

# Team 3 Project 1

January 10, 2024

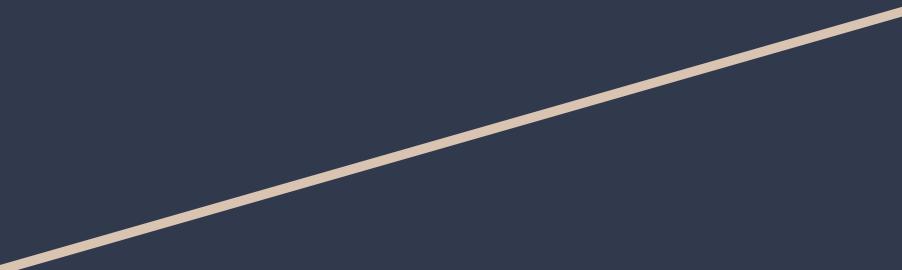
# Agenda

- Team 3 Introductions & Project Background
- Big Questions
- Conclusions
- Q&A

# Team 3

## Introductions &

## Project Background



# Team 3 selected the topic of Healthcare and Technology, specifically looking at how Telehealth is helping to close the Healthcare Divide

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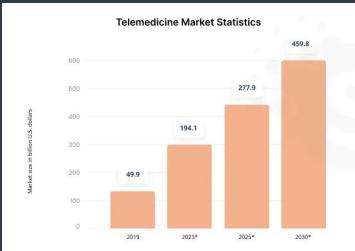
MICA



- Currently practice manager with Nursing & IT background.
- Works at Lawrence Memorial Hospital.
- Background in accounting / finance in medical industry
- Lives in rural Western Kansas
- Works in marketing at T-Mobile for Business, which sells technology products & services to the healthcare industry.

# Healthcare industry is undergoing a digital transformation, which will result in increased use of technology in patient care. Question is if patients are ready for this shift in care?

Pandemic accelerated usage of Telehealth services, and market is expected to grow



Source: Softernii, "[Telemedicine Market Trends and Statistics for 2023](#)"

Telehealth has the potential to greatly improve access to care and quality of care

Lower cost per visit, provides access to rural patients not able to travel, enables remote patient monitoring, improved patient substance abuse treatment participation, and more!

Successful Adoption of Telehealth for patients starts with access to connectivity (Internet Access)



Source: T-Mobile for Business, "[The Future of Telehealth and Rural Connectivity](#)"

Source: National Library of Medicine, "[Telemedicine: the current COVID-19 pandemic and the future: a narrative review and perspectives moving forward in the USA](#)"

# Knowing Internet Access is a factor in Telehealth Adoption, team reviewed Internet Access rates versus current Telehealth usage in order to determine if patients were ready for the shift in care



- Provided multiple data points about connectivity by US State
- Team is defining “Internet Access” as those residents with access to the minimum FCC standard for connectivity: download speeds of at least 25 Mbps and actual upload speeds of at least 3 Mbps
- Connect2Health map data also includes socioeconomic and health related data by US County, sourced via US government and health related agencies
- Timeframe: December 2023



- Telehealth usage rates by US State
- “Telehealth” services were documented by counting Medicare Part B beneficiaries for specific Telehealth service billing codes
- Medicare only data limits the reliability of the analysis, but trends can still be used directionally or to identify needs for further research and analysis
- Timeframe: 2023

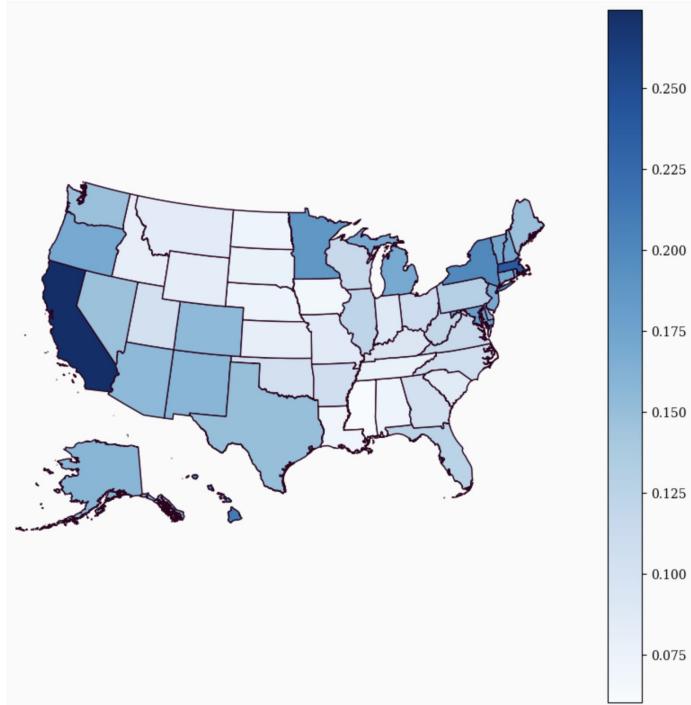
# Big Questions related to patient readiness for Telehealth care

1. Usage trends of Telehealth across the United States. What parts of the US are using it more than others? How does this relate to their current healthcare access & quality of life?
2. Internet access trends across the United States. What parts of the US are still struggling with internet access? Do areas of the US with higher Internet Access automatically have higher Telehealth usage rates?
3. Is current usage of Telehealth currently driven mainly by Internet Access? Or are there other factors influencing Telehealth usage?

# Question 1

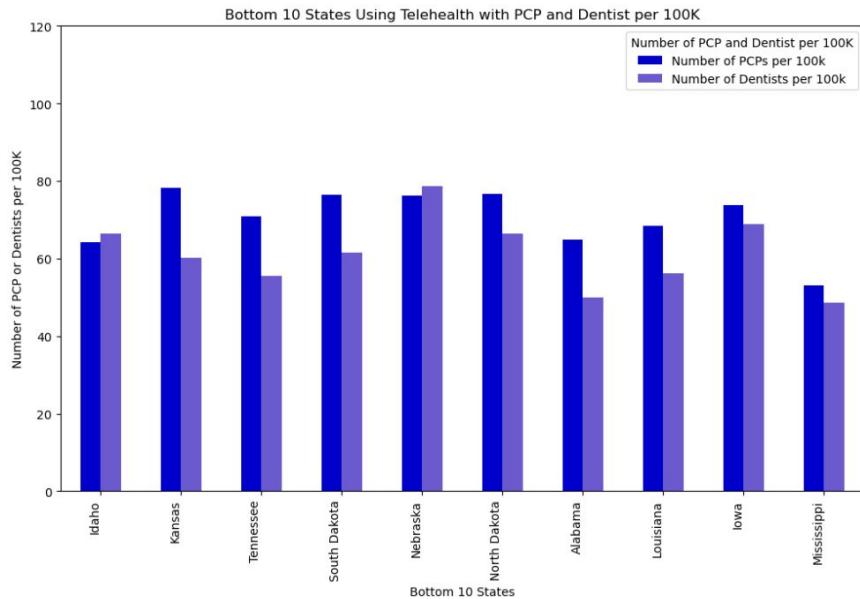
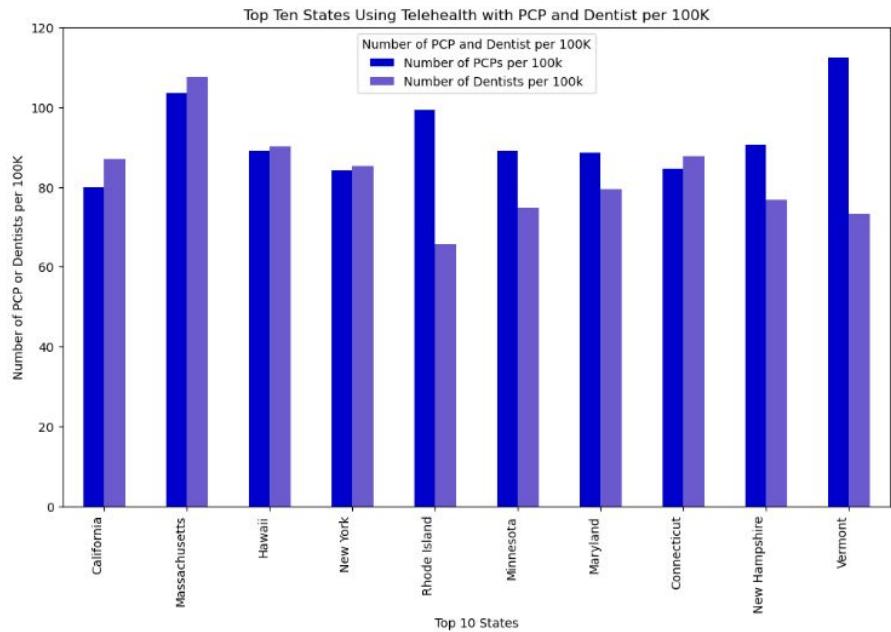
Current Telehealth usage trends in the United States

# Current Telehealth usage rates in the United States indicate higher adoption rates in more populated areas of the country

