LLO8200

BROADBAND SPEEDS IN LOUISIANA

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Covered Today

A brief outline

Articulation of the Problem

Research Question

Descriptive Statistics

Findings, Limitations, and Next Steps

Problem of Practice

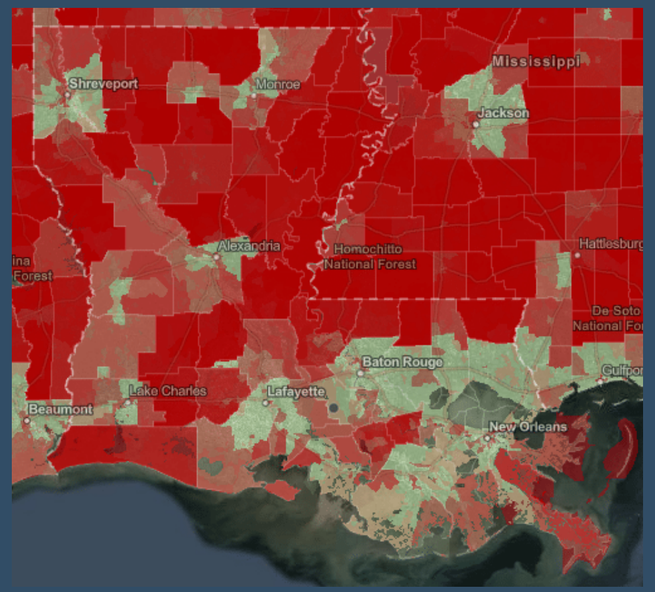
Digital Divide

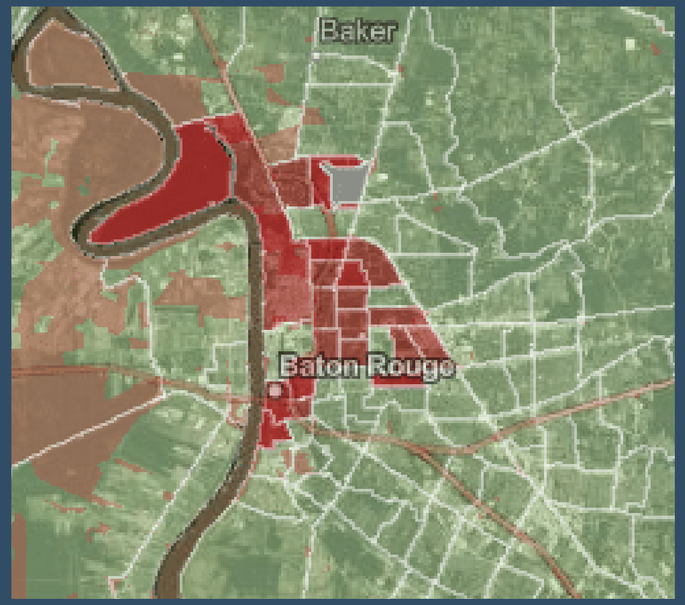
- Major shift to remote work, school, & health care during pandemic.
- “Internet services have seen rises in usage from 40% to 100%, compared to pre-lockdown levels” (De et al., 2020).
- The FCC currently identifies those with **<25 mbps** broadband download speed as **unserved** while those **below 100 mbps** are considered **underserved**.

