



U.S. Climate Change Attitudes

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Data Sources



[About](#) [Publications](#) [Visualizations & Data](#) [For Educators: Grades 6-12](#) [News & Events](#) [Search](#) [Donate](#)

[Home](#) / [Visualizations & Data](#) / [Yale Climate Opinion Maps 2020](#)

Map · Sep 2, 2020

Yale Climate Opinion Maps 2020

By Jennifer Marlon, Peter Howe, Matti Mildenberger, Anthony Leiserowitz and Xinran Wang
Filed under: [Behaviors & Actions](#), [Policy & Politics](#) and [Beliefs & Attitudes](#)

Opinion Maps

About

Methodology

Survey Questions

Data Download

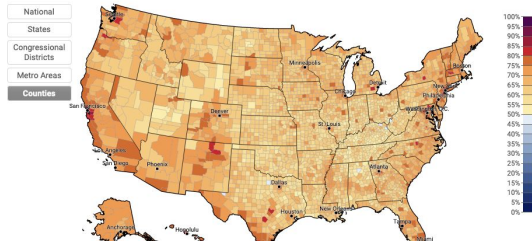
FAQ

These maps show how Americans' climate change beliefs, risk perceptions, and policy support vary at the state, congressional district, metro area, and county levels.

Estimated % of adults who think global warming is happening (72%), 2020

Select Question: Global warming is happening

Click on map to select geography, or:



Data Sources

// Census.gov > Topics > Population > Data

POPULATION

About this Topic

Data

National Population Projections

The Population Projections Program produces projections of the United States resident population.

Population and Housing Unit Estimates

Current population estimates are available for the nation, states, counties, cities and towns, and census tracts.

ACS County-County Migration Flows

These files contain the complete county-to-county migration flows by age, sex, race, and ethnicity.

2010 Census Data

Detailed information about the entire population from the 2010 Census.

BALLOT PEDIA

SEARCH THE ENCYCLOPEDIA OF AMERICAN POLITICS

List of Pivot Counties - the 206 counties that voted Obama-Obama-Trump

PIVOT COUNTIES

OBAMA 2008 • OBAMA 2012 • TRUMP 2016

206

In the November 2016 presidential election, **206 counties** were won by Donald Trump (R) after being carried by Barack Obama (D) in both 2008 and 2012. Trump's average margin of victory in those counties was **11.43 percent**, while Obama won them by **12.23 percent** in 2008 and **8.22 percent** in 2012.^[1] These counties are sometimes referred to as swing counties by media and political observers.

List of counties

The following table lists all of the Pivot Counties that voted for Obama in 2008 and 2012 and Trump in 2016, along with the margin of victory in each of those elections.

| Counties Won By Trump in 2016 and Obama in 2012 and 2008 | | | | |
|----------------------------------------------------------|------------|---------------------------------|---------------------------------|---------------------------------|
| County | State | Trump Margin of Victory in 2016 | Obama Margin of Victory in 2012 | Obama Margin of Victory in 2008 |
| Woodruff County, Arkansas | Arkansas | 8.91% | 4.21% | 7.46% |
| Conejos County, Colorado | Colorado | 3.56% | 9.22% | 12.93% |
| Huerfano County, New Mexico | New Mexico | 1.00% | 1.00% | 1.00% |

2016 PIVOT COUNTIES

Analysis

- Pivot counties overview
- List of counties
- Historical voting patterns
- Historical voting analysis, 1992-2004
- Demographics
- Reverse-Pivot Counties
- Voter turnout
- Pivot Counties by state
- Pivot Counties in congressional districts
- Pivot Counties in state legislative districts
- Pivot Counties and ballot



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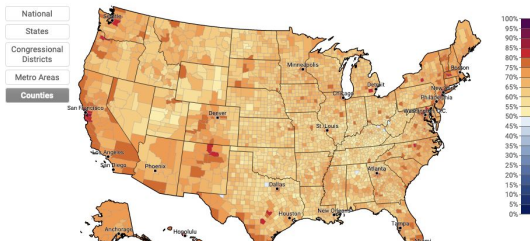
Opinion Maps About Methodology Survey Questions Data Download FAQ

These maps show how Americans' climate change beliefs, risk perceptions, and policy support vary at the state, congressional district, metro area, and county levels.