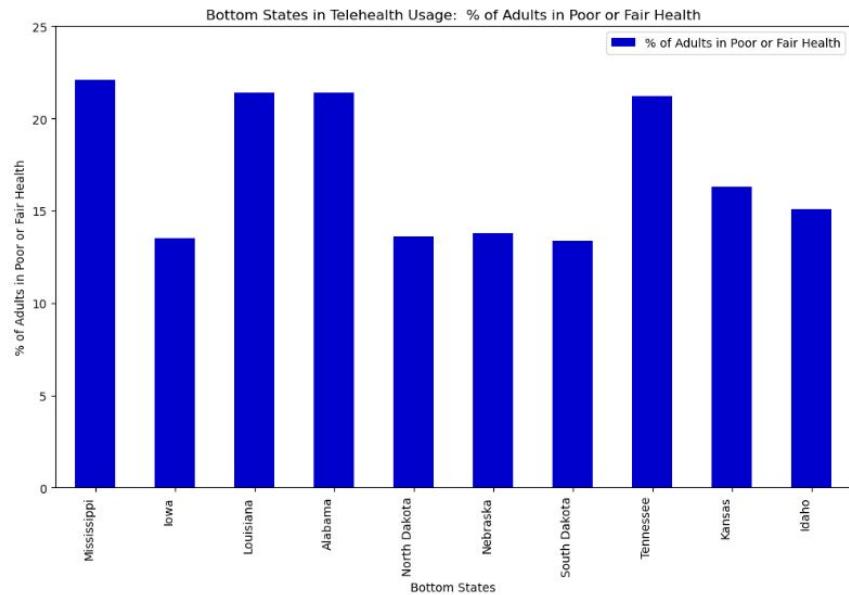
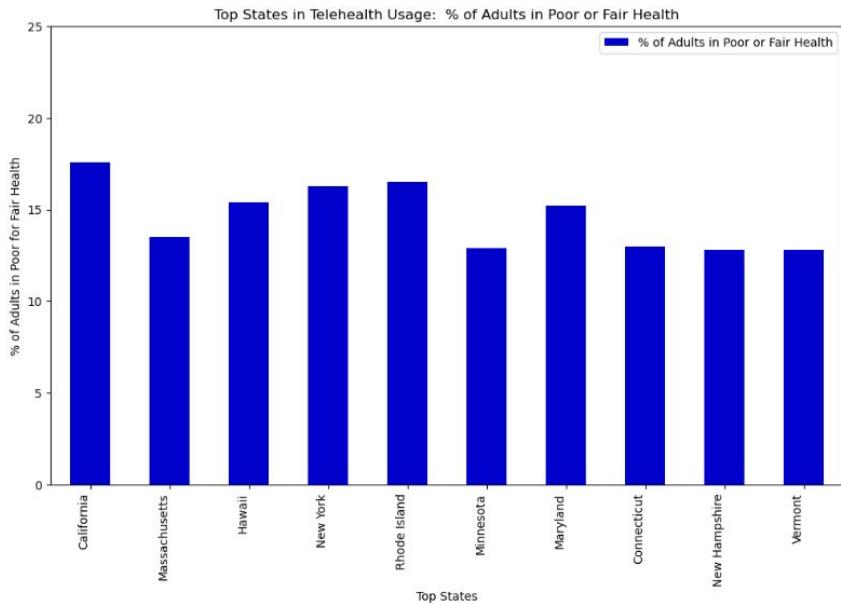


- States with largest populations and major urban areas have higher rates of Telehealth usage (CA, TX, NY, Chicago, etc).
- States with lower usage rates are located in the southeast (AL, LA), midwest (KS, NE) and western (WY, ID) regions

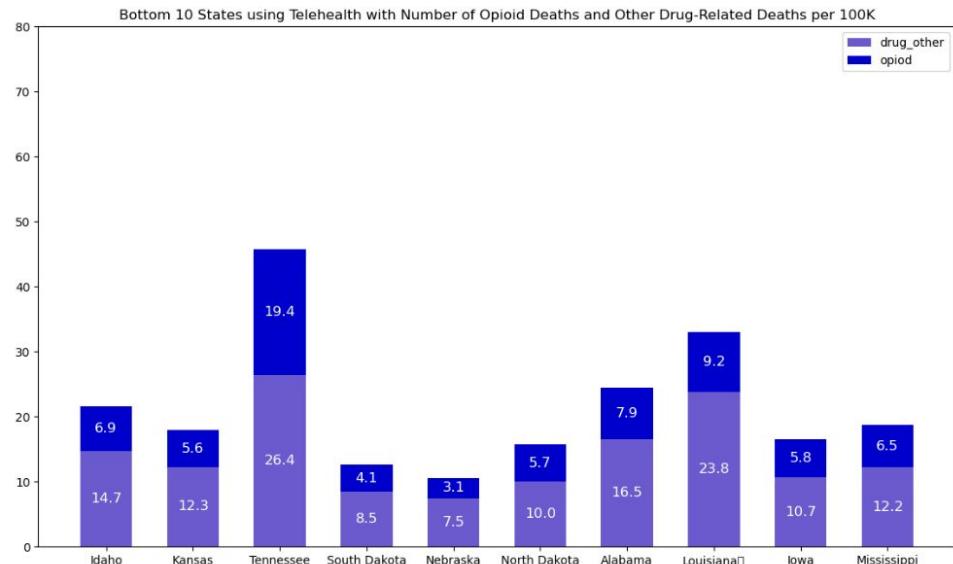
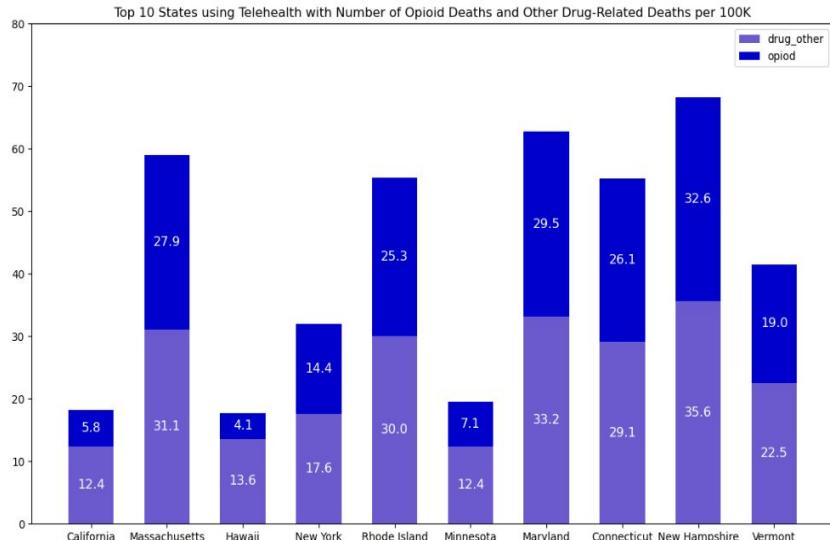
Team looked at Top 10 states & Bottom 10 states in Telehealth usage to identify trends in local access to healthcare. States with higher Telehealth usage rates also have more Dentists & PCPs per 100k



Top States in Telehealth Usage have lower shares of people in Poor or Fair health, indicating they are healthier than Bottom States. This could be due to Top States having more access to healthcare, improved care via Telehealth usage rates, or other factors.



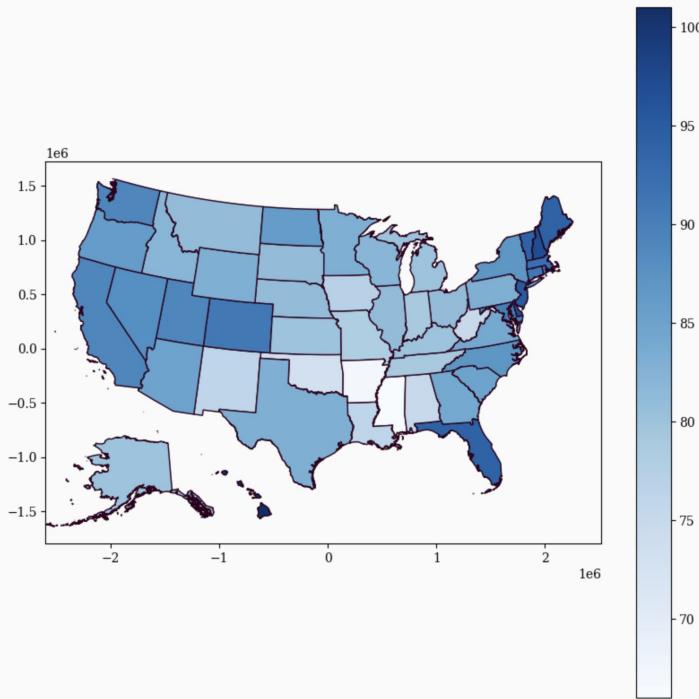
Opioid and Drug Use Rates were also reviewed by Top and Bottom States, as Telehealth has shown success in improving usage of substance abuse recovery programs.



# Question 2

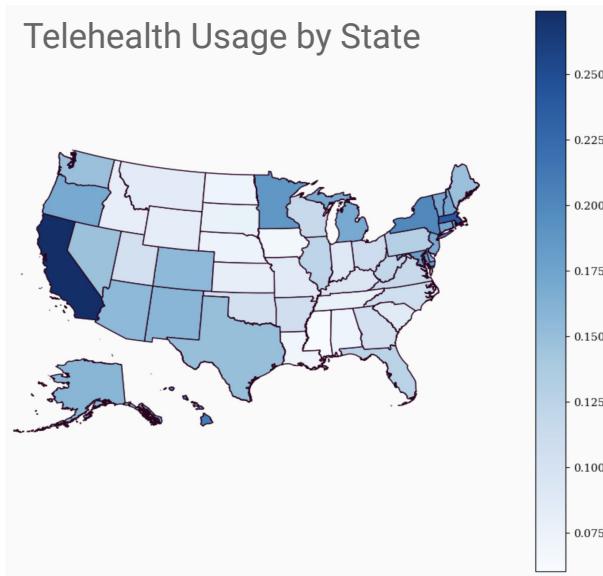
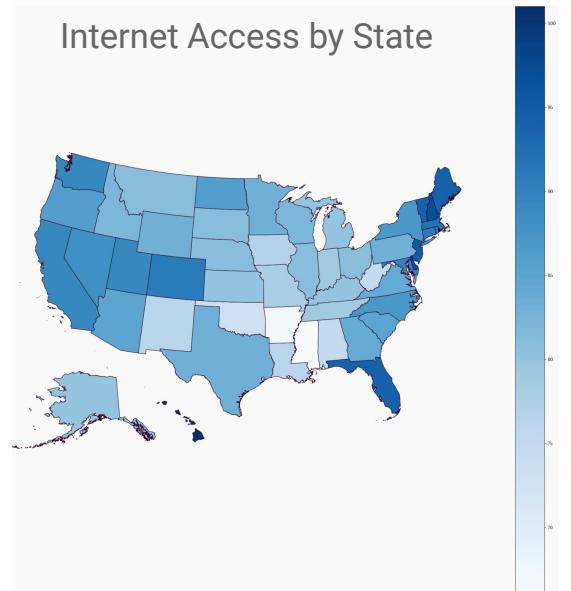
Internet access trends across the United States. What parts of the US are still struggling with internet access? Do areas of the US with higher Internet Access automatically have higher Telehealth usage rates?

