

Saint Louis University

# Voting Analytics

A study on the statistics of voters in the 2020 election

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When looking at the information presented to us by the U.S Census, one stood out in particular. The information being that of the 2020 election, given that the election took place during a pandemic, we were interested in looking into voter turnout at that time. Due to being such a tumultuous time in the United States, many different groups might have had different voting skews than normally presented, Landon and I both expressed our mutual interest in figuring out how to pinpoint these skews and statistics using our code. This interest eventually led to us forming our research question “How do age, economic status, and race impact voting turnout in the 2020 U.S. Presidential Election?”

The way we wished to find this data involved downloading the data from the Census as it was available there, turning the data into readable tables for our Google Colaboratory, and then starting by turning each variable into a dataframe for later usage. After we turned the variables into dataframes, we planned to look at a myriad of different graphs in order to fully figure out what is going on between the different sections in terms of voting statistics.

Why was our research question so important? In order to fully understand voting patterns and voter turnout in the United States, you have to understand the various groups that cross and intersect with each other and how these groups can become factors for voter turnout in certain areas across the country. You also have to acknowledge the social factors that take voting into play such as jobs related to government positions and how these might affect a citizen's theoretical “obligation to vote” which could cause higher voter turnout.

Our research question is important as it takes three of the most important aspects of the citizens of the United States and cross-compares them with each other in order to figure out voter turnout between these groups. Without this information it would be impossible to determine the difference between two groups like rich and poor whites, or old and young communities. In order

to get a fully accurate showing of statistics for voting, all of these groups must be included, or else you might have too little specification when it comes to voter turnout.

You may have to also factor in economic situations when it comes to voting, as those in lesser economic status might feel more inclined to vote in order to try and achieve some economic relief due to the situations they're in. While this is the case normally, in 2020 the situation might have been different due to risk of exposure to the COVID virus before a proper implementation of a vaccine could have been spread across the country. This may have caused those in lower economic areas to stay home rather than vote, causing lesser voter turnout. We intend to cover all of these areas in our findings, using the statistics to draw conclusions off of these referrals.

When retrieving the voting analytics data of United States citizens from the US Census Bureau, there were a total of 14 table sets. Each of these table sets are listed below with their respective titles:

**Table 1:** *Reported Voting and Registration, by Sex and Single Years of Age: November 2020.*

**Table 2:** *Reported Voting and Registration, by Race, Hispanic Origin, Sex, and Age: November 2020*, which consisted of four races: White, African American, Asian, and Hispanic/Latino.

**Table 3:** *Reported Voting and Registration by Age, for the United States, Regions, and Divisions: November 2020.*

**Table 4** consisted of three sections, listed a, b, and c.

- Section a: *Reported Voting and Registration for States: November 2020.*
- Section b: *Reported Voting and Registration, by Sex, Race and Hispanic Origin, for States: November 2020.*
- Section c: *Reported Voting and Registration, by Age, for States: November 2020.*

**Table 5:** *Reported Voting and Registration by Age, Sex, and Educational Attainment: November 2020.*

**Table 6:** *Reported Voting and Registration by Sex, Employment Status, Class of Worker and Disability Status: November 2020.*

**Table 7:** *Reported Voting and Registration of Family Members, by Age and Family Income: November 2020.*

**Table 8:** *Reported Voting and Registration, by Duration of Residence, and Tenure: November 2020.*

**Table 9:** *Reported Voting and Registration, by Marital Status, Age, and Sex: November 2020.*

**Table 10:** *Reasons for Not Voting, By Selected Characteristics: November 2020.*

**Table 11:** *Reported Voting and Registration Among Native and Naturalized Citizens, by Race, and Region of Origin: November 2020.*

