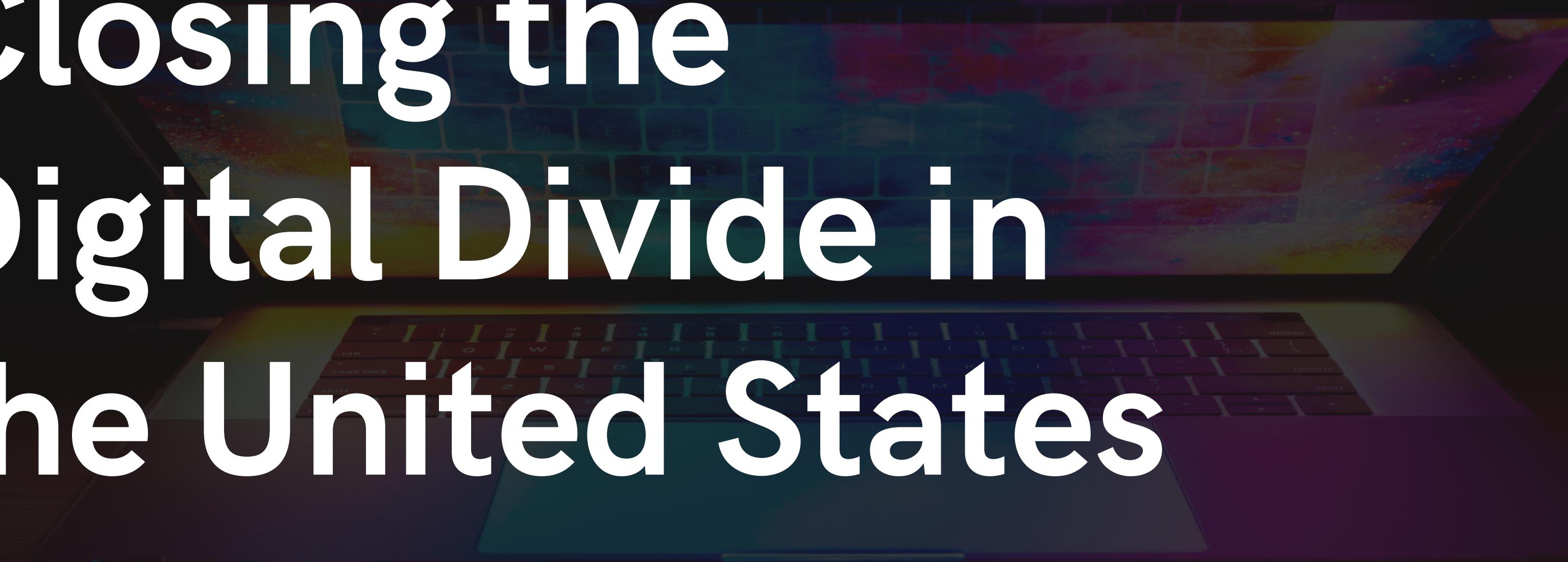


# Closing the Digital Divide in the United States



Team 13: Millie O. Symns, Geri Harding,  
& Jayuan (JJ) Ruiz

**About 1 in 4 households  
(27.6 million) do not  
have access to internet.**

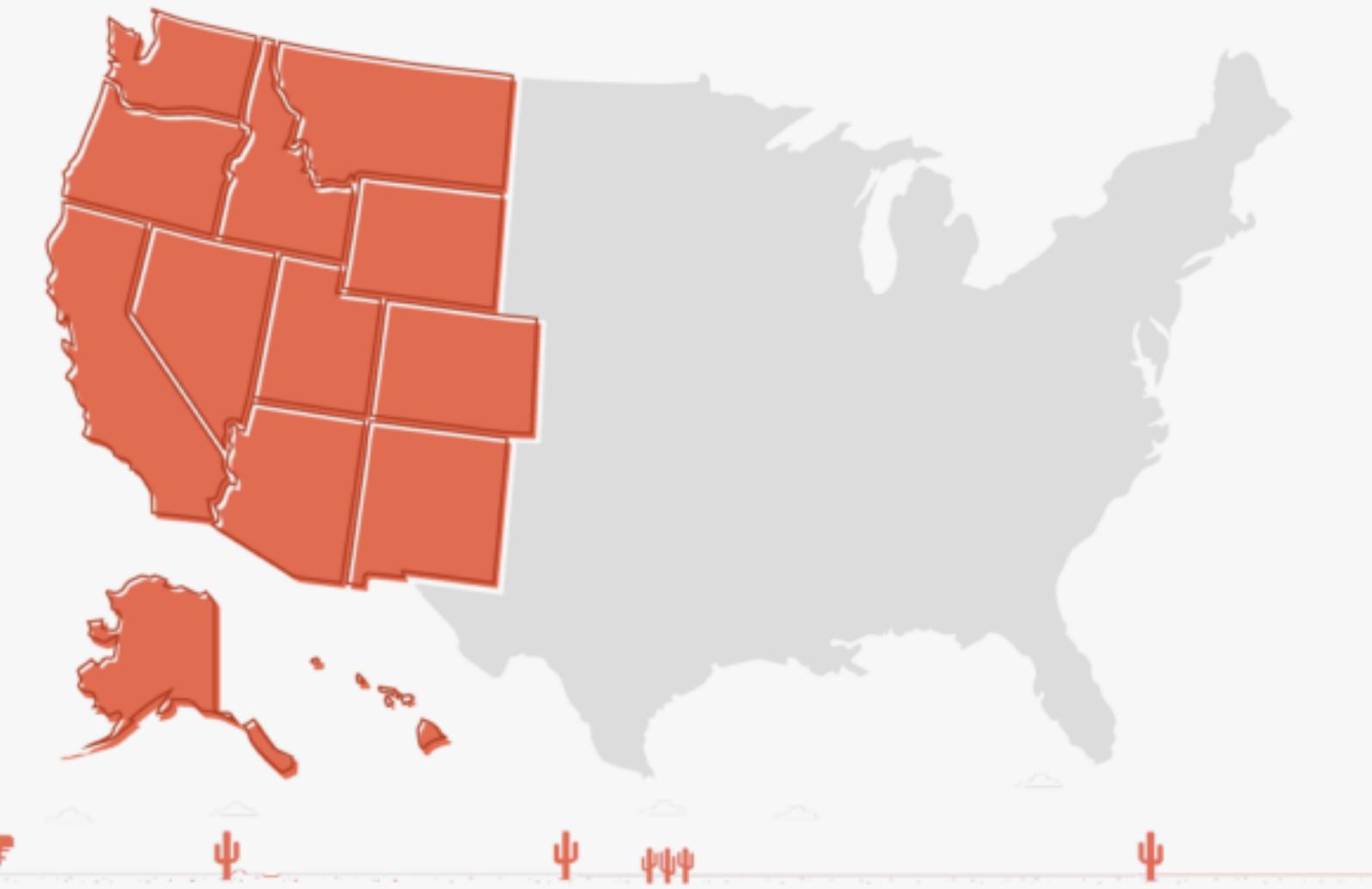
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Note: Based on counties observed in Census ACS data from [an article](#)

**The number of US households without internet connection  
is more than the total number of households in these 13 states combined.**



**That's about  
27,611,736  
households  
without internet  
connection.**



**Makes up the total number of households in  
about 13 states**

Note: Source [article](#) (reviews.org)



There are over  
**17.8 million**  
households that  
do not have any  
devices



**22%** of  
households do  
not have a  
desktop

# NECESSITY NOT LUXURY

Having access to internet and technology is necessary for people to access resources. Additionally, as the world continues moving to a digital space, lack of access will impact the economy.



# ADDRESSING THE DIGITAL DIVIDE MEANS DETERMINING THE NEED

**Problem:** There is a widening gap in equitable access to the internet and technology.

**Objective:** To help close the internet accessibility gap by identifying and assessing which areas are at the most risk of lacking proper access and determine that level of risk.