# Internet Access in the United States varies across regions, indicating access to the internet is not equal for all

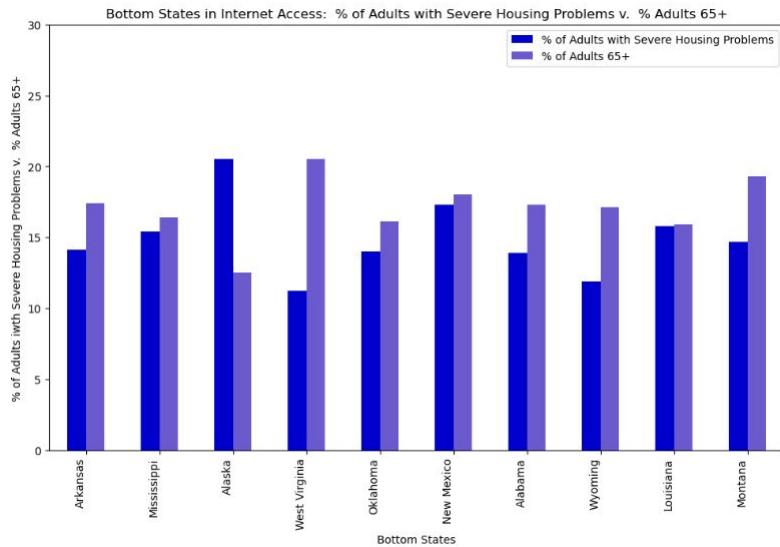
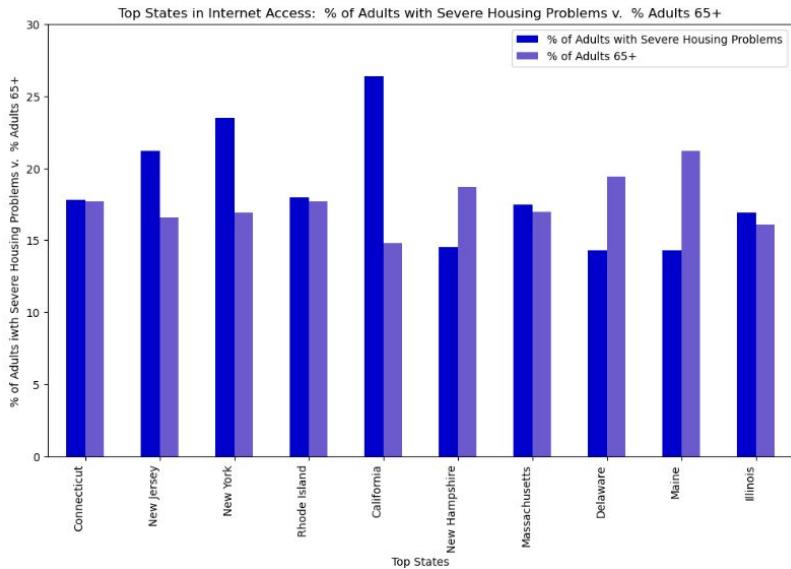


- East and West Coast tend to have higher Internet Access rates versus Midwest and South
- Hawaii appears to be the state with the highest degree of overall internet access and led the survey in the area of fixed internet subscribers

In comparing Internet Access to Telehealth Usage rates, Internet Access does not appear to overwhelmingly drive Telehealth adoption rates. It is likely other factors are influencing Telehealth Usage rates



Team looked at Top 10 states & Bottom 10 states in Internet Access to identify influence of socioeconomic factors of Housing Status & Age. Top states had higher shares of Adults with Severe Housing problems when compared to Bottom states, and age ranges were similar between the two groups

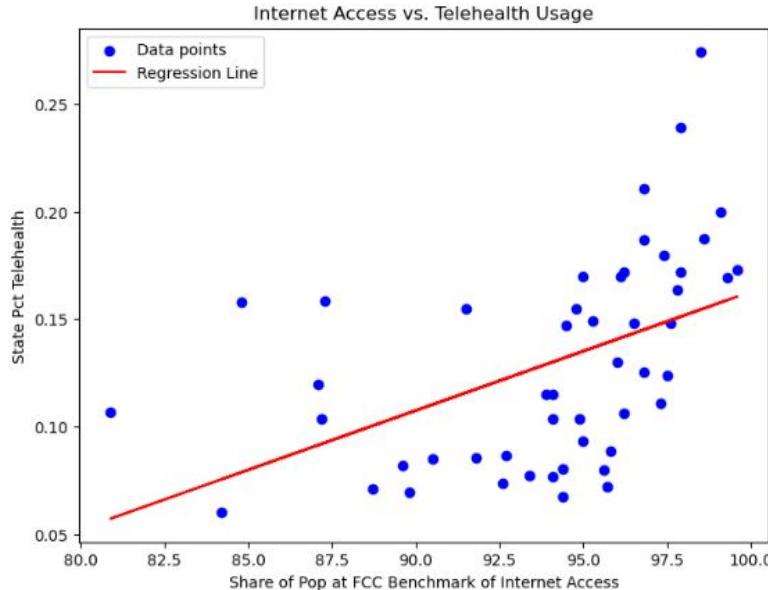


# Question 3

- Is current usage of Telehealth currently driven mainly by Internet Access? Or are there other factors influencing Telehealth adoption?

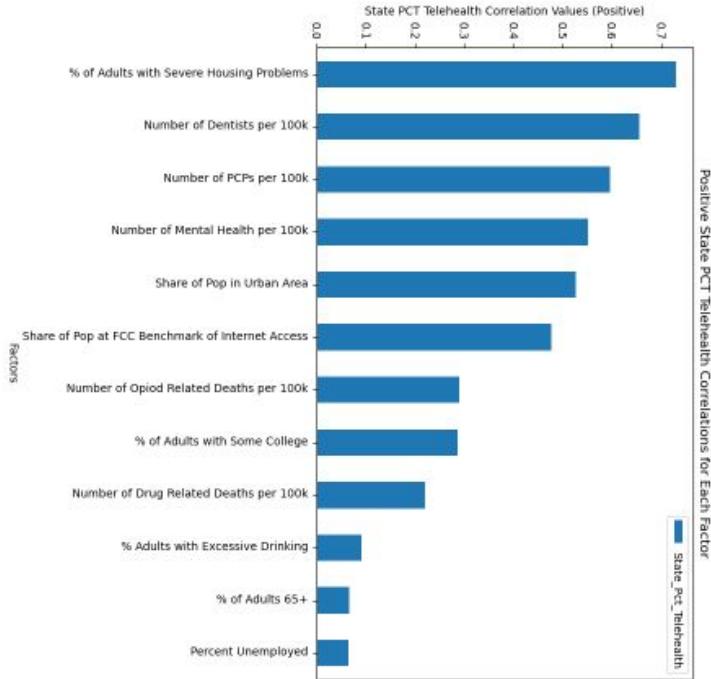
# Relationship between Telehealth Usage & Internet Access is likely related, but other factors are also influencing Telehealth usage

The correlation between Internet Access and Telehealth Usage is 0.47



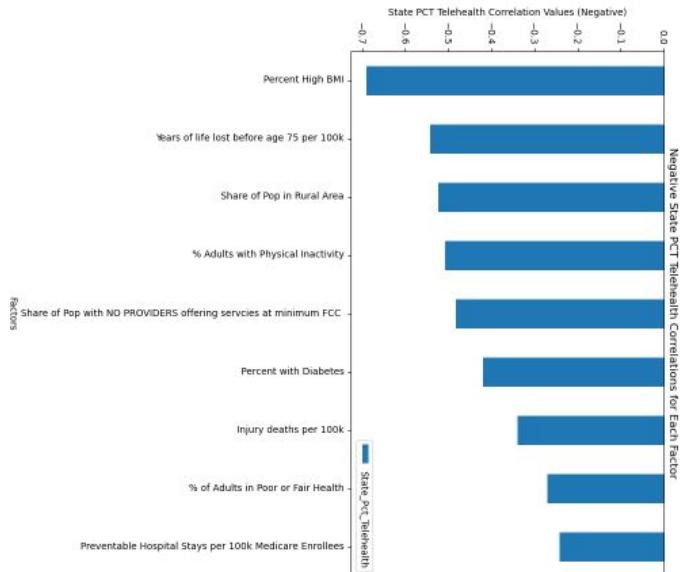
- Usage rates of Telehealth tend to increase as Internet Access increases, as indicated by positive correlation of 0.47
- Correlation of 0.47 is slightly above desired minimum correlation of 0.3, indicating other factors are also influencing Telehealth usage beyond just Internet Access

# Access to Housing and access to current healthcare providers have the highest correlations to Telehealth usage



- Not having reliable housing had the highest correlation rate
- Access to current healthcare providers appears to be strongly related to Telehealth Usage
  - “Access to current healthcare” is defined by the number of Dentists, Primary Care Physicians (PCPs) and Mental Health providers in their State
  - This could be explained by early adoption rates by healthcare providers in those states, different healthcare needs, or other factors
- Telehealth usage increases by living in a Urban areas
  - Big benefit of Telehealth is supposed to be providing healthcare to Rural populations living far from healthcare, which indicates more work needs to be done for Rural patient adoption

# Healthier people are more likely to use Telehealth services, as indicated by negative correlations to quality of life factors



- As quality of life factors of Percentage of High BMI and Years of Life Lost before Age 75 decreases, the usage of Telehealth increases, which indicates better health rates from current Telehealth users
- Relationship could be due to more access to healthcare, early Telehealth adoption from healthy people (or people dedicated to preventative care), or that quality of healthcare for people that use Telehealth is better
  - Further research and analysis is needed, as the current dataset does not definitively identify the cause
- Share of Rural Population decreasing as Telehealth increases again indicates adoption rates are lagging in area where it should be benefiting that population