**Table 12:** *Method of Registration, By Selected Characteristics: November 2020.*

**Table 13:** *Reported Voting and Registration, by Sex, Veteran Status, and Age: November 2020.*

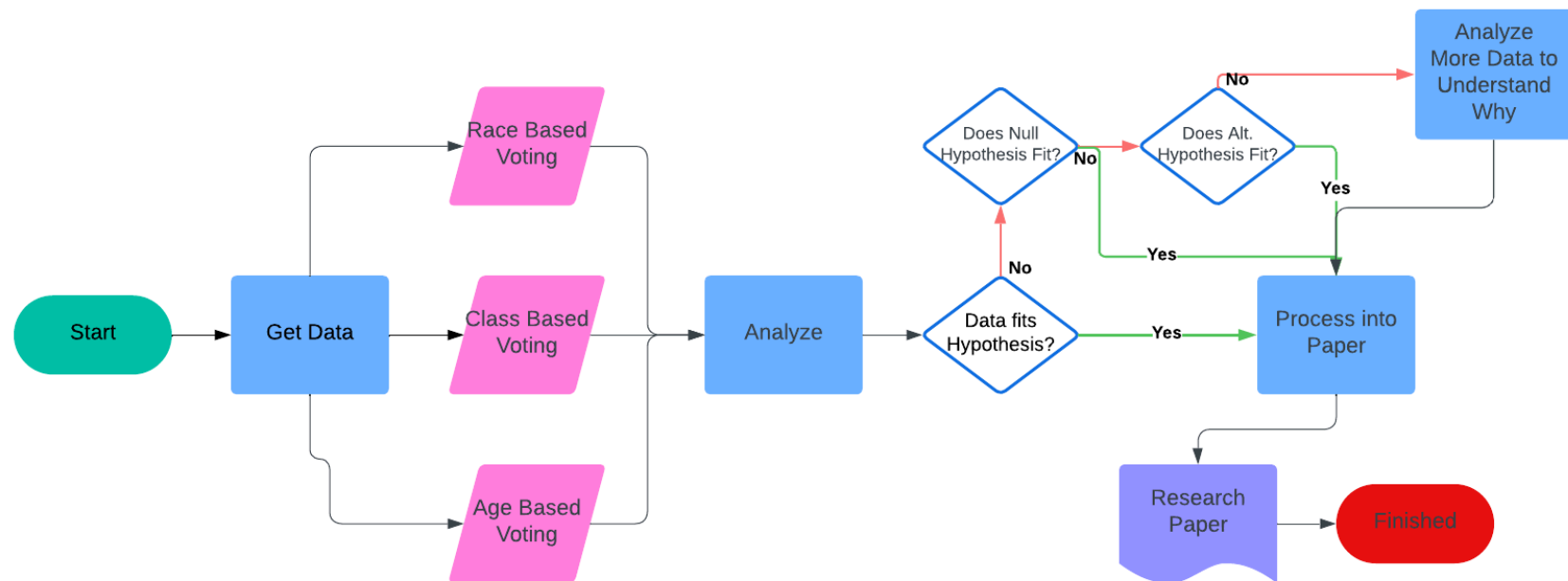
**Table 14:** *Method of Voting, By Selected Characteristics: November 2020.*

Additionally, in order to represent data, the data had to be “cleaned” and prepared. We had to manually acquire headers in order to implement the data properly and effectively. The data had to be cleaned through the manual removal of incorrect data formatting or missing data entirely. Therefore, with these changes, there is a possibility for incorrect data to be permitted within our results. Likewise, incorrect usage of the data may be present as well. In order to effectively analyze our hypothesis, Tables 2, 4, 5, 6, 10, 12, and 14 will be used to acquire data

from. Other tables may be helpful in fundamentally recognizing distinctions in voter turnout, but are deemed as unnecessary in determining the validity of our hypothesis.

As an effective mannerism to depict the validity of our hypothesis, we will introduce graphs that demonstrate relationships between age, race, education, and potential economic status. Ages will be separated into 6 individual brackets; 18+, 18-24, 25-44, 45-64, 65-74, and 75+. There will be four races represented; White, Black, Asian, and Hispanic/Latino (of United States' Citizenship). Education will be determined through 5 individual subsidies; less than 9th grade, 9th to 12th grade (no diploma), high school graduate, some college or associate's degree, and a bachelor's degree or more significant. Economic status will be represented through various job types and yearly salaries. Through these metrics or independent variables, we can measure voting percentage, registration percentage, and much else.

FLOWCHART ON NEXT PAGE



This flowchart demonstrates the workflow that we used to complete this research paper with. It signifies that we need to get our data, analyze the data, then make a conclusion as to how our data aligns with our hypothesis. This flowchart does not include the cleaning up of data, whether data is incorrectly inputted or not existent entirely.