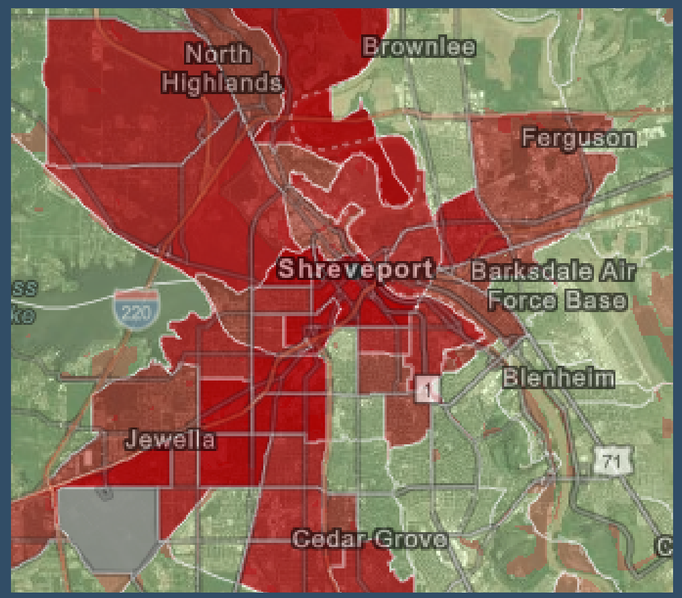
THE STATE OF BROADBAND IN LA

Why is this relevant?

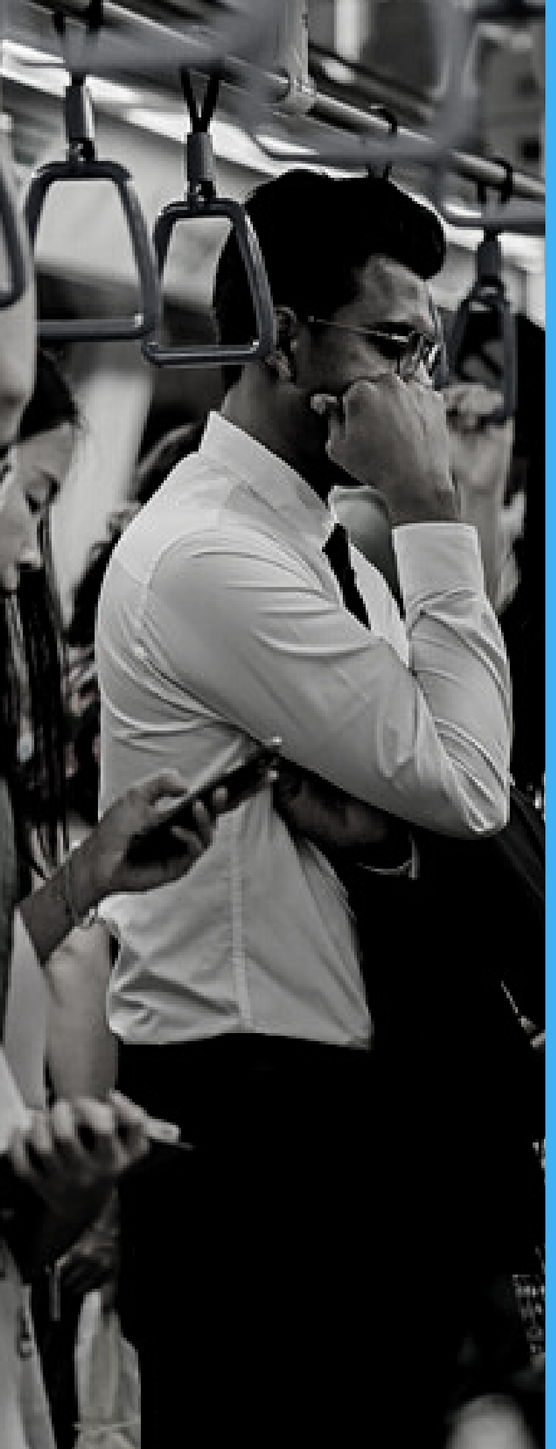
- Rankings
  - 48th in education (US News & World Report)
  - 48th for health care (US News & World Report)
  - 38th for unemployment (US Bureau of Labor Statistics)
- Broadband for Everyone in Louisiana Program
- Influx of funds for broadband expected with latest infrastructure bill