# Conclusions

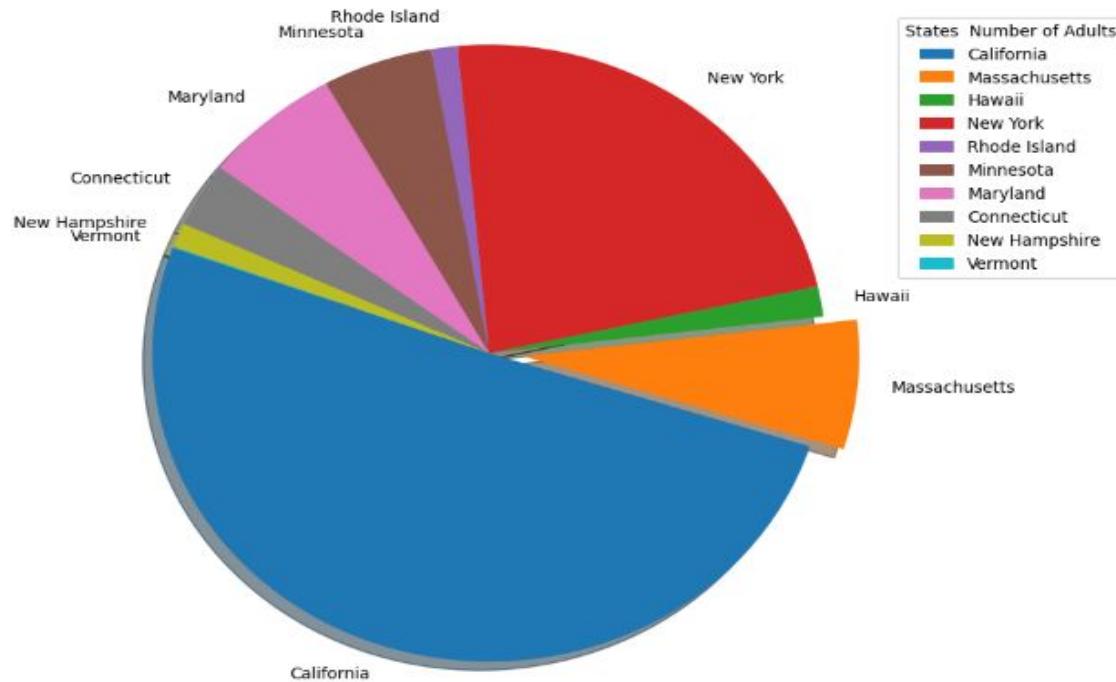
# Conclusions

- Relationship between Telehealth Usage & Internet Access is likely related, but other factors are also influencing Telehealth usage
- Major benefit of Telehealth is increasing access to care for Rural areas, but Telehealth usage rates are pacing behind Urban areas
  - Rural areas likely need increased access to the internet, as well as higher education rates on the availability of Telehealth to them as a care option
  - Urban areas with more dentists, PCPs, and mental health providers in their area have higher adoption rates, which may indicate patients in Urban areas are more aware of Telehealth as an option versus those living in Rural areas

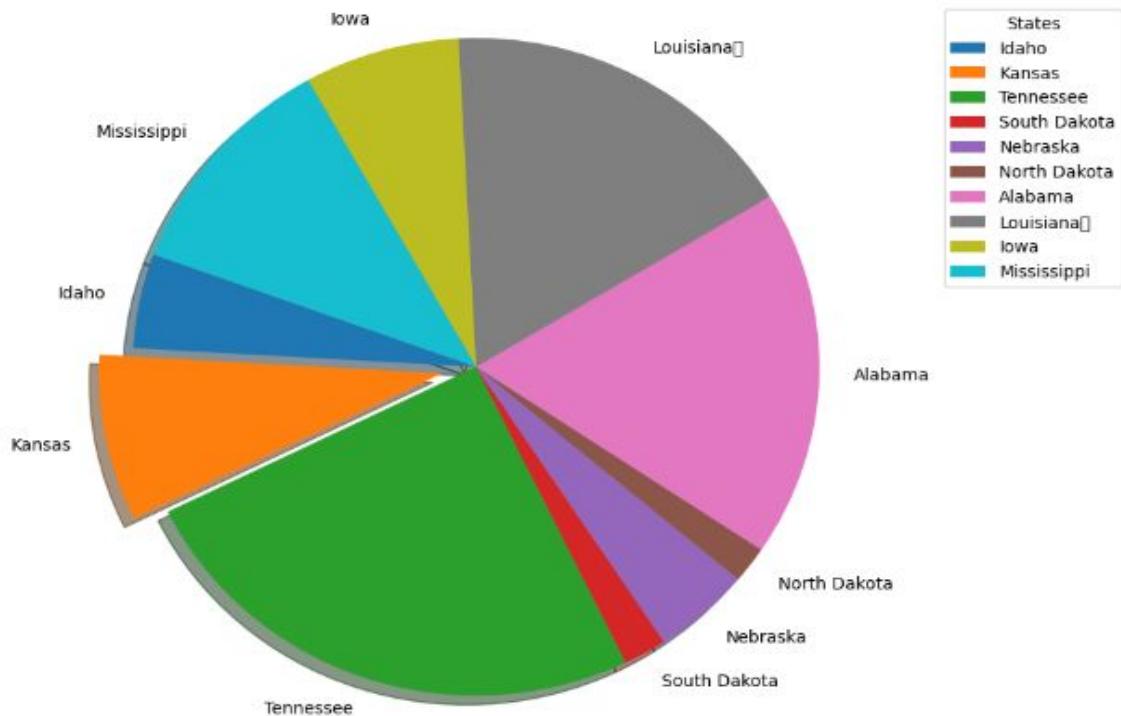
# Q&A

# APPENDIX

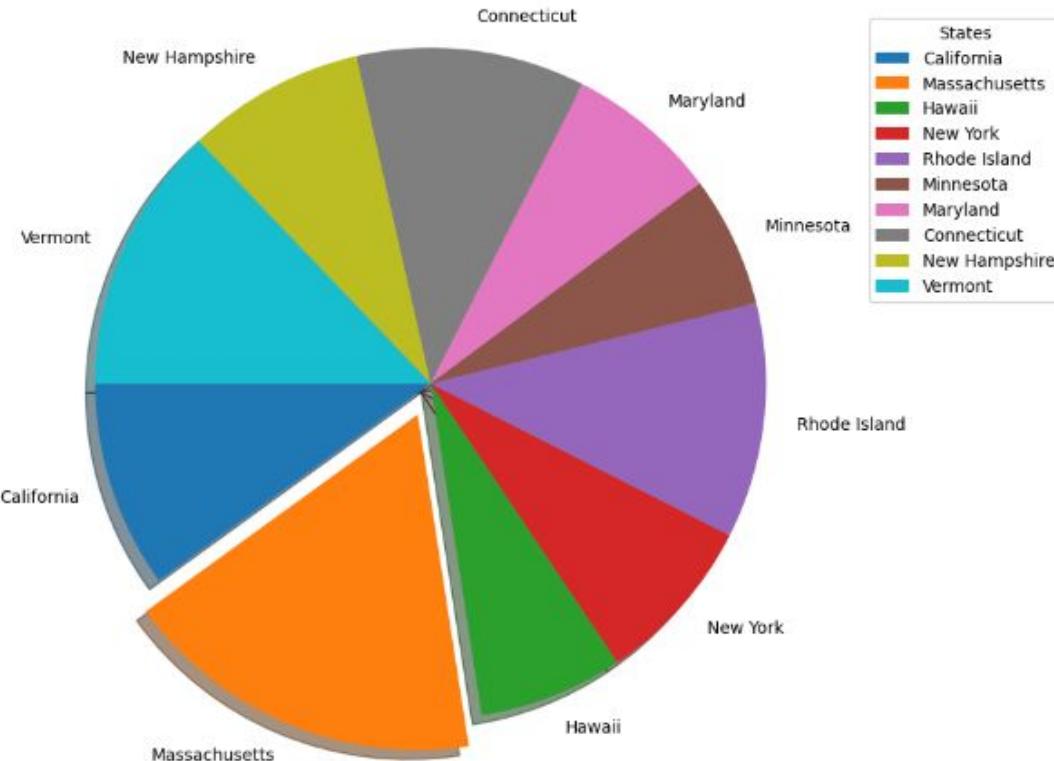
Top 10 States Using Telehealth with Number of Adults in Poor or Fair Health



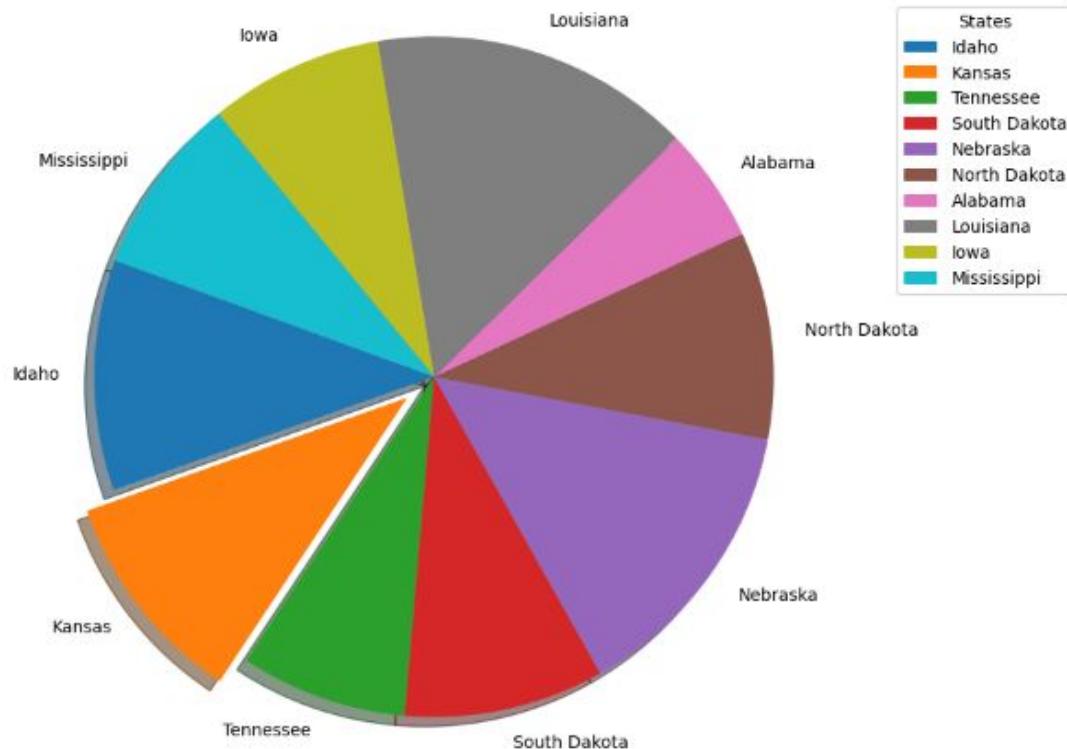
Bottom 10 States Using Telehealth with Number of Adults in Poor or Fair Health