Estimated % of adults who think global warming is happening (72%), 2020

Select Question: Global warming is happening Absolute Value

Click on map to select geography, or: Select a State Select a County



Add Data Search

The Harvard Dataserve Repository is currently experiencing significantly higher than average load. Certain pages may experience timeouts as we investigate optimizations. If that happens, please try again later or contact support_at_dataserve.



U.S. Presidential Elections (Massachusetts Institute of Technology)

This Dataserve is maintained by

Harvard Dataserve > MEDSL Dataserve > MEDSL Election Returns Dataserve > U.S. Presidential Elections >

U.S. President 1976–2020

Version 6.0



MIT Election Data and Science Lab, 2017, "U.S. President 1976–2020", <https://doi.org/10.7927/H4T1-6K9Q>
Harvard Dataserve, V6, UNF:6:4KoNz9KgTxY0ZBxJ9ZkOw== [fileUNF]

Cite Dataset

Learn about Data Citation Standards.

Description

This data file contains constituency (state-level) returns for elections to the U.S. House of Representatives from 1976 to 2020.

Converting Between County Identifiers

```
30
31 # Routines to process the key geographic ID we'll use
32 # To stitch together the 4 data sources
33
34 # County-level ID:
35 # format of 'GEOID' or 'STCOU' column is
36 # 2-digit state
37 # plus 3-digit county
38 # if it's interpreted as an integer, the leading 0 in the state portion
39 # may be lost. So we decided to convert these ID's to strings
40
41 # Input: an int, floating point, or string containing numeric characters
42 # Output: 5-digit numeric string, adding leading zeroes as needed to reach 5 digits
43 # It expects the input not to exceed 5 characters/digits
44 def padID(id_param):
45     id_string = str(int(id_param))
46     if len(id_string) > 5:
47         print("ERROR! ID exceeding expected length: " + id_string)
48         return id_string
49     else:
50         return id_string.rjust(5, '0')
51
52 # input: 5-character string representing a state/county ID
53 # returns: false if final 3 digits are all 0's (indicating it's not a county)
54 #         true otherwise
55 def isCountyID(id_string):
56     if id_string[2:] == "000":
57         return False
58     else:
59         return True
60
61
```