FIGURE 1. Representation of voting percentages across the four racial groups. The dependent variable (y-axis), total voting percentage (ranging from 0% to 100%), is plotted for each of the four races which act as our independent variables (x-axis). This bar graph allows for a comparison of voting participation rates among different races, therefore providing insight into the general and overall electoral engagement within each group. The data is able to signify if there are any racial disparities or statistical anomalies. Data is collected from Table 2.

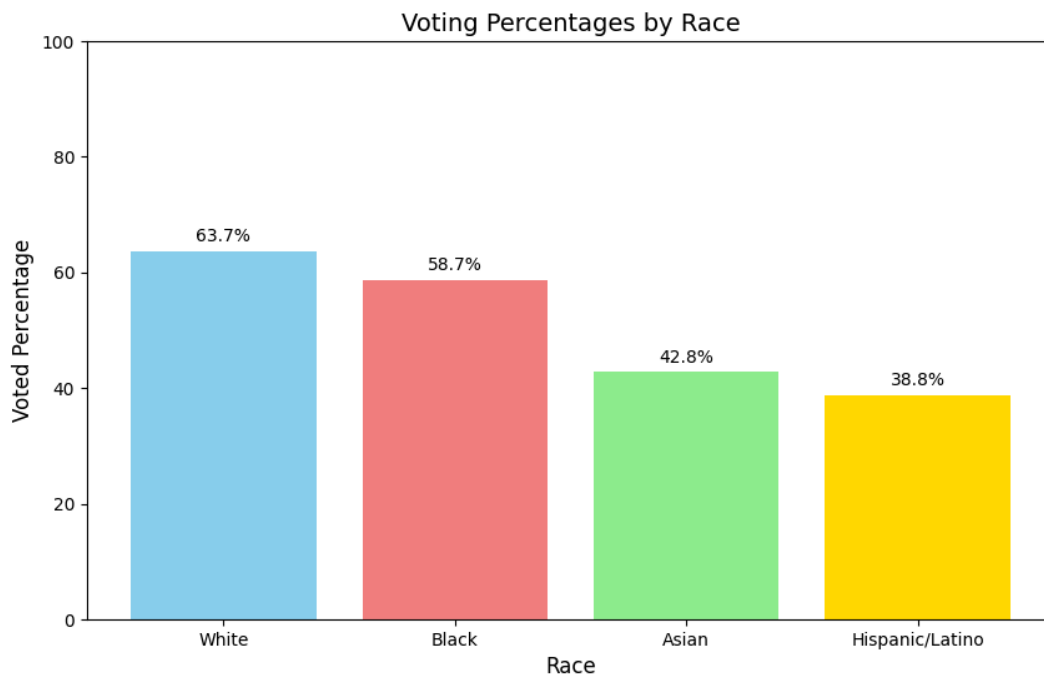


Figure 1 signifies that there is a 5% decline in voting from White to Black, a 15.9% decline from Black to Asian, and a 4% decline from Asian to Hispanic/Latino. This leads to the result that there are distinct differences in voting turnouts among different racial groups.

FIGURE 2. Same graph as Figure 1, except with the distinction of specific sexes coinciding with race (male is colored as blue, female as red). Data is collected from Table 2.