Top 10 States Using Telehealth with Number of Mental Health per 100k

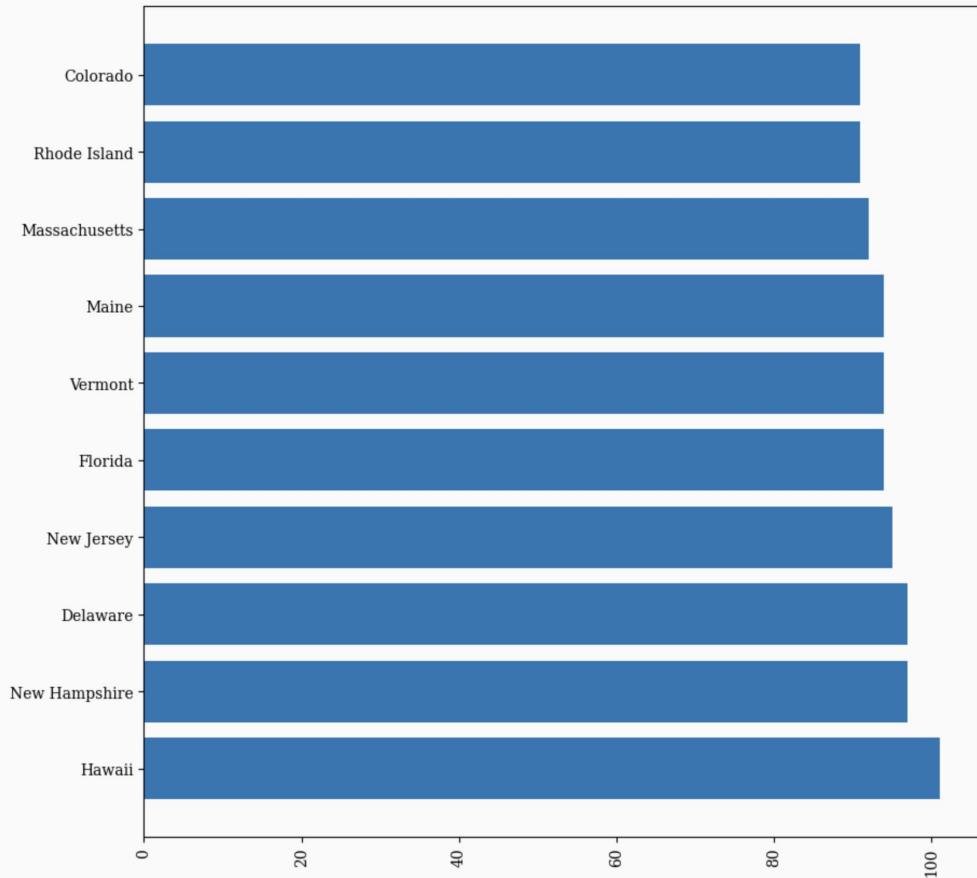


Bottom 10 States Using Telehealth with Number of Mental Health Per 100K

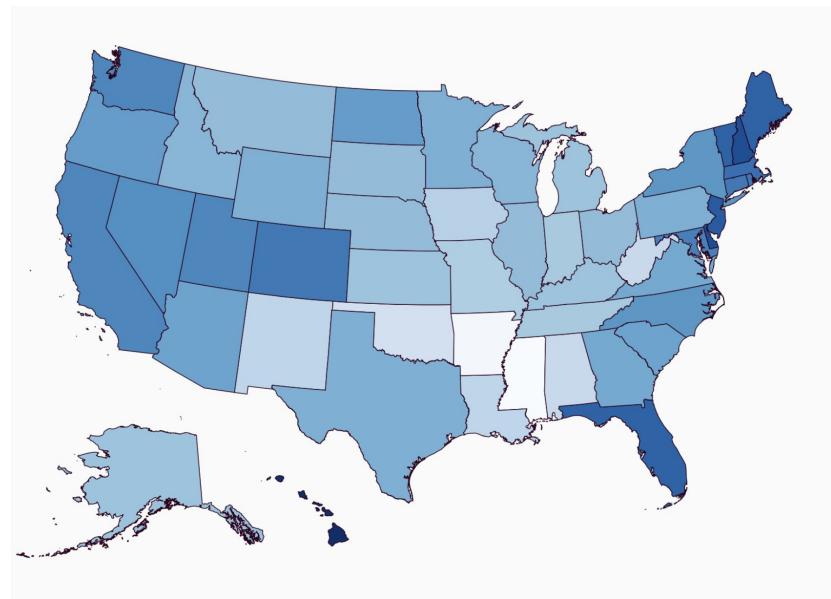


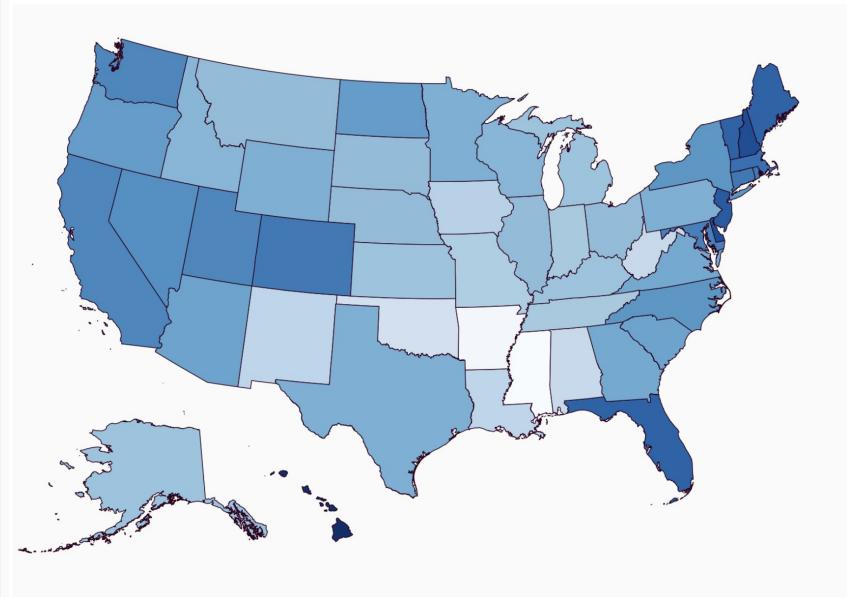
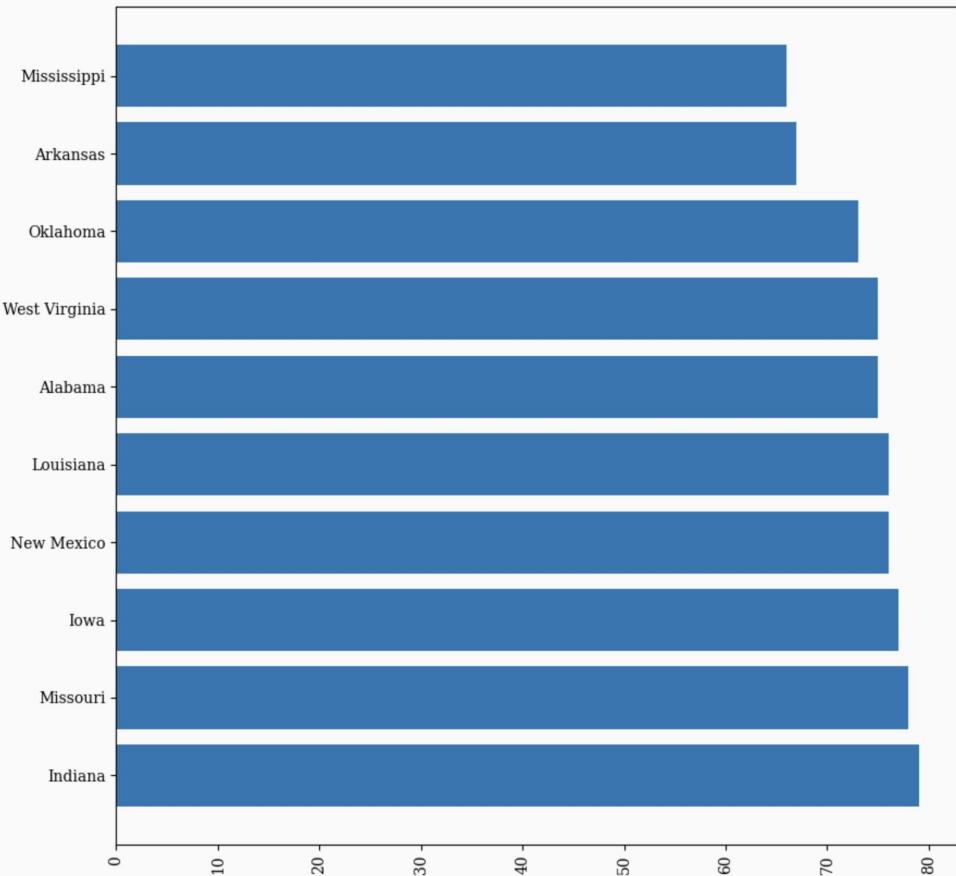