**Solution:** Creating an interactive dashboard that provides a comprehensive score of needs using key metrics.

# DATA WRANGLING & EXPLORATION



Insights to our datasets  
and exploratory analysis

# DATASETS



Population Count by  
County



County Internet Access



Employment Status by  
County



Types of Computers and  
Internet Subscriptions



Median Income in  
Households

- All 2018
- County Level
- All 50 US States

# LIMITATIONS WITH THE DATA

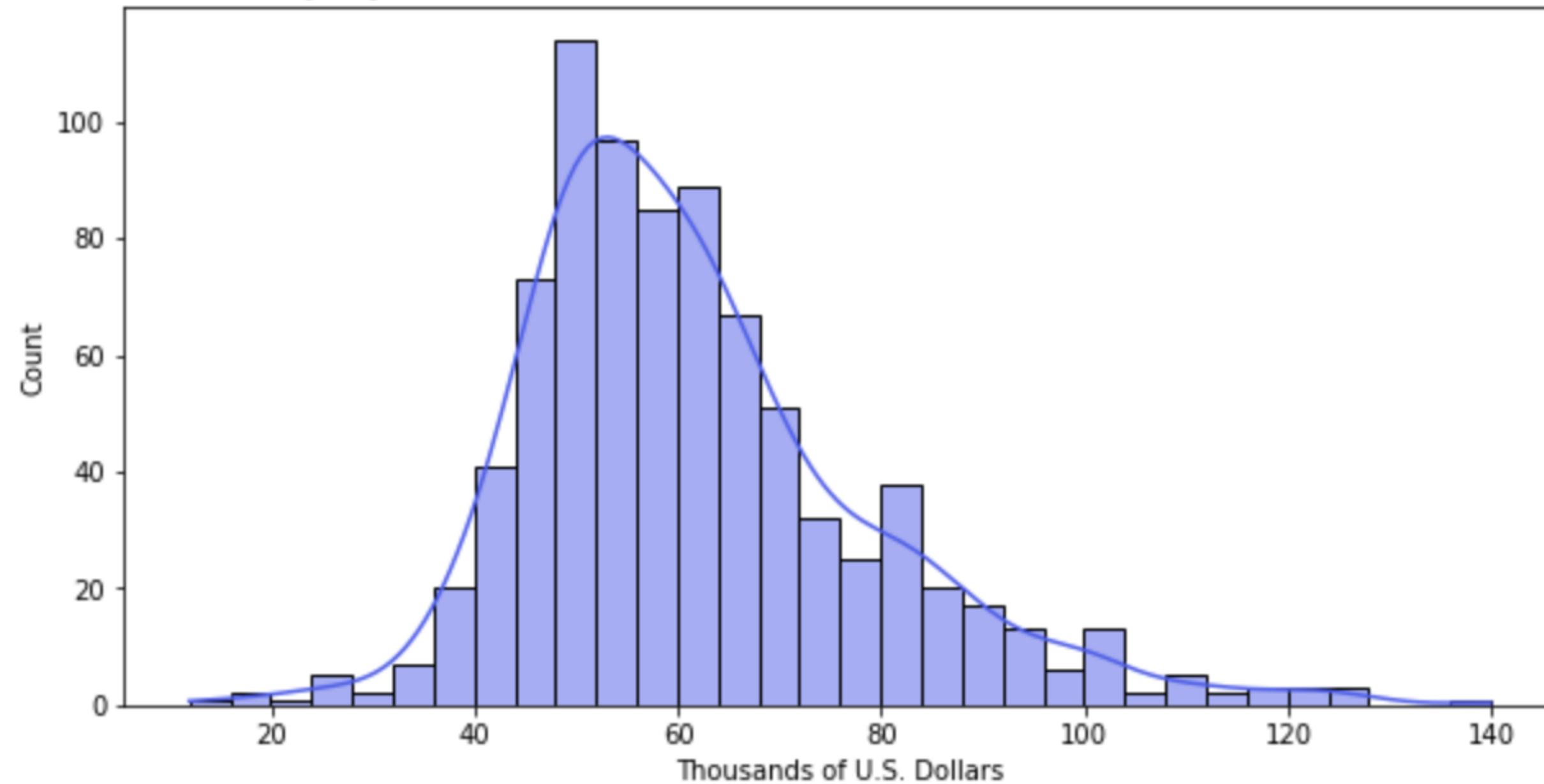
—  
Lots of missingness of the county level that were not surveyed (majority in the micro and rural areas)

—  
Our data is back for 2018 to match the timeframe of a dataset with percentage of households with broadband data that was complete

—  
Data remains on the most generalizable level, therefore we do not get into race, gender and age differences