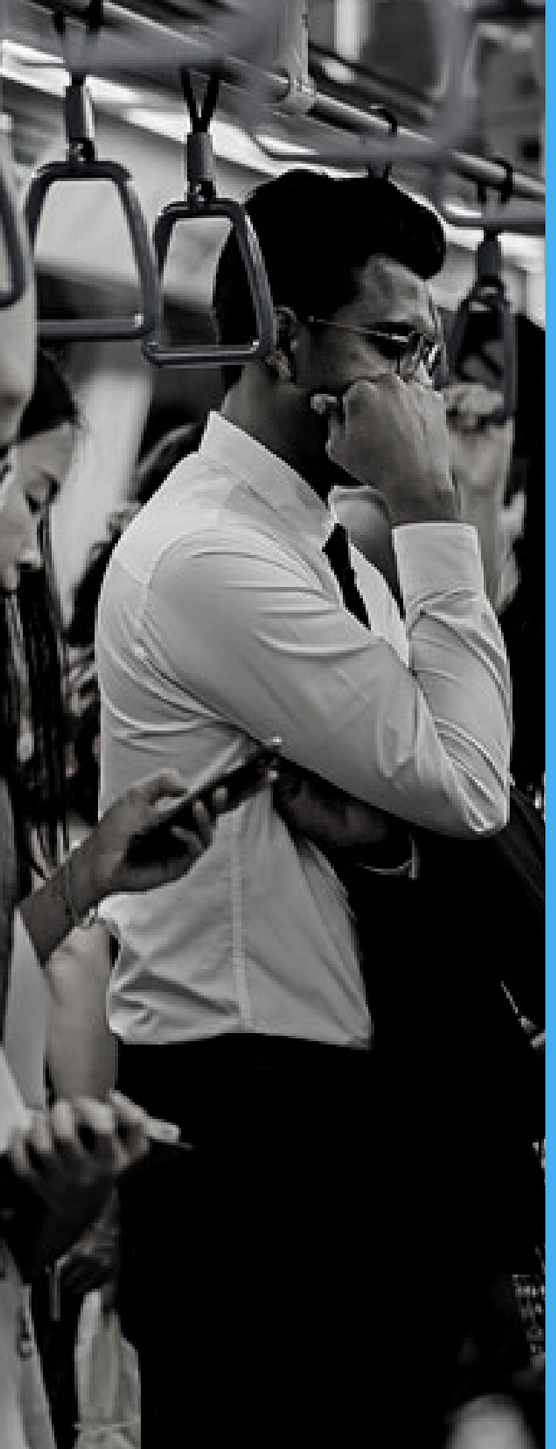


Source: National Telecommunication and Information Administration



Determining Appropriate Geographic Units

- Considerations: size, scope, match to demographic Census Data
- Selected: **Tracts** and **Rural-Urban Commuting Area (RUCA) codes**
  - 11 classifications ranging from major metropolitan areas to rural areas
  - Population density, urbanization, and daily commuting used in formula



Primary RUCA Codes (2010)

Factors:

- Area Size:
  - Metro
  - Micro
  - Small Town
  - Rural
  - No RUCA
- Area commuting patterns
  - Within area
  - High commuting to outside
  - Low commuting to outside

Research Questions

IS THERE A RELATIONSHIP BETWEEN **RUCA CODE** AND **ADVERTISED DOWNLOAD SPEEDS** IN THE STATE OF LOUISIANA?

CAN THE RUCA CODE **PREDICT** THE ADVERTISED DOWNLOAD SPEED IN LOUISIANA?

IF THERE IS A RELATIONSHIP, DOES CONSIDERING VARIABLES SUCH AS **MEDIAN HOUSEHOLD INCOME, RACE**, AND **POPULATION** IMPROVE THE PREDICTIVE POWER OF THE MODEL?

Hypothesis

IN LOUISIANA, THERE IS A RELATIONSHIP BETWEEN **RUCA CODE** AND **MEDIAN ADVERTISED DOWNLOAD SPEEDS**.

