Confidential Internal Report (Public Data Example)

Subject: Broadband Availability and Speed Analysis in New York State (2019)

Key Takeaway: While many Census blocks in New York State have multiple broadband providers, significant disparities in internet speed and access persist across the state. Urban areas like New York City and Albany benefit from higher provider counts and faster internet speeds, whereas rural regions, particularly those in the Adirondack Mountains, often face limited options and mixed, if not slower, speeds.

Introduction

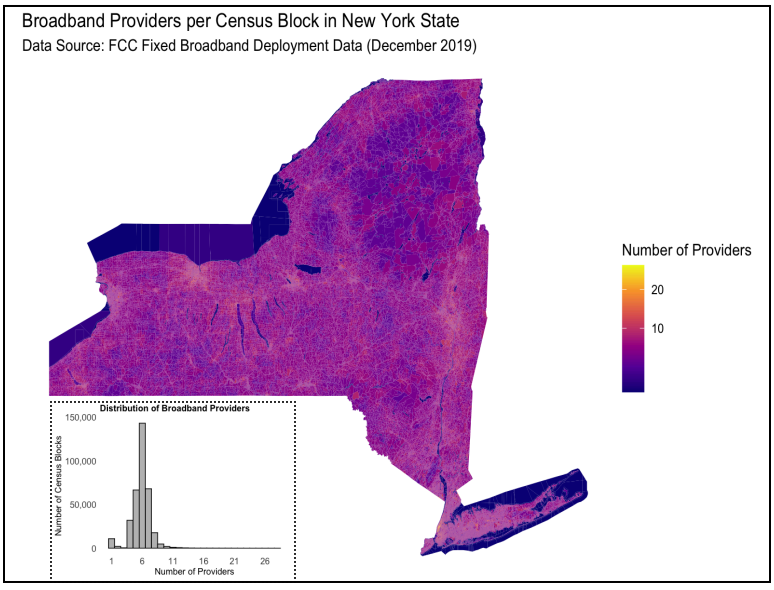
This report uses publicly available FCC Fixed Broadband Deployment data (December 2019) combined with U.S. Census block shapefiles to examine patterns in broadband provider availability and maximum advertised speeds across New York State. The primary goals are to understand baseline levels of provider competition, investigate any relationships between provider counts and advertised speeds, and identify geographic disparities in broadband access. Confidential client data was removed from this version of the project.

Key Findings

1. *Provider Availability Patterns*
   After grouping broadband providers by Census block, we found both the mean and median number of providers per block is approximately six. Out of 350,169 Census blocks examined, 143,225 (about 40.9%) have exactly six providers, indicating a notable concentration around this level of availability. However, the range of provider counts (1 to 28) illustrates considerable variation in the marketplace.

   Urban centers such as New York City and Albany feature Census blocks with a consistently higher provider count, while rural areas, notably in the Adirondacks, have fewer options. This pattern suggests a core level of competition in many places but underscores persistent disparities. Figure 1 visualizes the spatial distribution of provider availability and confirms the clustering around six providers, as well

Figure 1

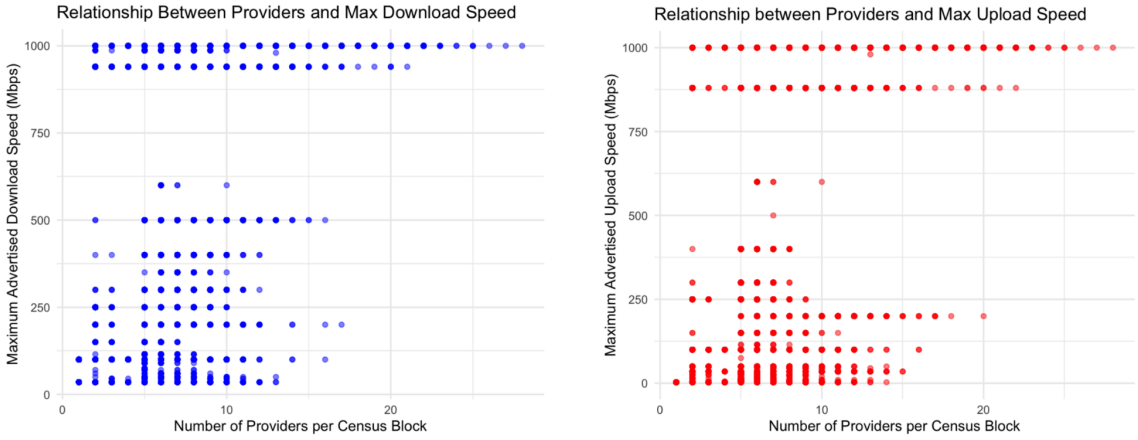


as highlights areas diverging from the norm.