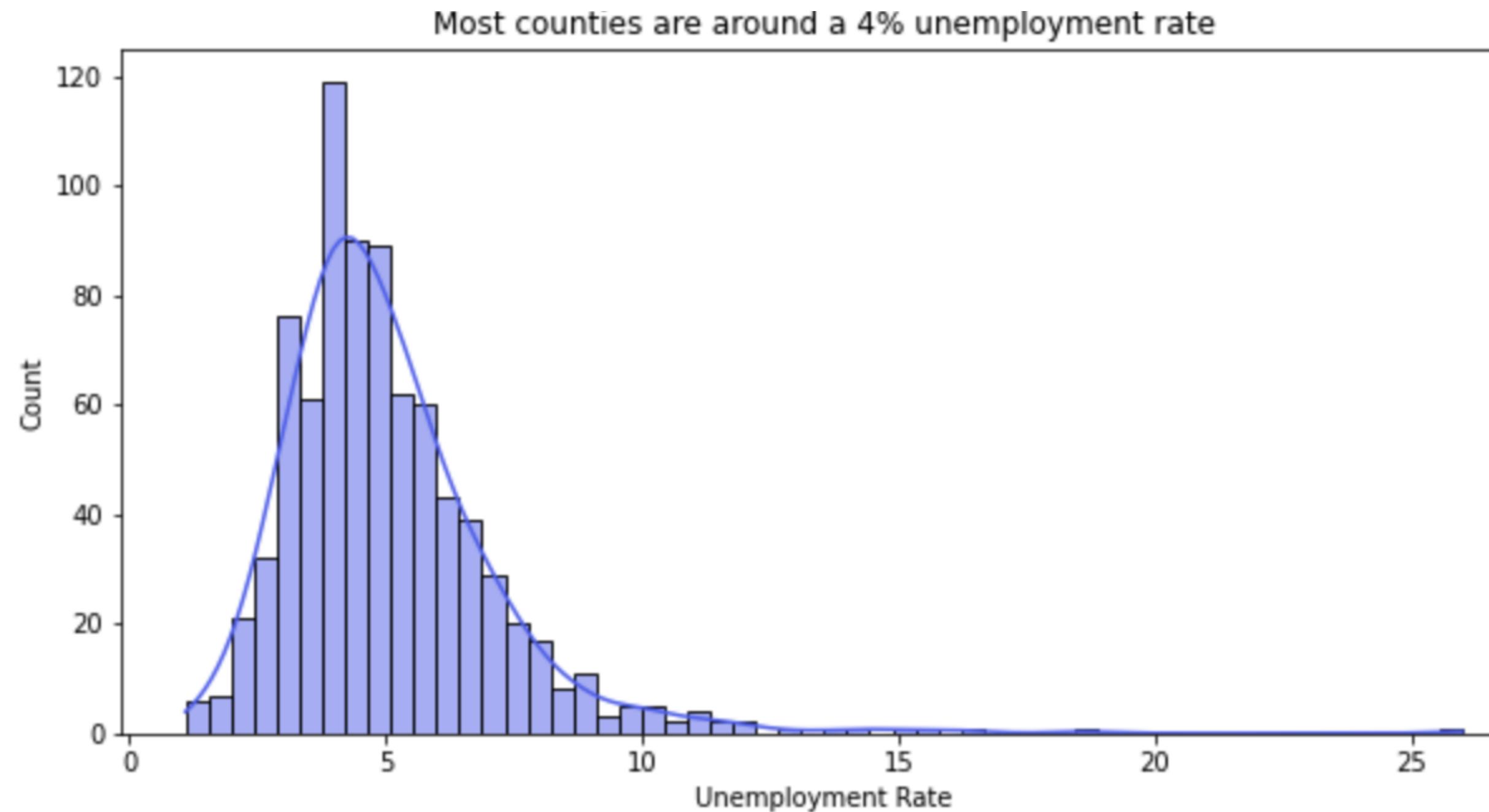
# BACKGROUND ON COUNTIES

Majority of households in U.S. counties have median incomes around \$60K



