indicates a tract that is high in both the share of rural and the share of served BSLs. The darker blue, on the other hand, shows tracts with a higher share of rural, but a lower share of served BSLs. Figure 8 also plots the share of the rural population and the share of served BSLs by one BEAD technology. Here again, the darker purple color indicates a higher share of rural and served by one BEAD technology. In other words, the more rural a Census tract the more likely it has a lower share of served BSLs and a higher share of BSLs served by one BEAD technology.

**Figure 7.** *Bivariate Map with Percent Rural and Percent Served*



Source: FCC Broadband Map; December 2023

**Figure 8.** *Bivariate Map with Percent Rural and Percent BSLs Served by One BEAD Technology*



Source: FCC Broadband Map; December 2023

## // CONCLUSIONS

As the BEAD funds begin to roll out into unserved and underserved areas in Indiana, the digital divide landscape will change in a positive way. At the same time, it is important to understand who is currently served, where, and by what technologies. Findings indicate that more than 90% of BSLs are served by BEAD technologies with at least 25/3 Mbps service in Indiana. However, the share of served BSLs in rural tracts is 10 percentage points lower compared to urban tracts.

Regarding BEAD technologies (DSL, fixed wireless, cable, and fiber-optic), Indiana's share is higher than the country's when it comes to fiber-optic and fixed wireless and very similar when looking at cable and DSL (see Figure 2). The share of urban BSLs served by DSL was more than double compared to rural areas. This implies that unless they have access to other technologies, these urban BSLs may end up with subpar broadband for years to come. And while close to 100% of urban BSLs were served by cable, less than half were served by cable in rural areas.

The share of business BSLs was higher when served by fiber-optics followed by fixed wireless compared to other technologies regardless of rurality category. However, the availability of fiber-optics to rural businesses was 20 percentage points lower compared to urban areas. On the other hand, more technologies are available among residential BSLs, where a higher share of urban BSLs are served with cable compared to rural BSLs (see Figures 3 and 4).

A clear divide emerges when looking at BSLs served by only one BEAD technology. While this is partially explained by lack of density, it nonetheless results in less options for rural areas. While less than 2% of urban BSLs in Indiana were served by only one technology, close to one-quarter of rural BSLs had access to only one BEAD technology (see Figure 5). Furthermore, cable serves the majority of urban BSLs with one BEAD technology while in rural areas, the share is similar between fiber-optics and fixed wireless (see Figure 6).

Future research can focus on tracking this landscape over time as more and more BEAD projects are implemented. Hopefully, BEAD will change the focus from a strict access/availability divide to a divide looking at different technologies among served BSLs.

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