RUCA Codes & Advertised Download Speeds

DESCRIPTIVE STATISTICS

Overview of Data Used

RUCA CODES FOR LOUISIANA

Organized by census tract - Source USDA

MEDIAN DOWNLOAD SPEEDS

Organized by census tract - Source FCC

MEDIAN HOUSEHOLD INCOME

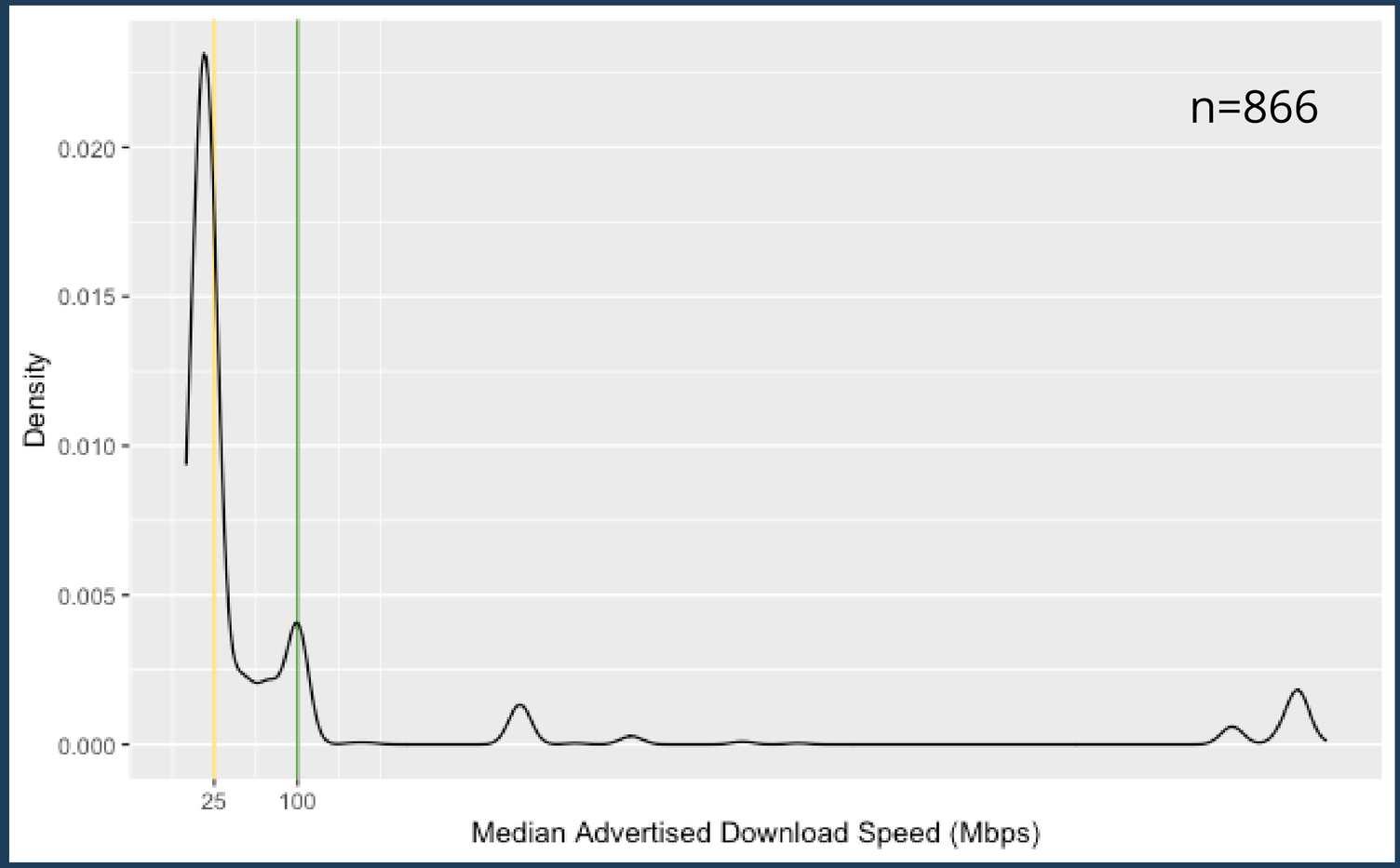
Organized by census tract - Source US Census