2. *Relationship Between Provider Count and Advertised Speeds*
We examined whether having more providers correlates with higher maximum advertised internet speeds. Computing Pearson correlations, we found a moderate positive correlation (~0.53) for download speeds and a weaker positive correlation (~0.33) for upload speeds. While this suggests that competition may coincide with better service offerings, it does not establish causation.

Factors like infrastructure investment, population density, or economic conditions may also influence speeds. Moreover, advertised speeds may not reflect actual user experiences. A more comprehensive model, potentially integrating additional variables, would be needed to draw stronger conclusions. Below, Figure 2 depicts the observed relationships, offering visual evidence of the general upward trends as provider counts increase.

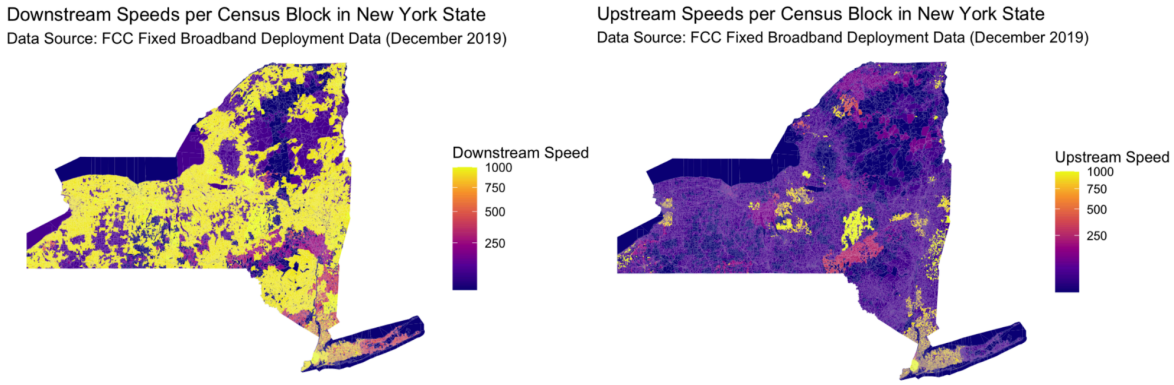
Figure 2



3. *Geographic Disparities in Speed Offerings*
Mapping the maximum advertised speeds reveals pronounced geographic differences. Urban areas—New York City, Albany, Buffalo—generally feature higher advertised downstream and upstream speeds. In contrast, rural regions, particularly north of Albany and in the Adirondacks, show significantly lower speeds and fewer providers.

Upload speeds, critical for many modern digital activities, are especially limited in rural areas, intensifying the “upload divide.” This suggests that while certain communities enjoy ample high-speed connectivity, others struggle to achieve baseline service quality. Such disparities can influence economic opportunities, education, and access to critical online services. The maps below in Figure 3 provide a clear spatial narrative, illustrating which areas enjoy robust speeds and which remain underserved.

Figure 3



Limitations and Considerations

- *Advertised Speeds vs. Actual Performance*
  The analysis relies on maximum advertised speeds, which may differ from average experienced speeds due to factors like network congestion.
- *Contextual Influences*
  Correlations observed do not control for underlying variables like infrastructure investment or local income levels. Additional modeling or external datasets could refine these insights.

Conclusions and Potential Next Steps

Broadband availability in New York State centers around a moderate level of provider competition, with about six providers per block being common. While more providers seem to correspond with higher advertised speeds, deeper analysis is needed to confirm underlying causal factors. Geographic patterns highlight meaningful differences between urban and rural regions, emphasizing the need for targeted interventions if bridging the digital divide is a priority. Potential next steps might include:

- Integrating demographic or infrastructure investment data to understand drivers of the observed disparities.
- Tracking changes over time to assess whether policy initiatives or market shifts improve access and competition.
- Considering more complex econometric models or Bayesian approaches to isolate the true impact of provider counts on actual service quality.