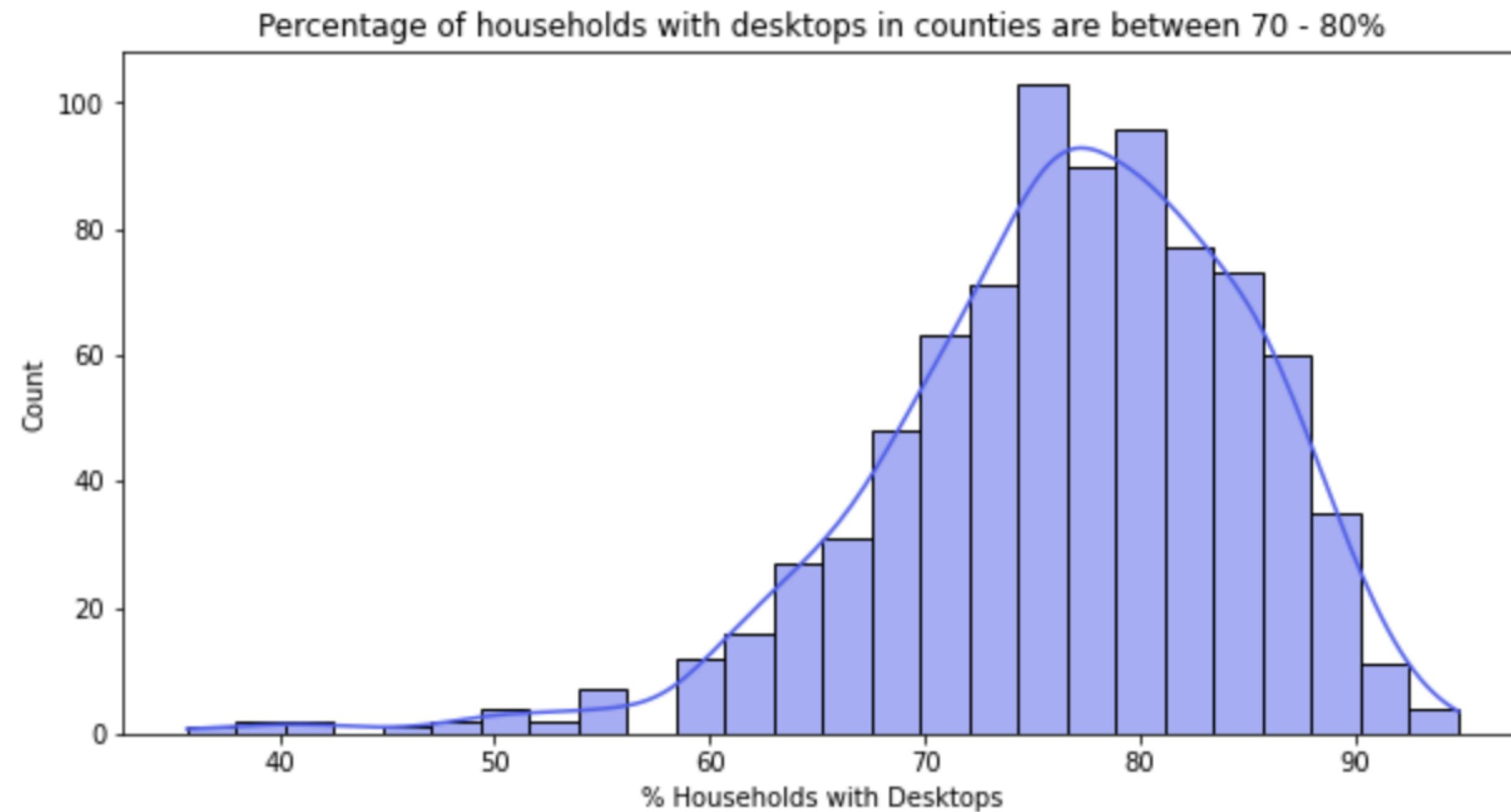
Important to know what income looks like to determine accessibility to afford internet and technology.