Fixed Internet Subscribers as a Percentage of Population

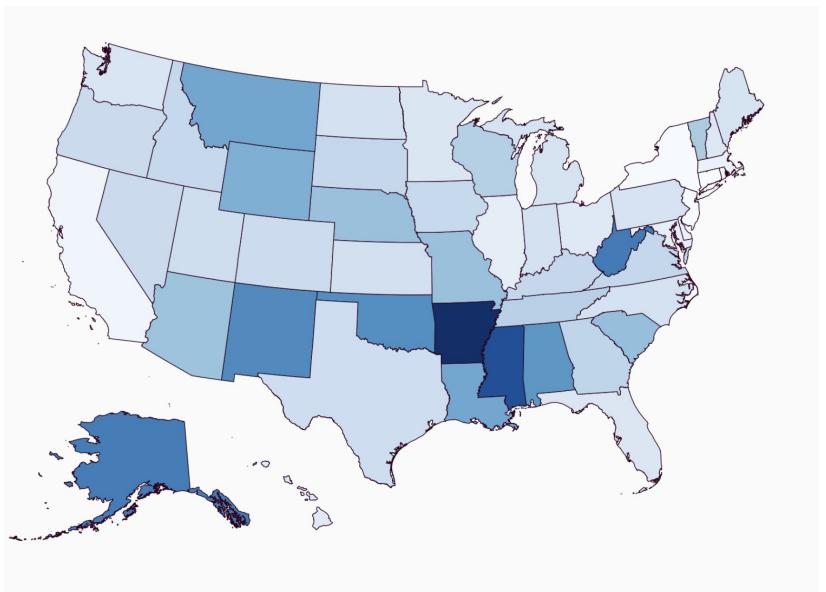
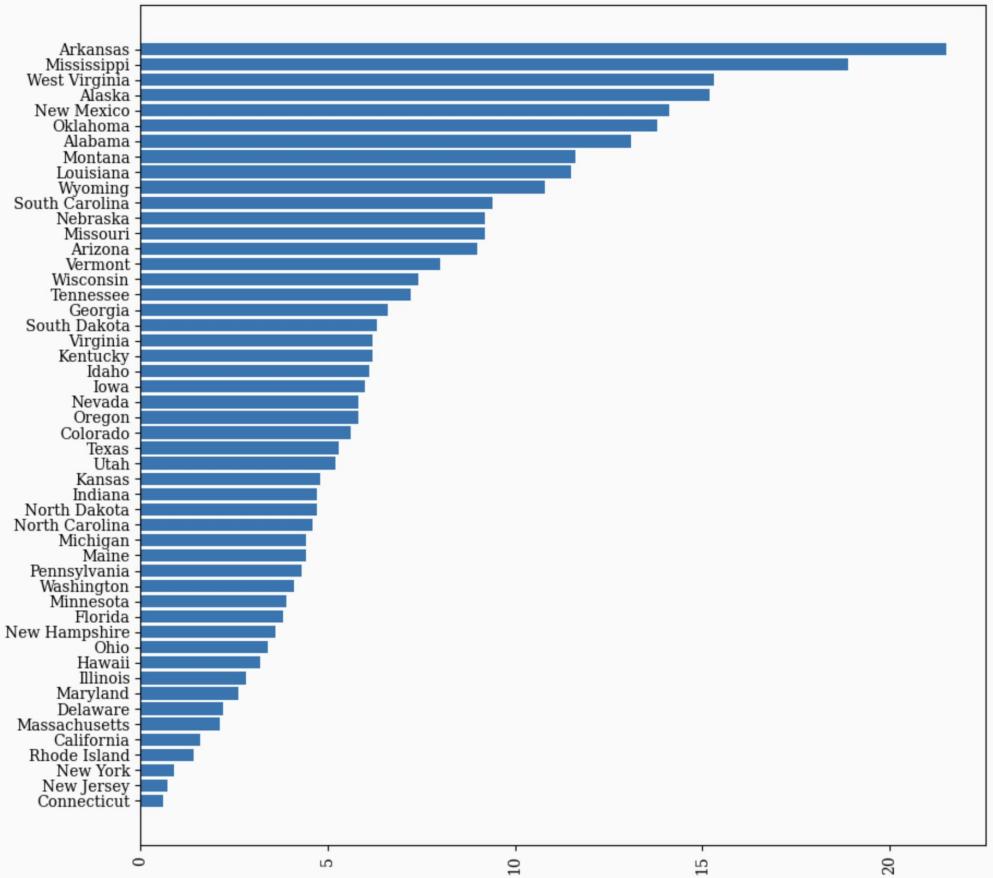


Top 10 States With Fixed Internet Subscribers

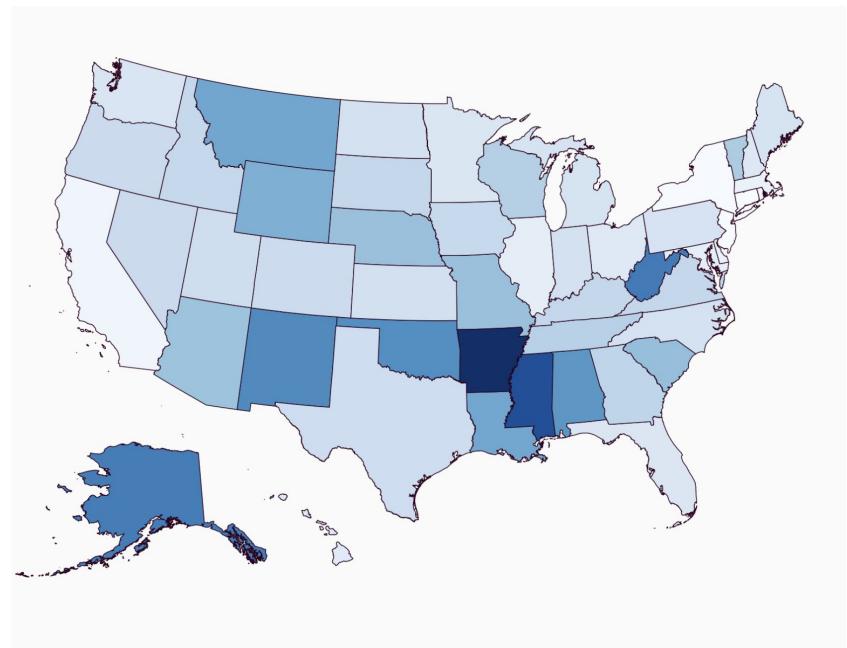
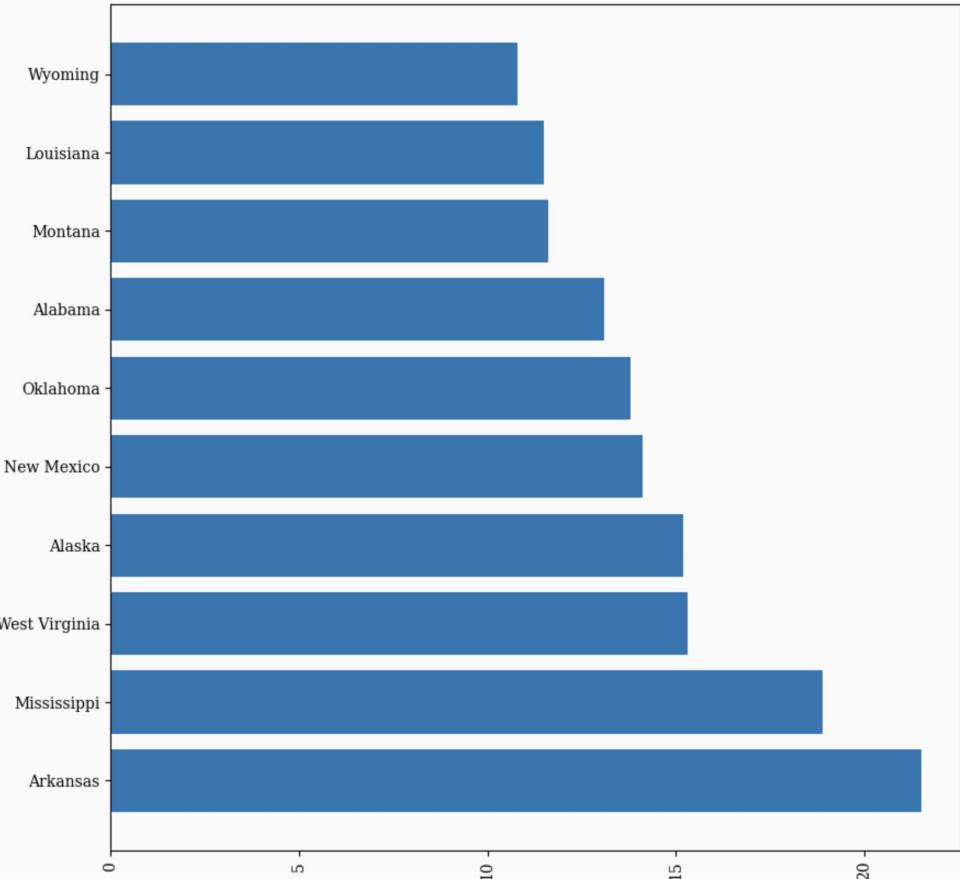