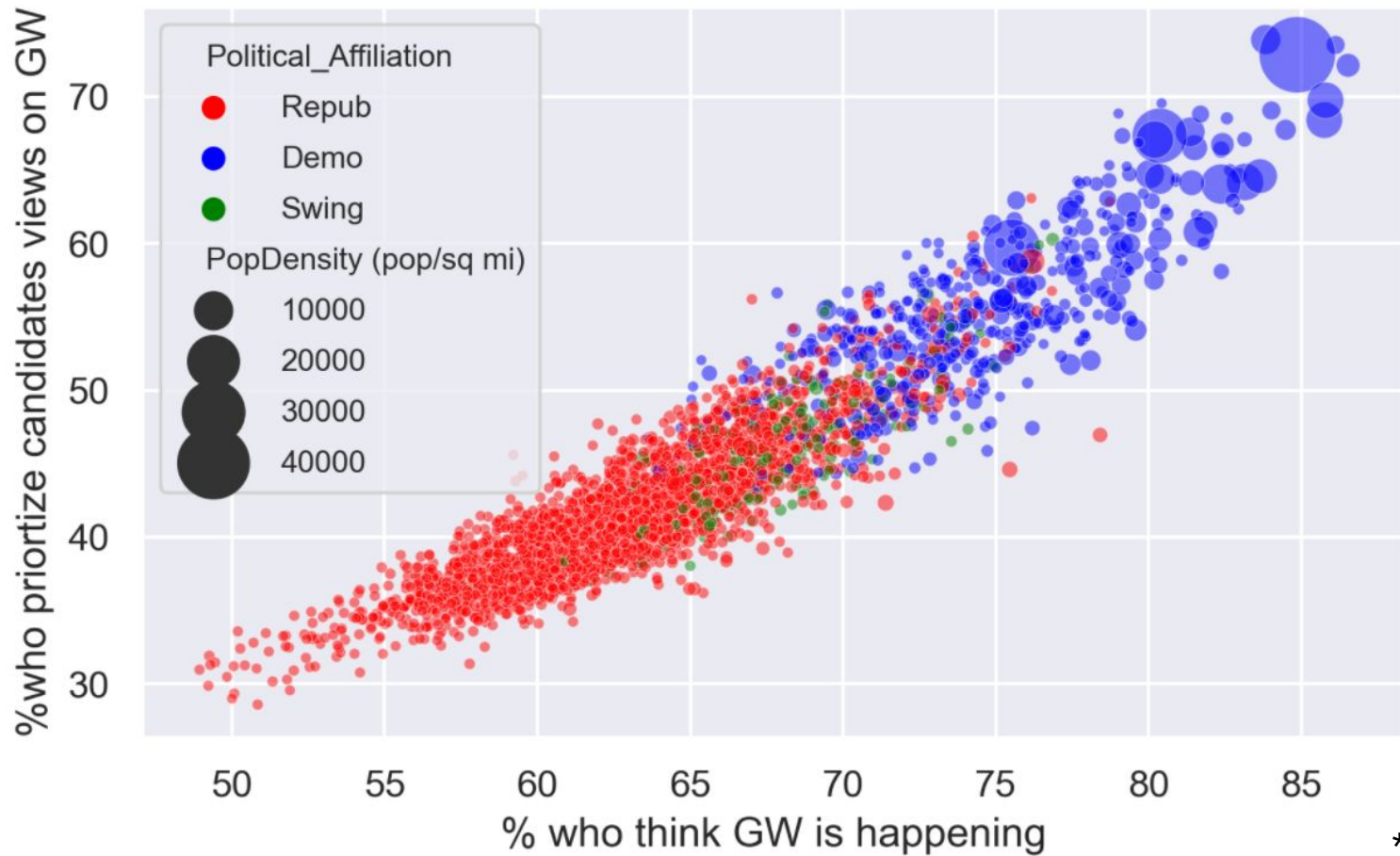
Our 1st question was:

Do those who think global warming is happening also think that a candidate's views on global warming is important?

How does this relate to the 2016 presidential election?