# BACKGROUND ON COUNTIES



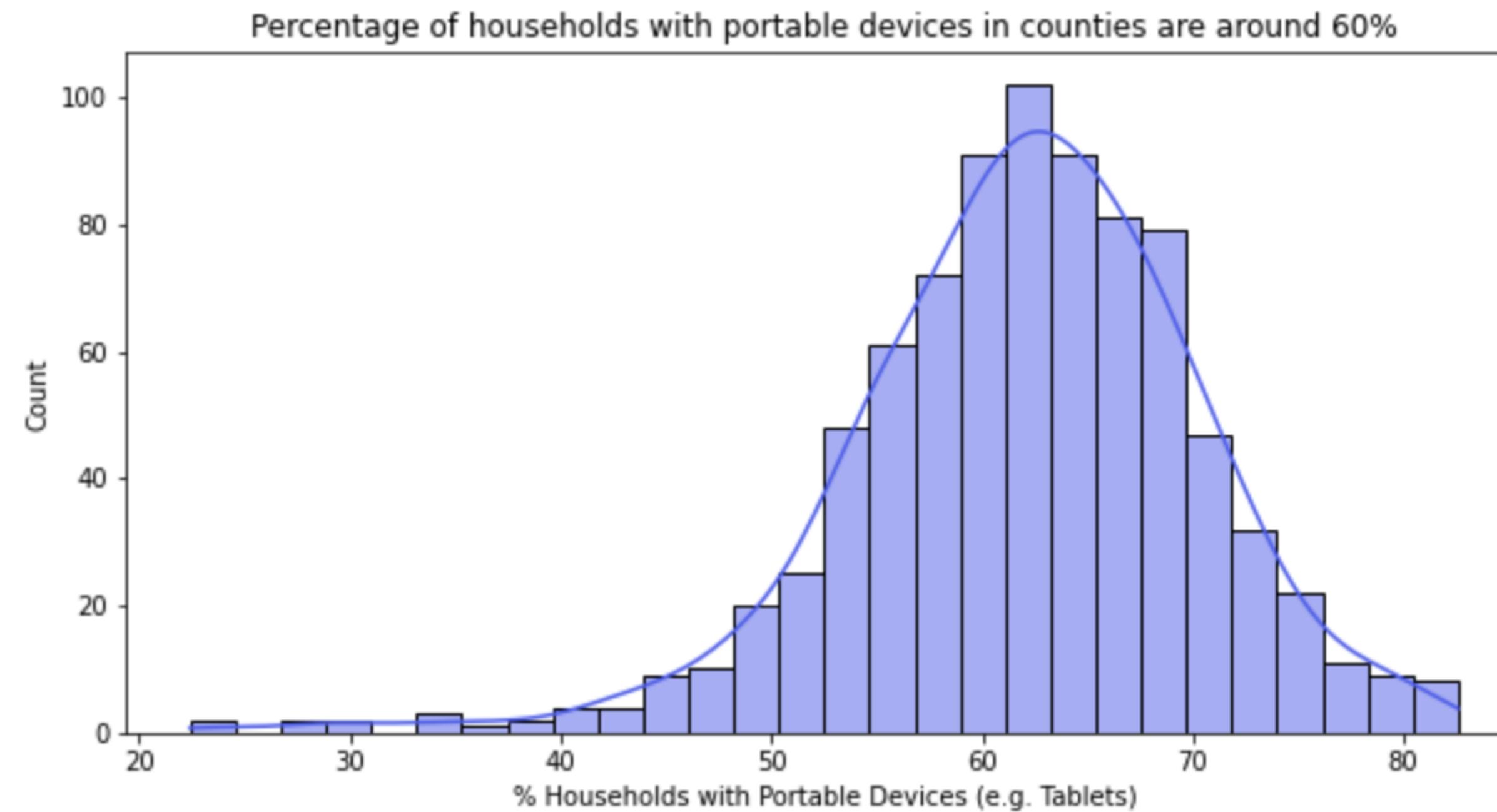
When broken out by region, the unemployment rate distribution remains relatively consistent