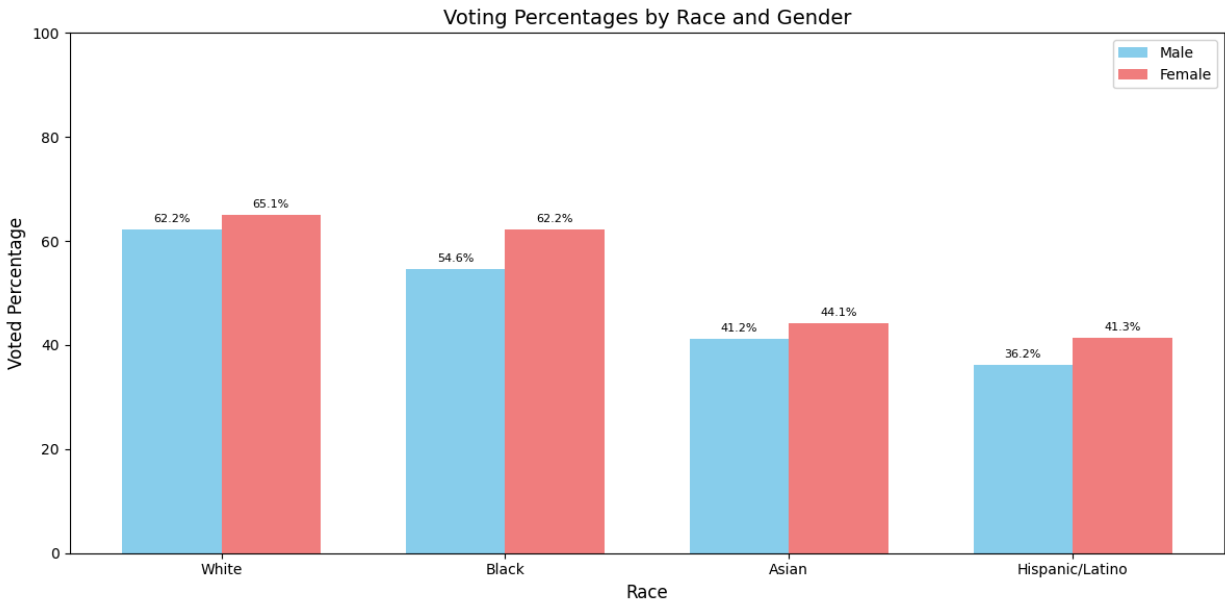


Figure 2 is able to clearly identify that females are more likely to turn out to vote, as for every race, females vote more often than men. There is less than a 3% difference between the sexes for two races: White and Asian. There's a 7.6% female lead for Black and a 5.1% female lead for Hispanic/Latino.



FIGURE 3. Graph pertaining to voting percentage by race and age. Ages are separated into 6 brackets (18+, 18-24, 25-44, 45-64, 65-74, 75+, in this order) and are aligned as independent variables (x-axis). Voting percentages (ranging from 0% to 100%) are represented as the dependent variables (y-axis). Race is differentiated by coloration with their respective plots (white as blue, black as orange, asian as green, and hispanic/latino as red). Data is collected from Table 2.

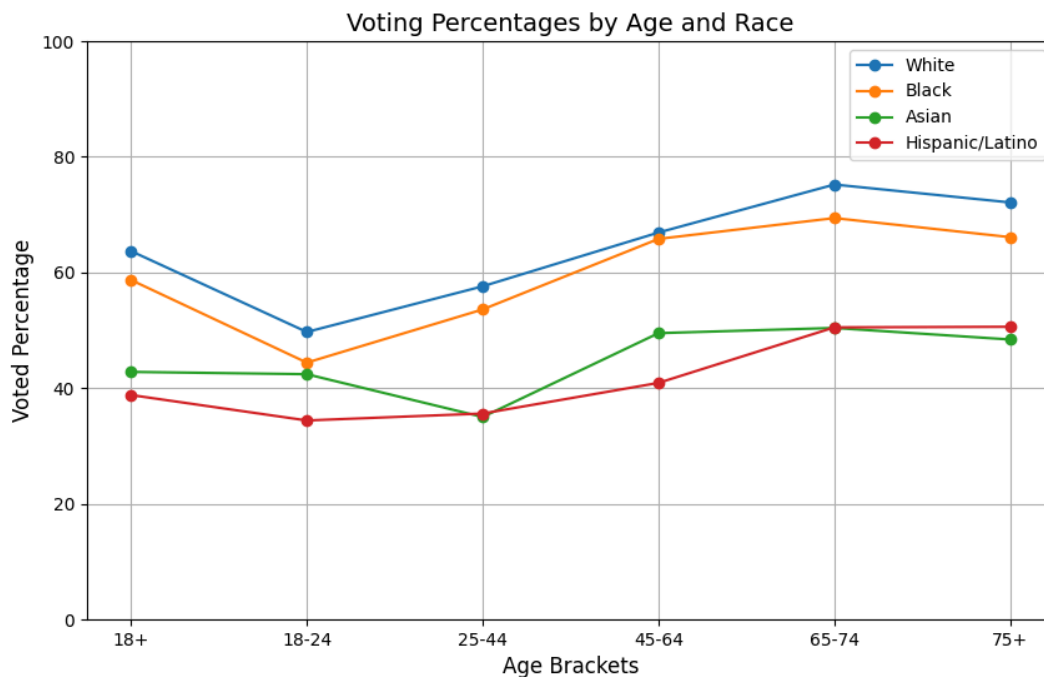


Figure 3 shows that all the different races have correlations in voter turnout for age, as they all follow nearly the same trend, with the only change being Asian plateauing out from the 45-75+ range.