RACE DEMOGRAPHICS

Used specifically %Hispanic Latino and %Black residents - Source US Census

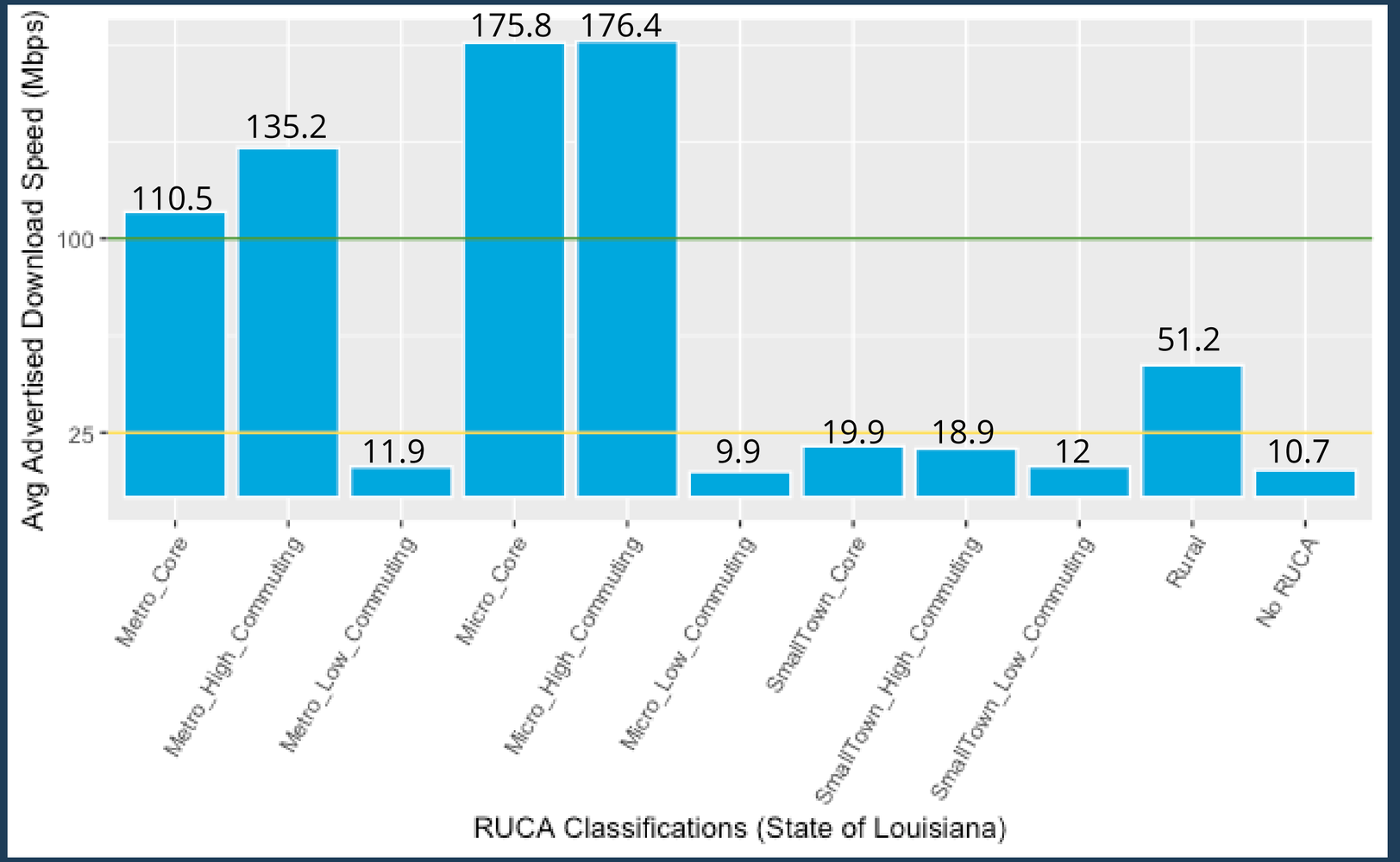
POPULATION

Organized by census tract - Source US Census



Distribution of Median Advertised Download Speed in Louisiana

Conditional Mean of Advertised Download Speed by RUCA Classification



CONDITIONAL MEANS - ADDITIONAL FACTORS

POPULATION

Pop_Quartiles	Served	Underserved
1	0.0276498	0.9723502
2	0.1013825	0.8986175
3	0.1388889	0.8611111
4	0.1898148	0.8101852