# HOUSEHOLDS WITH TECHNOLOGY



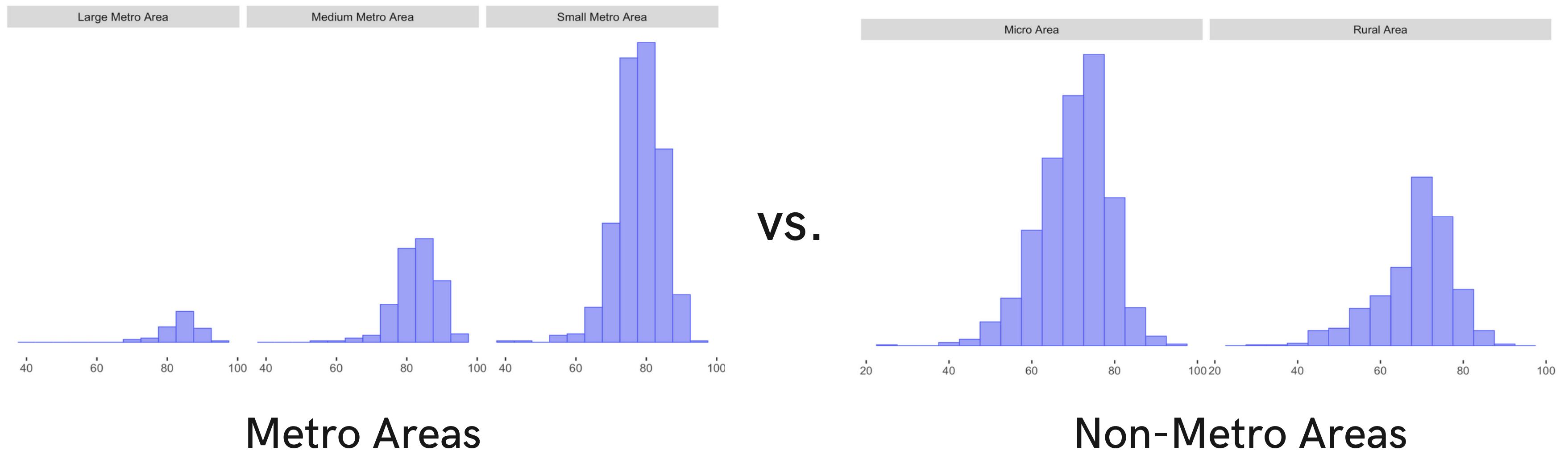
Most households in counties have desktops (average of 78%)