FIGURE 4. Representation of registration percentages across the four racial groups. The dependent variable (y-axis), total voting percentage (ranging from 0% to 100%), is plotted for each of the four races which act as our independent variables (x-axis). This bar graph allows for a comparison of voting participation rates among different races, therefore providing insight into the general and overall electoral engagement within each group. The data is able to signify if there are any racial disparities or statistical anomalies. Data is collected from Table 2.

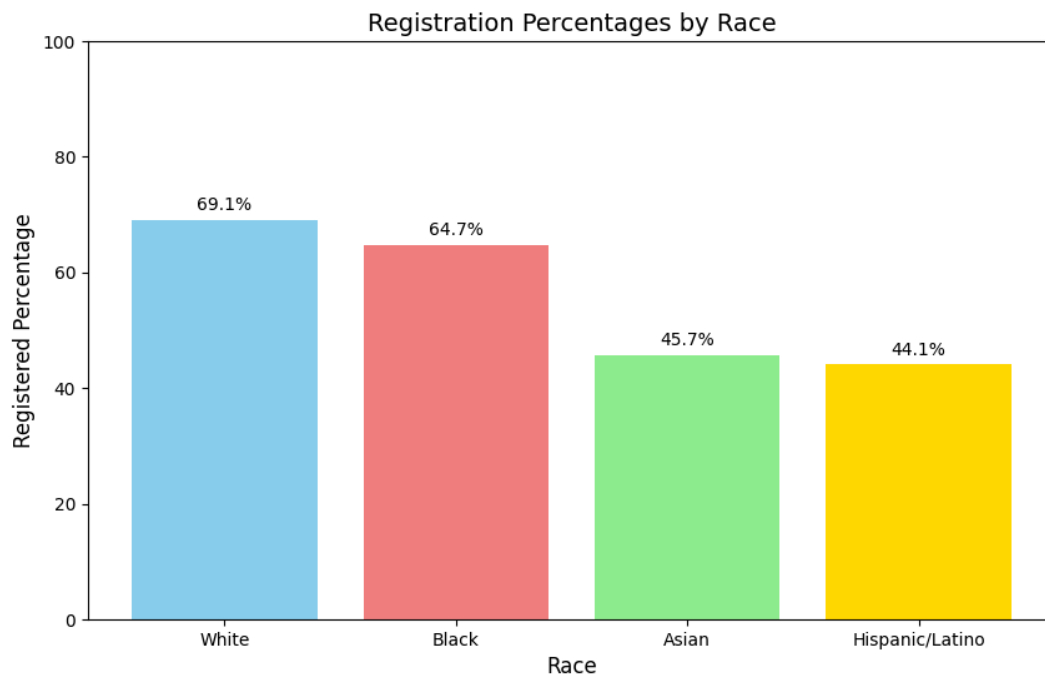


Figure 4 shows a slight decrease in voting participation from white to black, and a much larger jump from White/Black to Asian/Hispanic

FIGURE 5. Same graph as Figure 4, except with the distinction of specific sexes coinciding with race (male is colored as blue, female as red). Data is collected from Table 2.