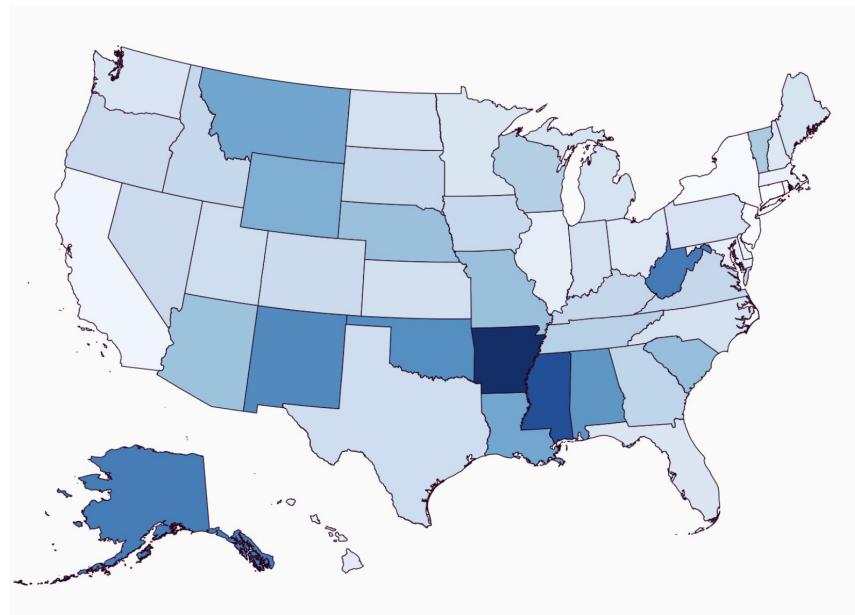
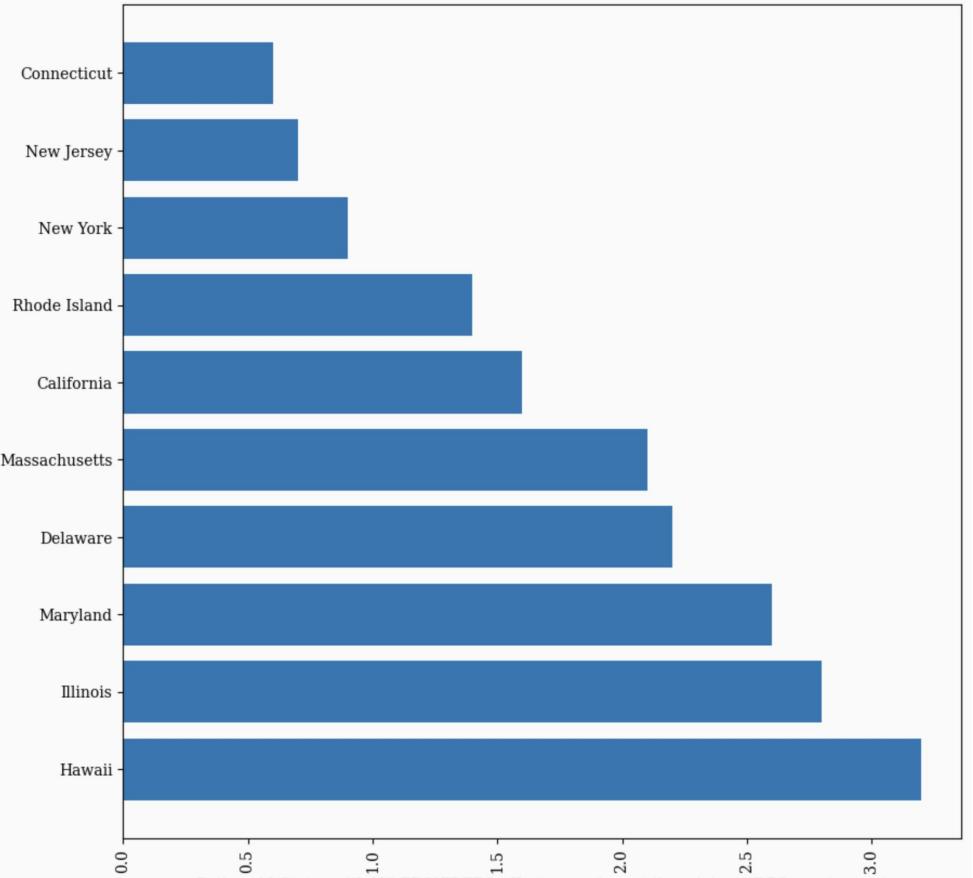
Bottom 10 States With Fixed Internet Subscribers



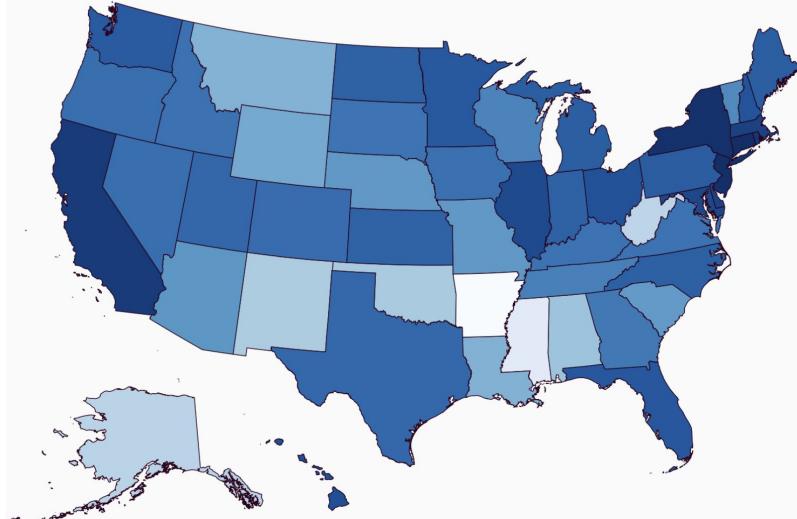
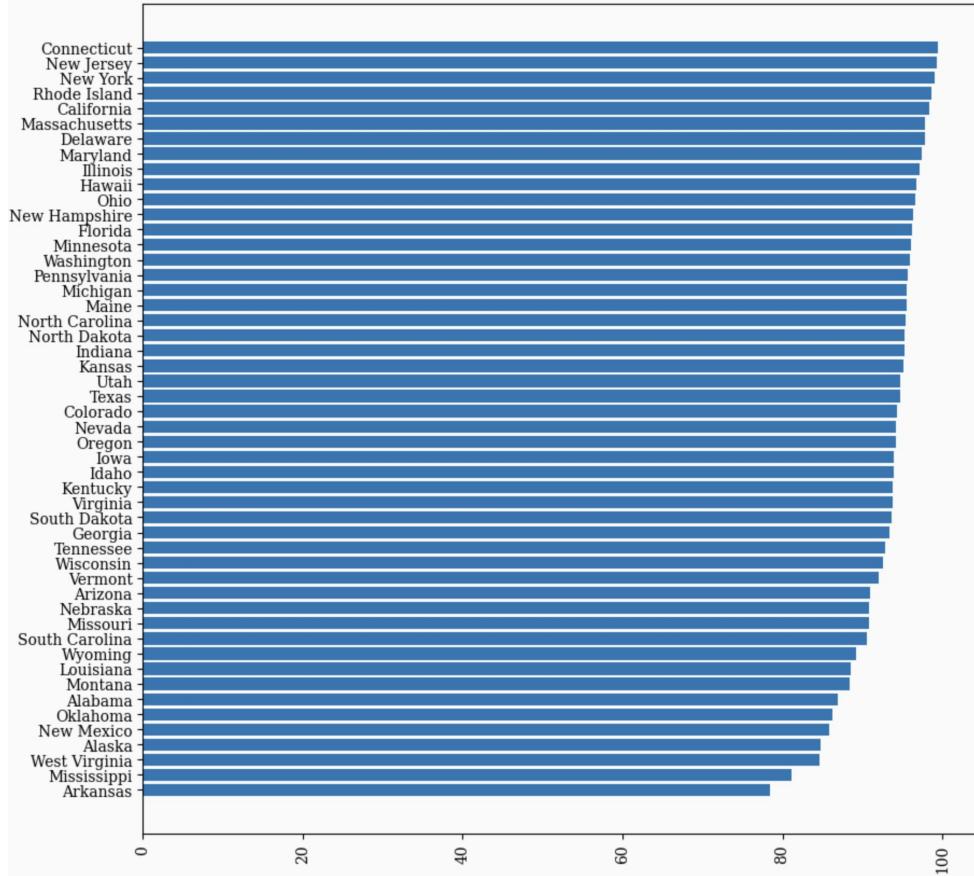
Share of Population with NO PROVIDERS offering services at minimum FCC requirements



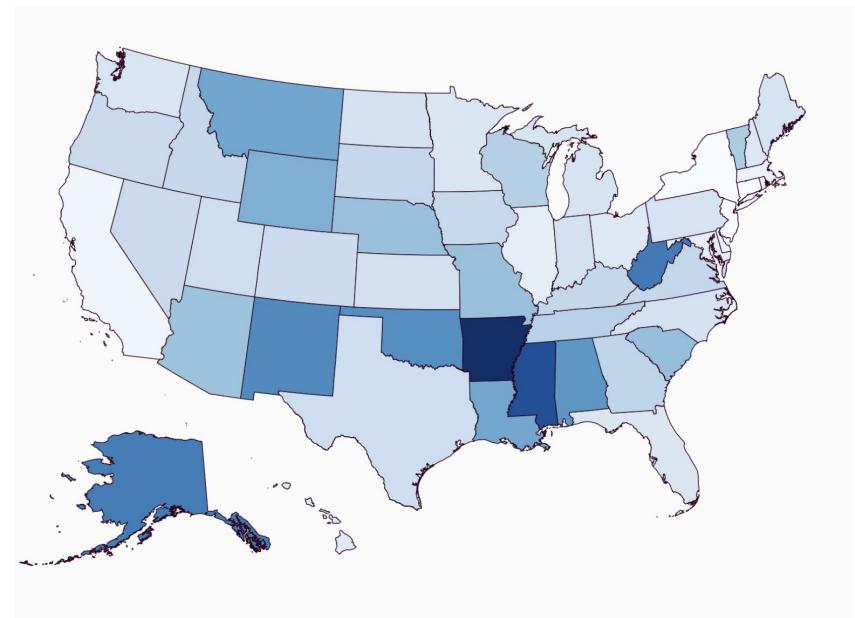
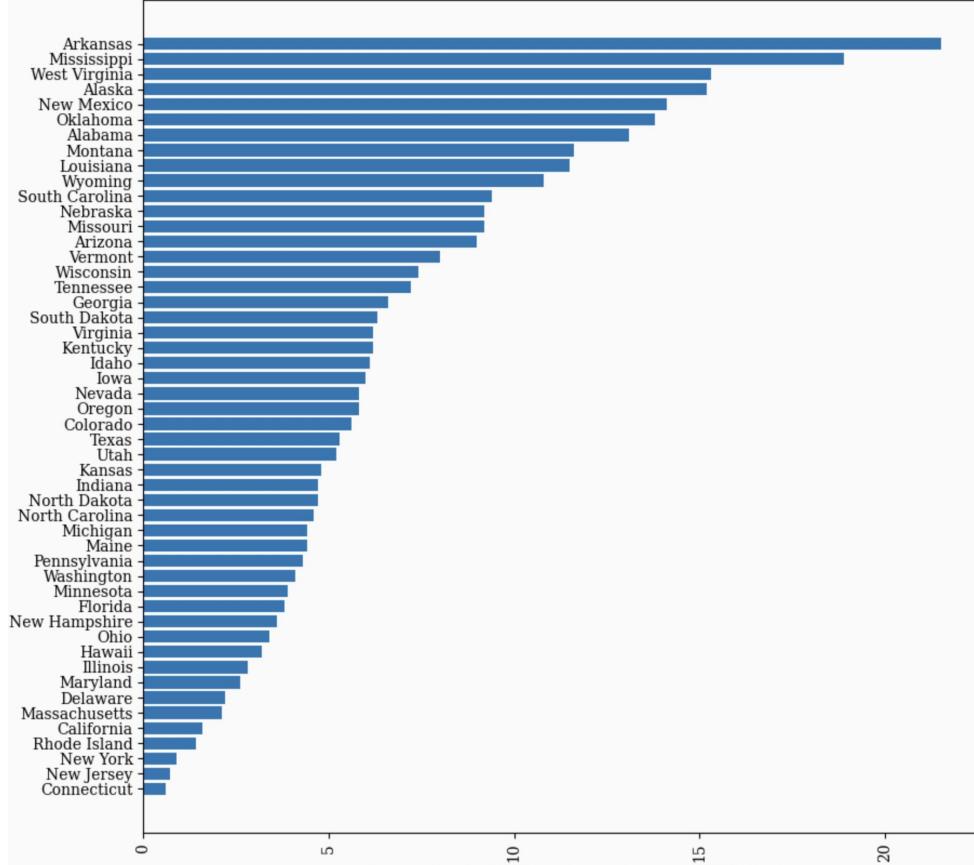
Top 10 States with NO PROVIDERS offering services at the minimum FCC requirements