# HOUSEHOLDS WITH TECHNOLOGY



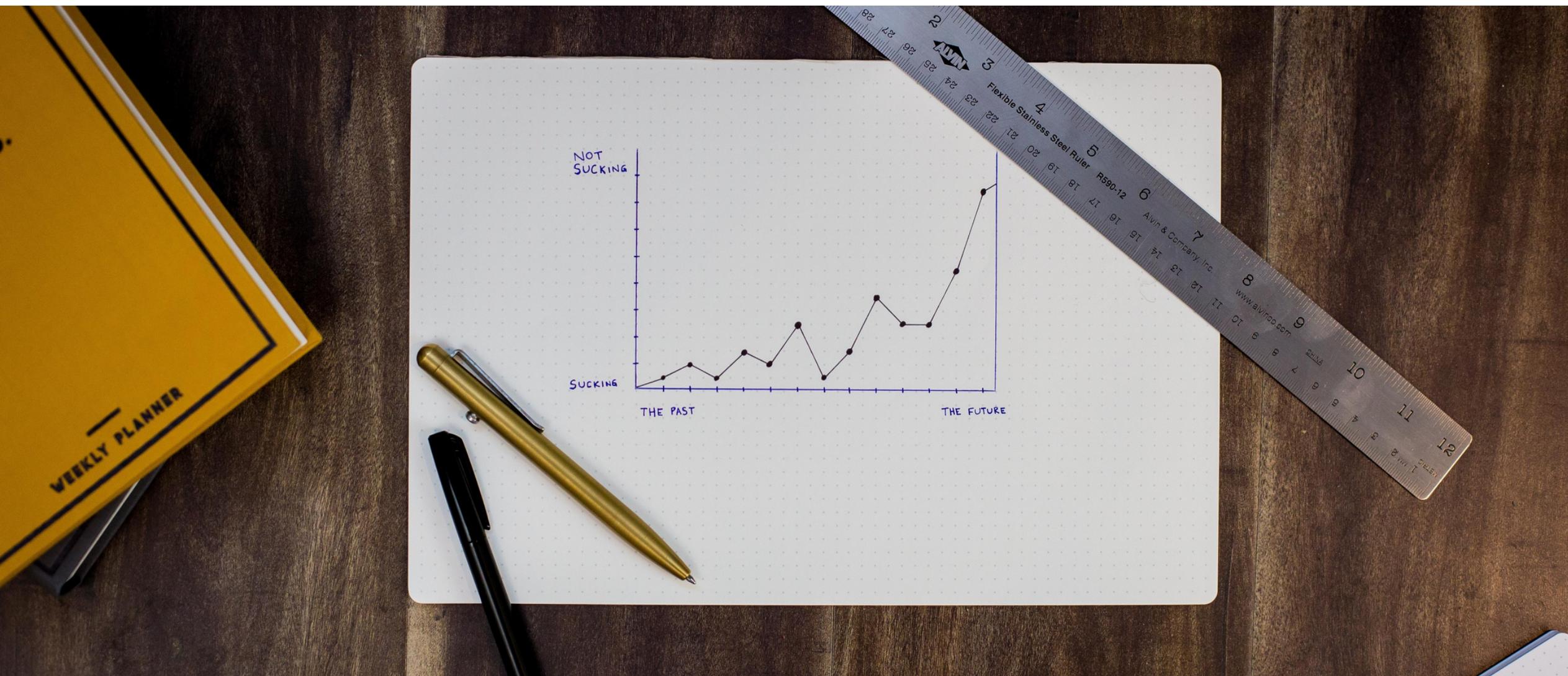
Most households in counties have portable devices like tablets (average of 60%)

# BROADBAND INTERNET BY POPULATION CLASS



Metro areas appear to have better infrastructure in place and accessibility to the internet with the percentage of households in metro area counties around 80% and non-metro areas having a broad range between 60 - 80%

# METHODOLOGY & ANALYSIS



How we ended up using  
our data

# CREATING THE ACCESSIBILITY SCORE

Feature	Bottom Value	Top Value
% Households with Broadband Internet	<b>1 = Less than 54.9%</b>	<b>5 = Greater than 85%</b>
Median Income in Households*	<b>1 = Below poverty line</b>	<b>5 = Upper income</b>
% Households with Desktops	<b>1 = Less than 50.9%</b>	<b>5 = Greater than 93.3%</b>
% Households with Portable Device	<b>1 = Less than 36.7%</b>	<b>5 = Greater than 78.2%</b>
% Households with Smartphones	<b>1 = Less than 66.2%</b>	<b>5 = Greater than 94.8%</b>

\*Poverty level was based on the higher numbers of members in the household in the dataset (4). Alaska poverty line is the highest level of income at \$31,380.