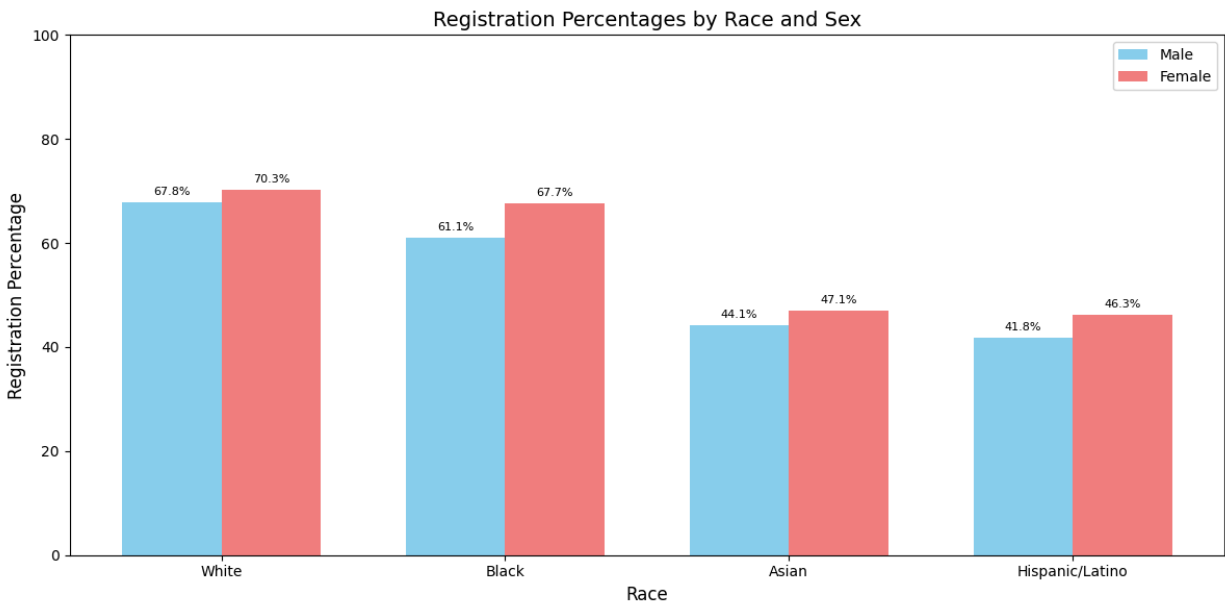


Figure 5 signifies that females take the lead in voter registration when compared to males. For White and Asian, they have a female lead on voter registration for ~3%. While Black has a female lead of 6.6% and Hispanic/Latino have a female lead of 4.5%.

FIGURE 6. Graph pertaining to registration percentage by race and age. Ages are separated into 6 brackets (18+, 18-24, 25-44, 45-64, 65-75, 75+, in this order) and are aligned as independent variables (x-axis). Voting percentages (ranging from 0% to 100%) are represented as the dependent variables (y-axis). Race is differentiated by coloration with their respective plots (white as blue, black as orange, asian as green, and hispanic/latino as red). Data is collected from Table 2.