INCOME

Income_Quartiles	Served	Underserved
1	0.0460829	0.9539171
2	0.1244240	0.8755760
3	0.1342593	0.8657407
4	0.1527778	0.8472222

% OF HISPANIC RESIDENTS

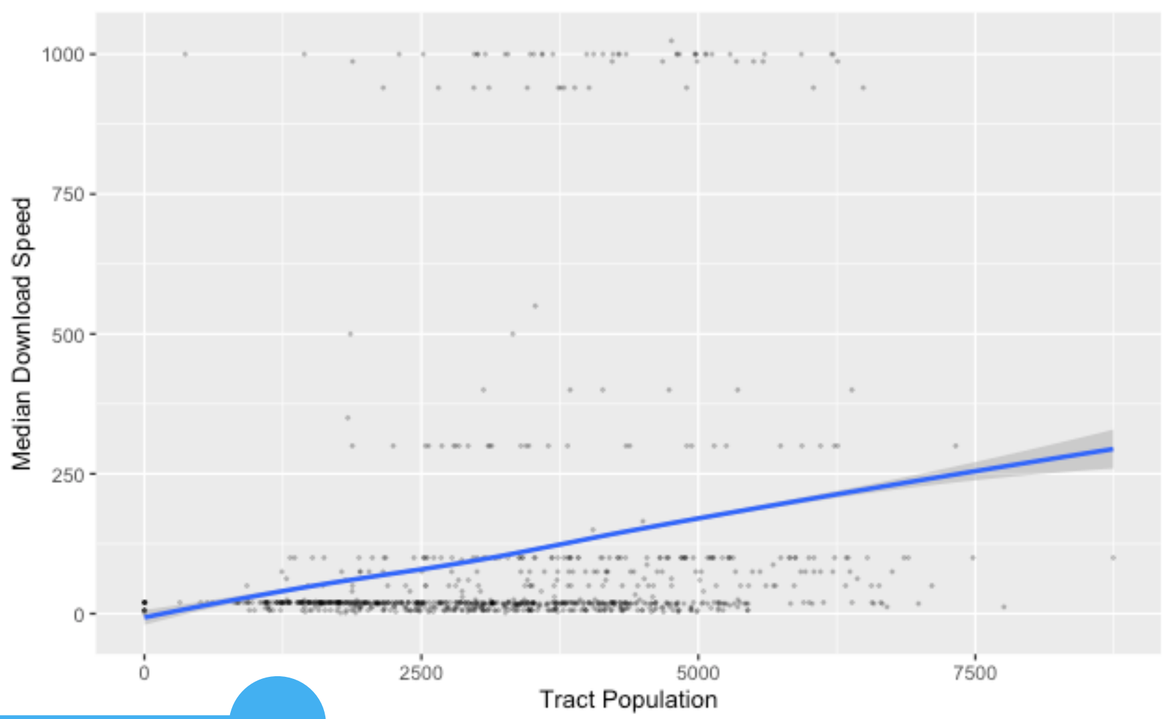
Hispanic_Quartiles	Served	Underserved
1	0.1168224	0.8831776
2	0.1635514	0.8364486
3	0.0794393	0.9205607
4	0.1028037	0.8971963

% OF BLACK RESIDENTS

Black_Quartiles	Served	Underserved
1	0.1168224	0.8831776
2	0.1401869	0.8598131
3	0.1168224	0.8831776
4	0.0887850	0.9112150