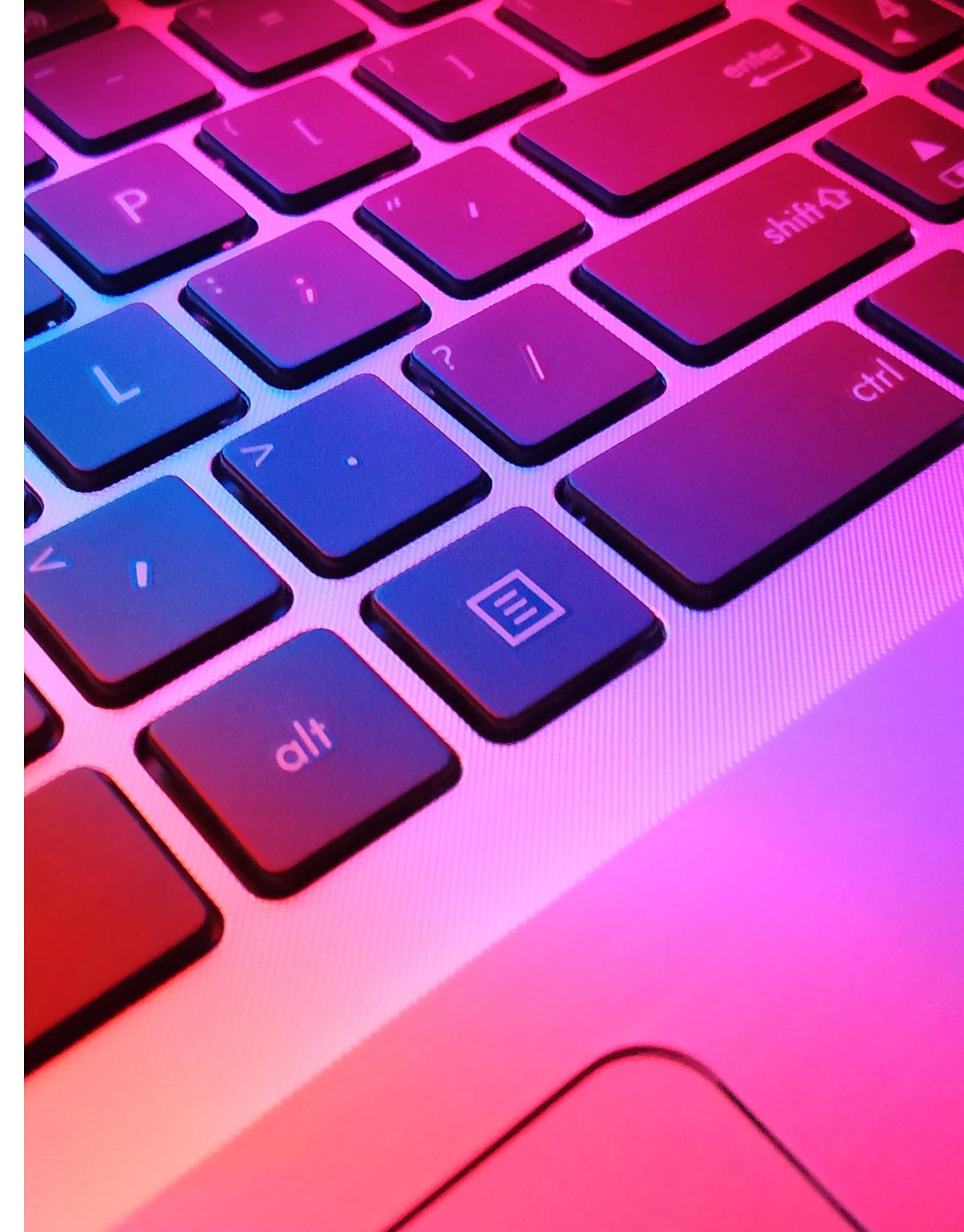
# PREDICTING PERCENT OF HOUSEHOLDS WITH INTERNET & DESKTOPS

We built two linear regression models to predict:

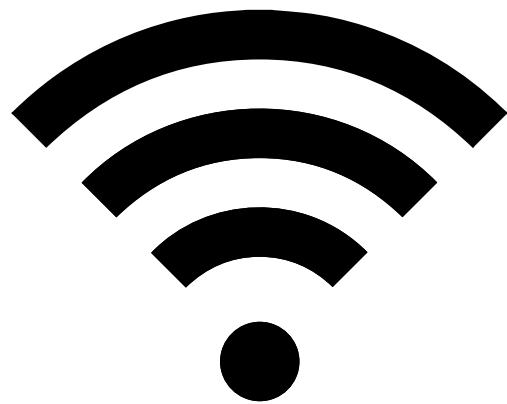
- % of households with broadband internet
- % of households with desktops.

We are trying to predict which areas are most needed in the future for these resources.

In each model, our inputs included region, unemployment rate, median income, and devices.



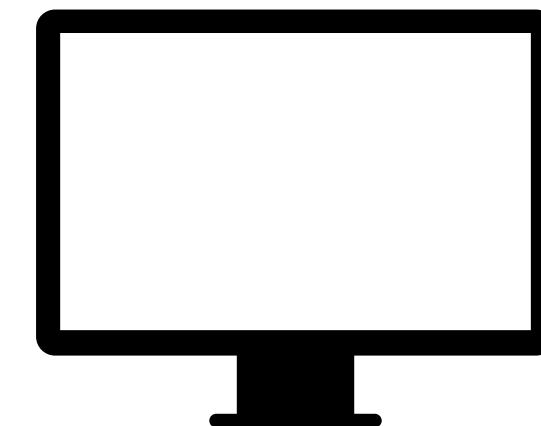
# BROADBAND



R-SQUARED = 0.821

- Estimated median income
- Percent of households with desktops
- Percent of households with portable

# DESKTOPS



R-SQUARED = 0.845

- Estimated median income
- Unemployment rate
- Region (Northeast & West)
- Percent of households with portable

# LET'S EXPLORE THE DASHBOARD



<https://public.tableau.com/app/profile/geri.harding/viz/DS4AClosingtheDigitalDivide/Dashboard2>

# CONCLUSIONS AND FUTURE WORK



What we have gathered  
and hope to continue in  
the future

# KEY TAKEAWAYS

More research needs to be conducted in rural areas to learn more about the internet and technology needs

Household income plays a significant factor in having access to the internet and technology devices

Priority should be given to the South and Midwest regions for infrastructure funding based on our assessment of need

# FUTURE WORK

Incorporate more data on internet and infrastructure pricing and other costs

Reach out to internet providers for their data on connectivity across the country

Dig deeper into the variability in specific states and regions by demographic backgrounds

# THANK YOU!



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