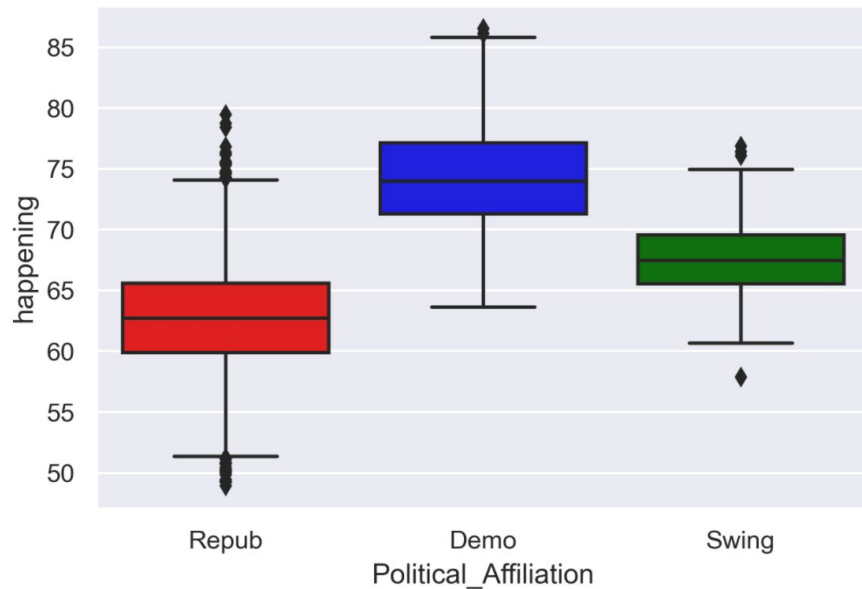


%Who think GW is happening vs those who care

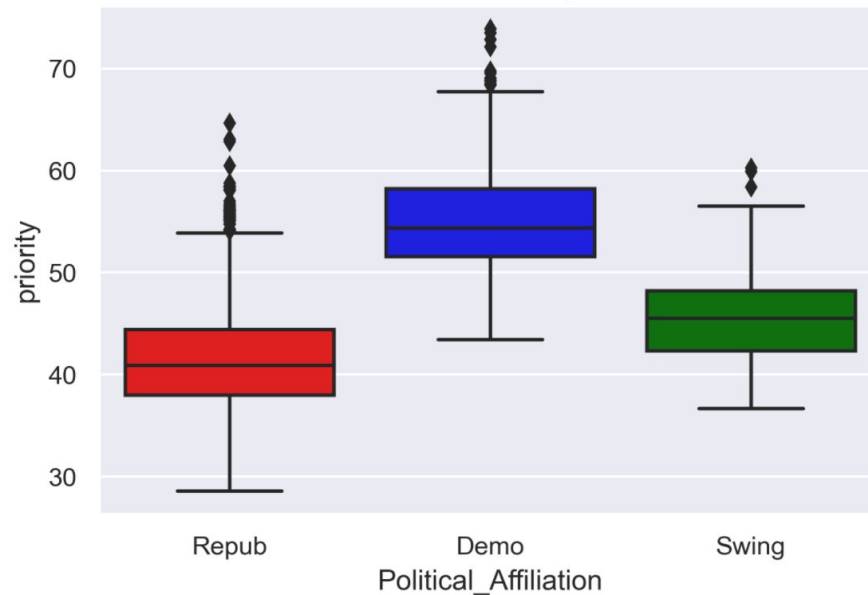


*Seaborn
library

GW is happening vs Political Affiliation



Candidate's views on GW is Priority vs Political Affiliation

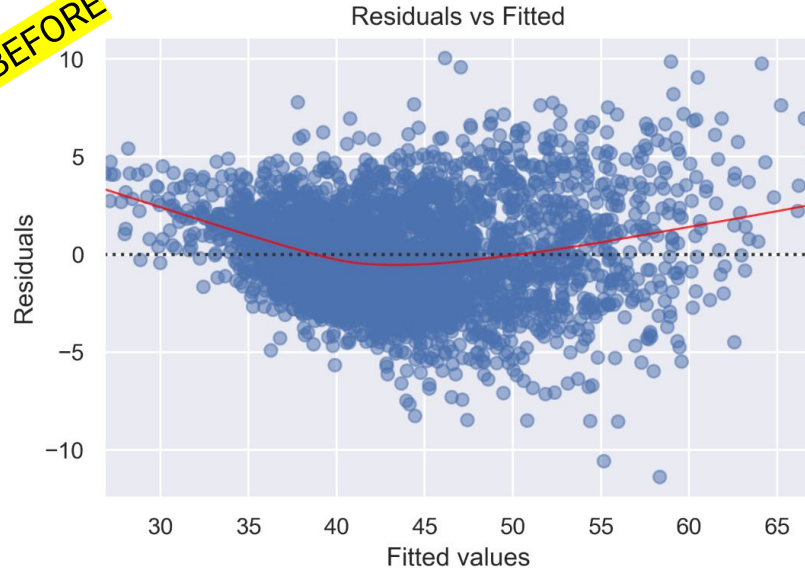


*Seaborn
library

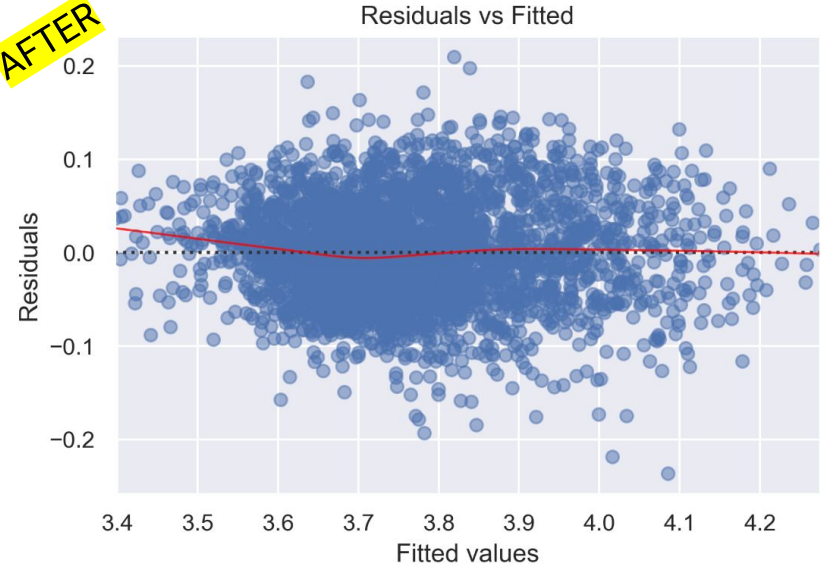
****Used ols from statsmodels library to fit linear regression model**

1. **87%** of the variability in those who prioritize candidate's views on global warming was captured
2. Did have to log transform the response:

BEFORE



AFTER



We found that:

Those who prioritize candidate's views on global warming decreases on average by about 3.4% per change in those who think global warming is happening if they voted Republican in the 2016 election instead of voting Democrat.