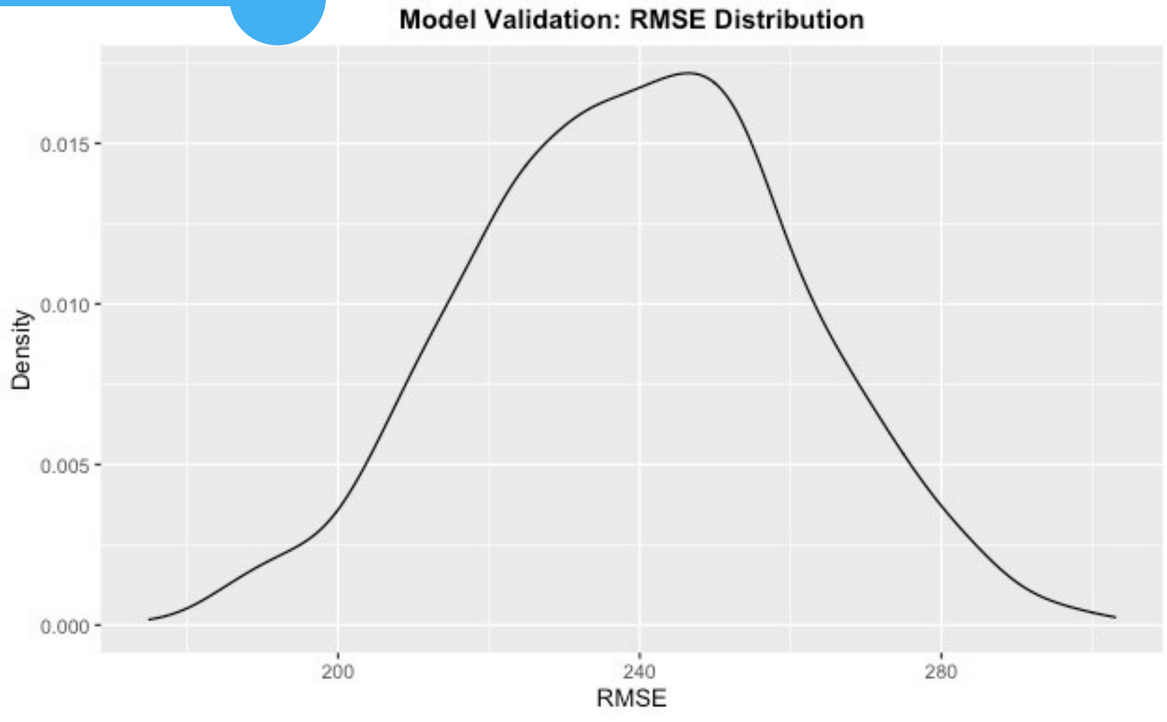
RUCA Codes & Advertised Download Speeds

ANALYTICAL PROCESS



Regression

- Median Download Speed (DV)
- RUCA Code (IV)
- Tract Population (IV)*
- Household Median Income (IV)
- R-squared: .08
- RMSE: 247



Model Validation

- Monte Carlo method
- Wide RMSE range shows that our model does not fit consistently to "new data"

FINDINGS

FINDING 1

Much of Louisiana continues to be underserved or unserved according to industry standards despite previous funding and legislation.

FINDING 2

RUCA and population are not necessarily predictive of download speeds.

FINDING 3

Although the literature suggests a connection between access to broadband and race, this is not necessarily the case when considering download speed in Louisiana.

FINDING 4

High commuting tracts always has higher broadband speeds than low commuting tracts.

LIMITATIONS

OUTLIERS

RMSE is sensitive to outliers in the positive skew

EXTERNAL VALIDITY

Data cannot be generalized beyond the state of Louisiana

CHOSEN DATA POINTS

Choosing advertised download speed vs actual

RUCA code classifications from 2010

Where do we go next?