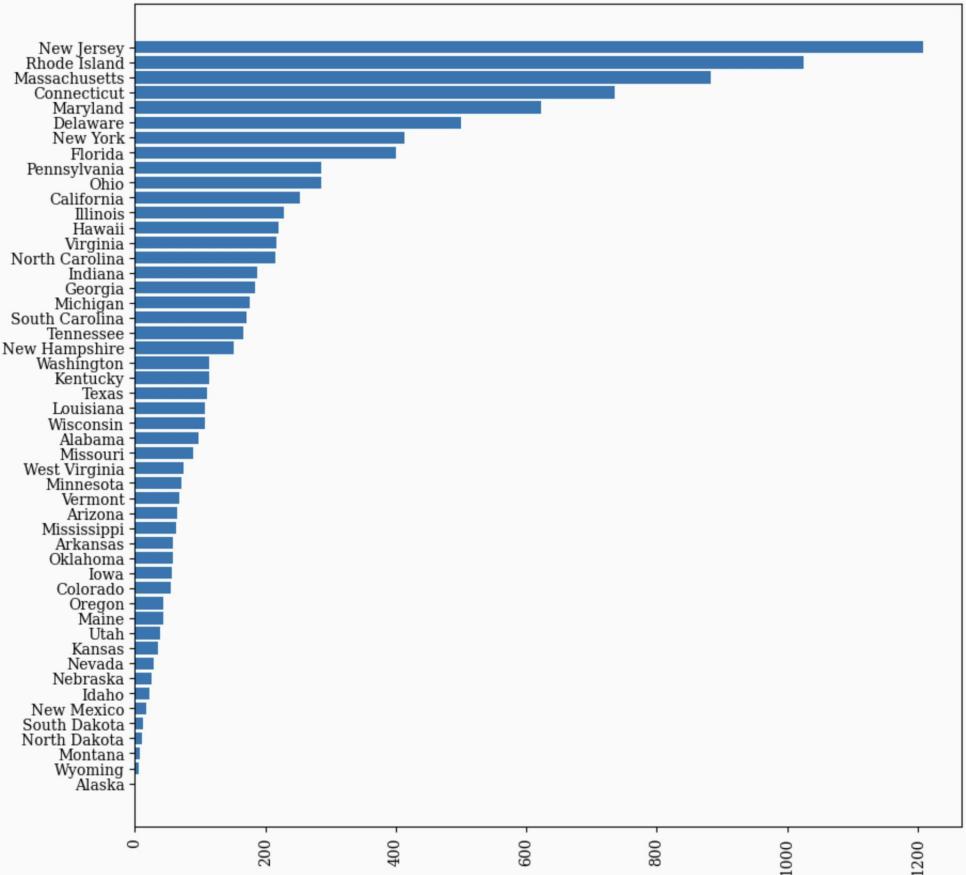
Bottom 10 States with NO PROVIDERS offering services at the minimum FCC requirements



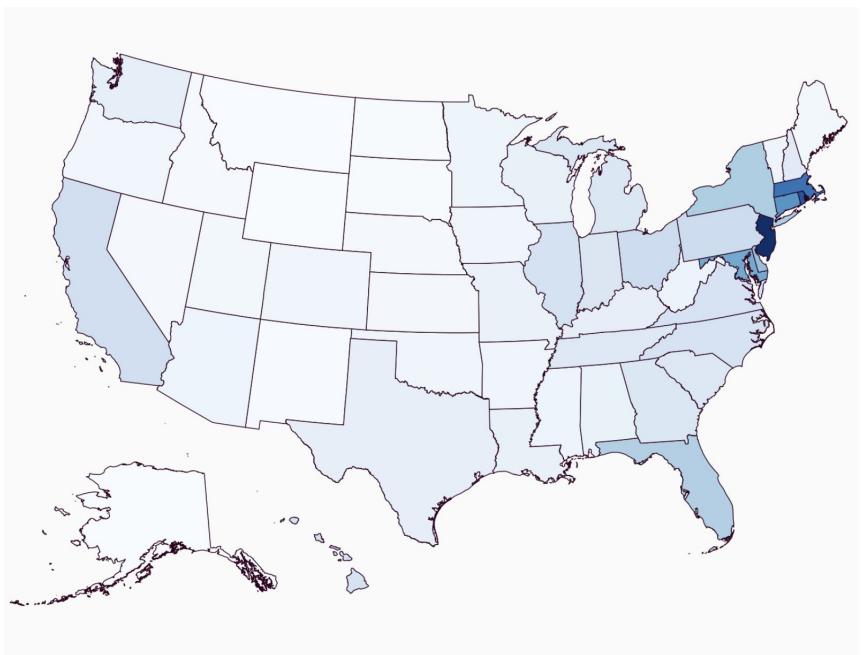
Share of pop with Fixed Broadband Service FCC at Minimum

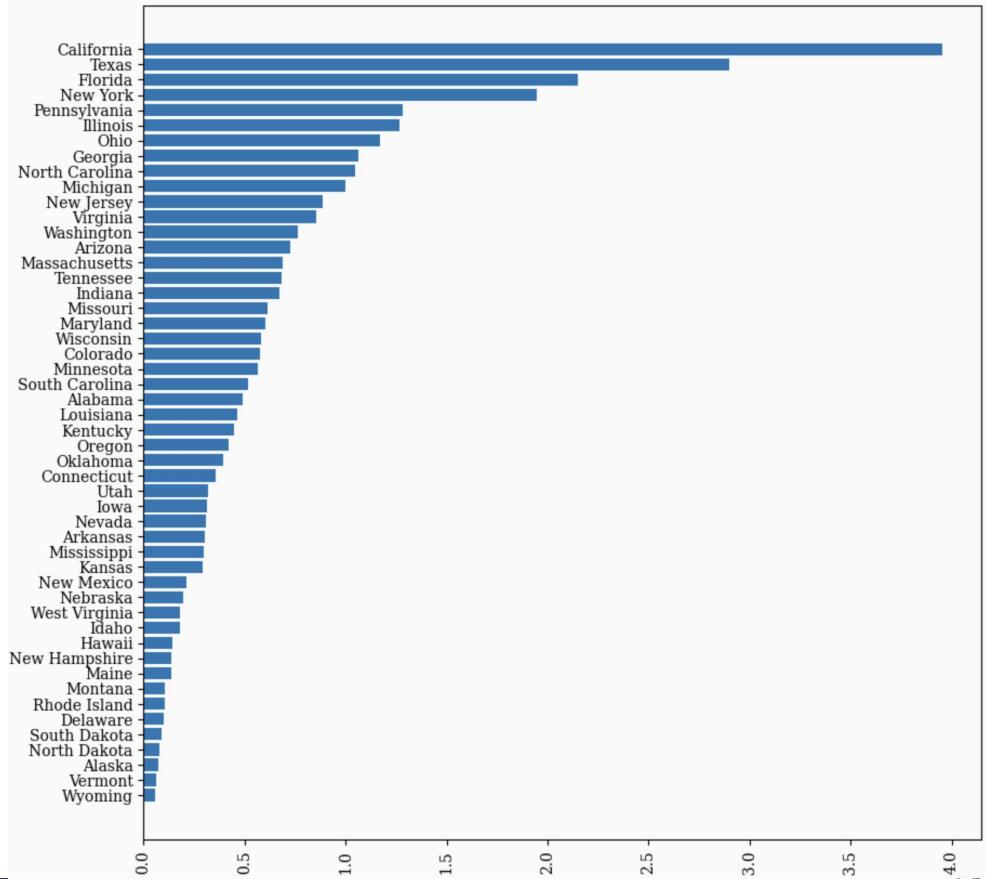


Share of pop with NO ACCESS To Fixed Broadband FCC Minimum

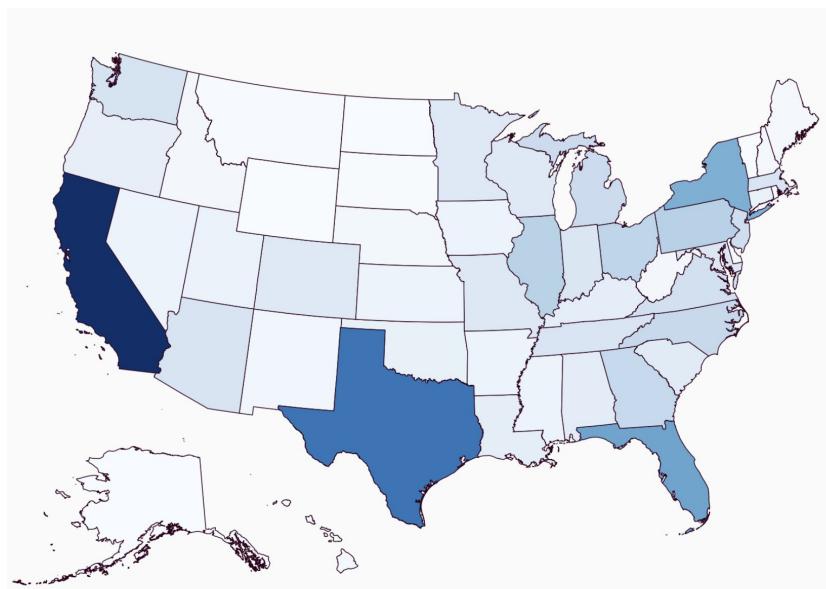


County Population Per Square Mile





County Population



Team looked at Top 10 states & Bottom 10 states in Internet Access to identify influence of socioeconomic factors of Education and Employment. Trends in both groups were similar, indicating other factors are impacting Internet Access