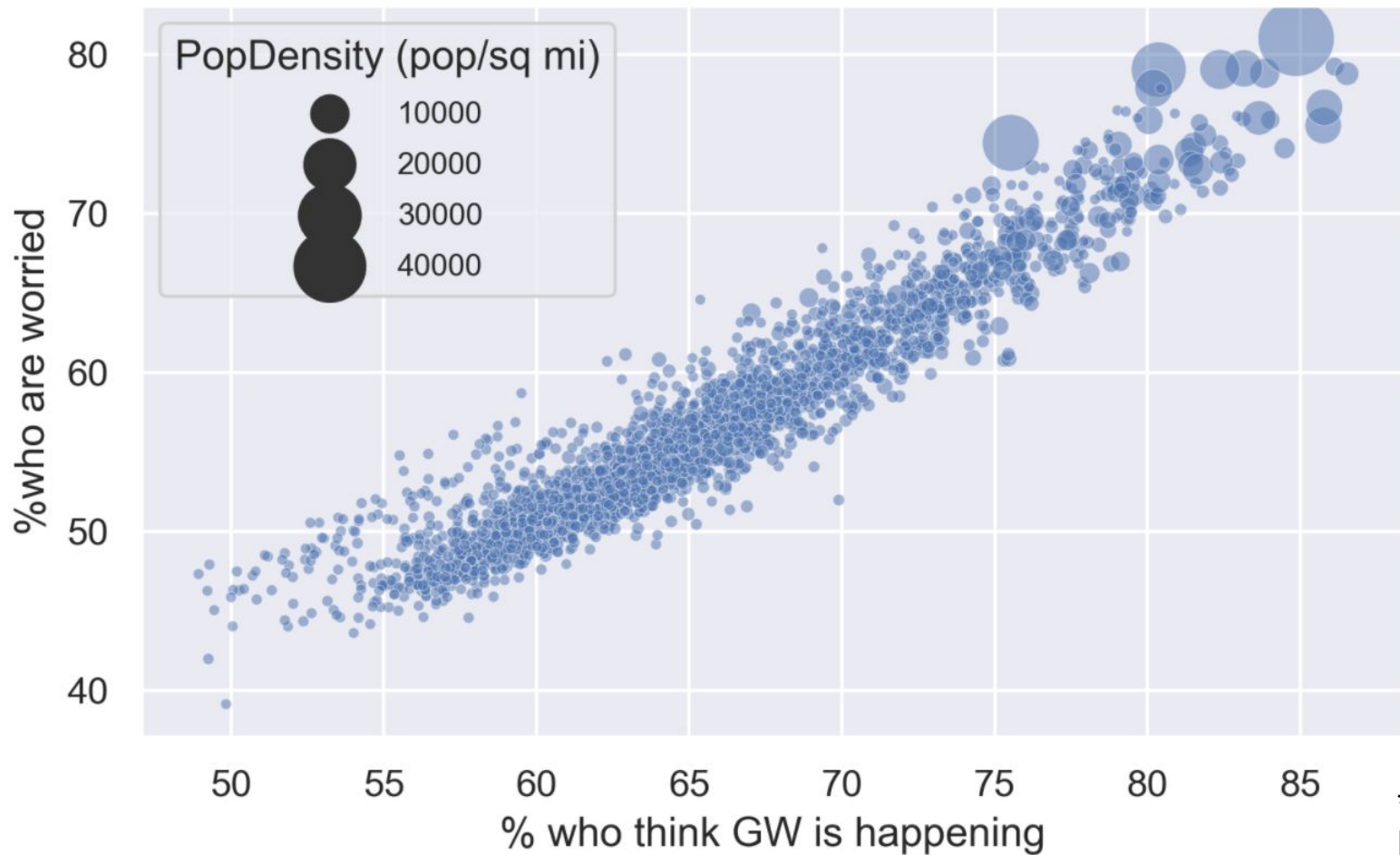


Our 2nd question was:

Are the people who think global warming is happening actually worried about it and how does this relate to population density?



%Who think GW is happening vs those who are worried



*Seaborn
library

Multiple regression model was fit:

90% of the variability in those who are worried about global warming was captured.

We found that:

.0002% is the expected change in those who are worried per unit change in the population density when those who believe global warming is happening is held constant.



Telling the Story

Based on the statistical examination we created a Map Experience

- Interactive Choropleth map
- Built with Plotly Graph Objects
 - Using Geojson for county and state boundaries
- Rendered as a Dash application
- Deployed to Heroku
 - Continuous Development Environment