NEXT STEPS

NEXT STEPS

INVESTIGATE WAYS TO FOCUS FUNDING IN THE AREAS THAT ARE CURRENTLY UNSERVED

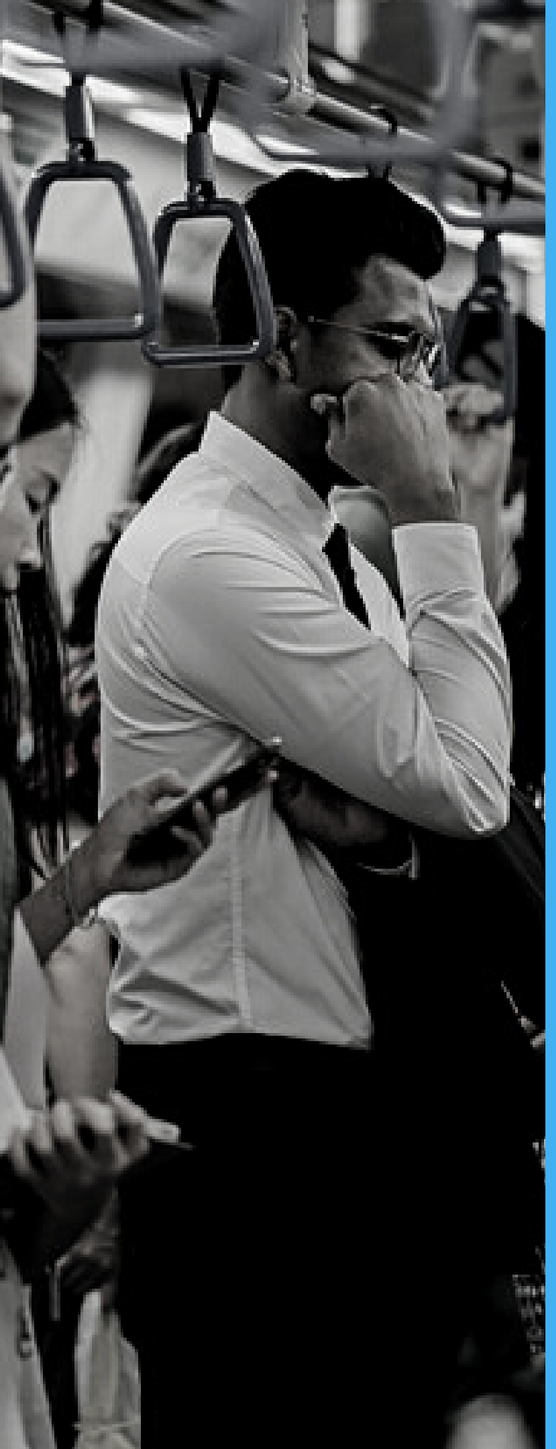
LOOK AT DIFFERENT PREDICTIVE VARIABLE (# OF PROVIDERS/TOTAL $ SPENT/AVERAGE COMMUTING TIME)

ENCOURAGE LAW MAKERS TO REEVALUATE POLICIES TARGETED AT RURAL AREAS TO BETTER SERVE ALL CITIZENS OF LOUISIANA

Be Inspired

"BROADBAND ACCESS IS THE GREAT EQUALIZER, LEVELING THE PLAYING FIELD SO THAT EVERY WILLING AND ABLE PERSON, NO MATTER THEIR STATION IN LIFE, HAS ACCESS TO THE INFORMATION AND TOOLS NECESSARY TO ACHIEVE THE AMERICAN DREAM."

- MICHAEL K. POWELL



What are RUCA Codes?

1. Metropolitan area core: primary flow within an urbanized area (UA)
2. Metropolitan area high commuting: primary flow 30% or more to a UA
3. Metropolitan area low commuting: primary flow 10% to 30% to a UA
4. Micropolitan area core: primary flow within an Urban Cluster of 10,000 to 49,999 (large UC)
5. Micropolitan high commuting: primary flow 30% or more to a large UC
6. Micropolitan low commuting: primary flow 10% to 30% to a large UC
7. Small town core: primary flow within an Urban Cluster of 2,500 to 9,999 (small UC)
8. Small town high commuting: primary flow 30% or more to a small UC
9. Small town low commuting: primary flow 10% to 30% to a small UC
10. Rural areas: primary flow to a tract outside a UA or UC
99. Not coded: Census tract has zero population and no rural-urban identifier information