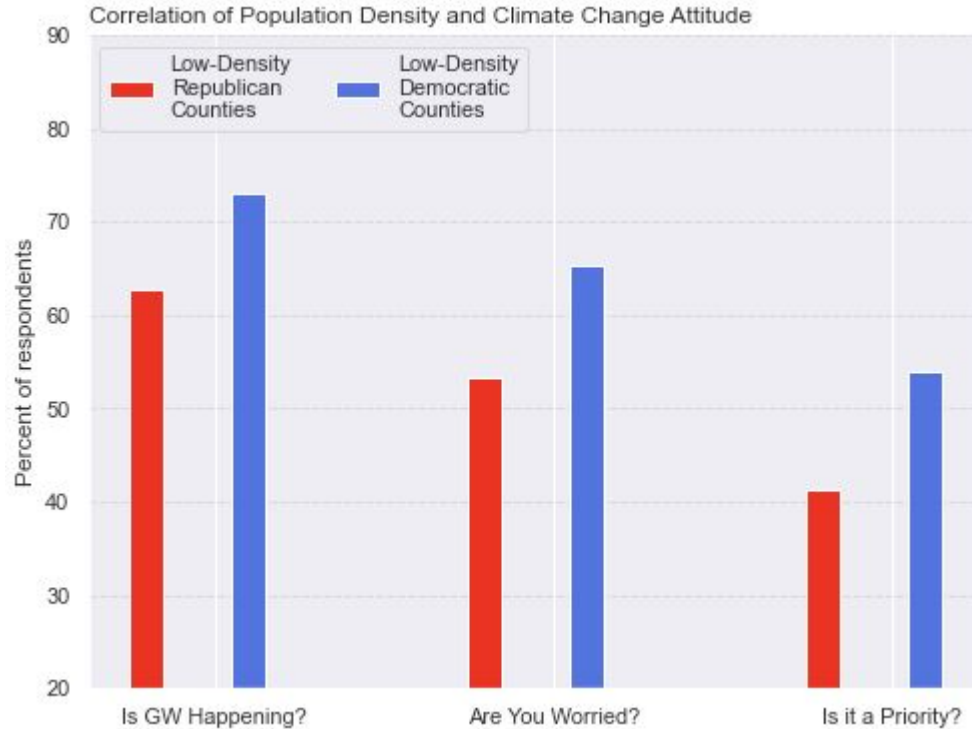




Software Testing

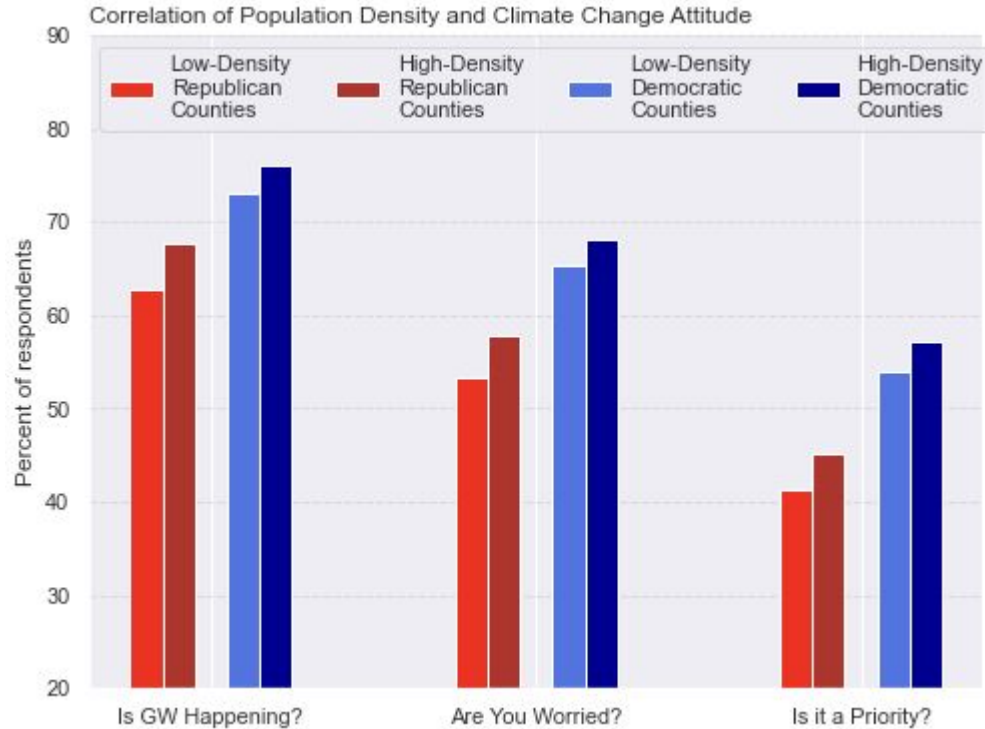
Conclusion:

Climate Change Attitude vs. Population Density



Conclusion:

Climate Change Attitude vs. Population Density



A Hint to our Graders.

Because we enjoy a little “extra”, we...

1. Built an Interactive Map
2. Web-scraped swing-county data
3. Transformed response variables in statistical analysis