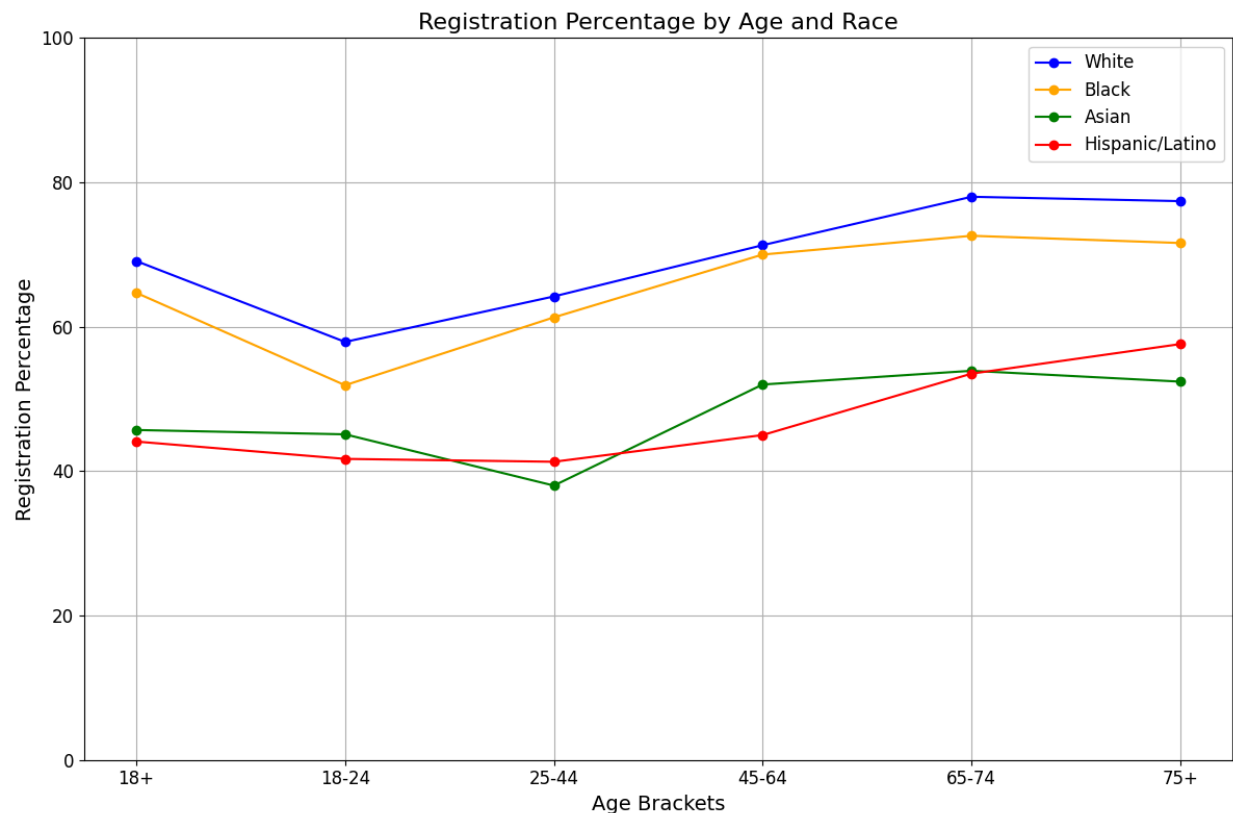


Figure 6 demonstrates that White and Asian have similar age-to-registration percentage, while Black and Latino have their own similar age-to-registration percentage. Additionally, this graph shows a slight incline for age and registration percentage for all races.

FIGURE 7. Voting Percentages by Job Type. Data collected from Table 6. Formatted in a bar graph style that has different sets of jobs as different colors. Red is for those not in the labor force, green is for civilian workers, yellow is for government workers, light blue represents those who are in private industries, orange reflects those who are self-employed, and regular blue represents the amount of all the other percentages added together and divided, aka the total.

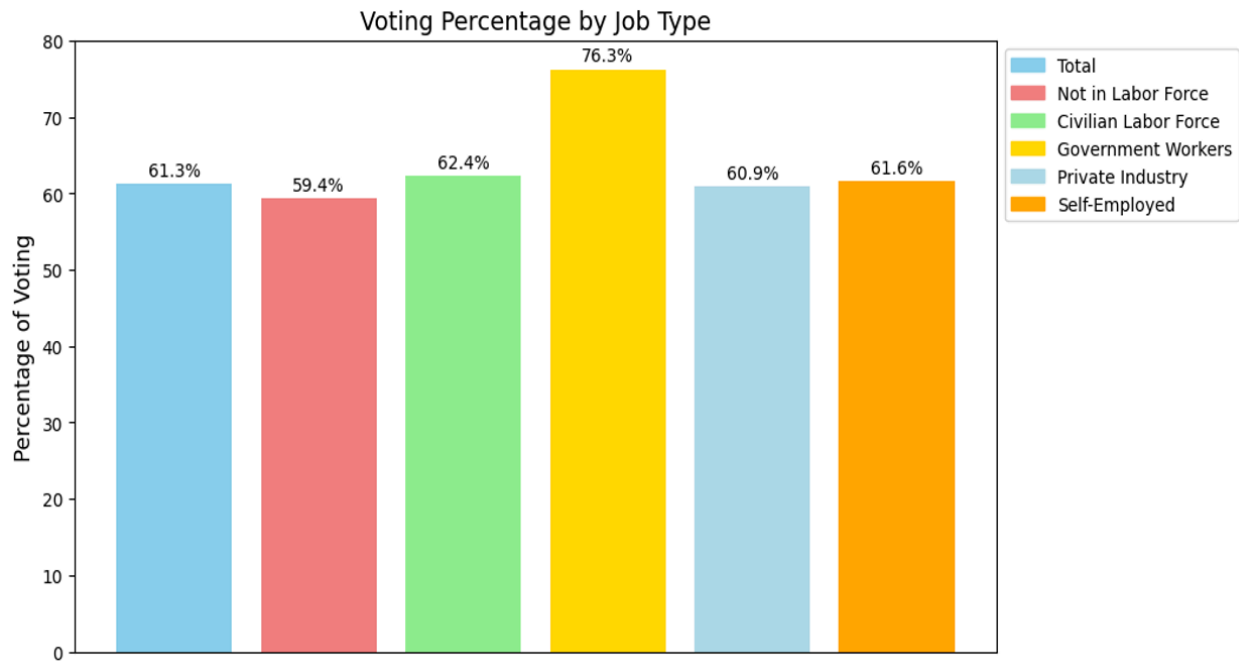
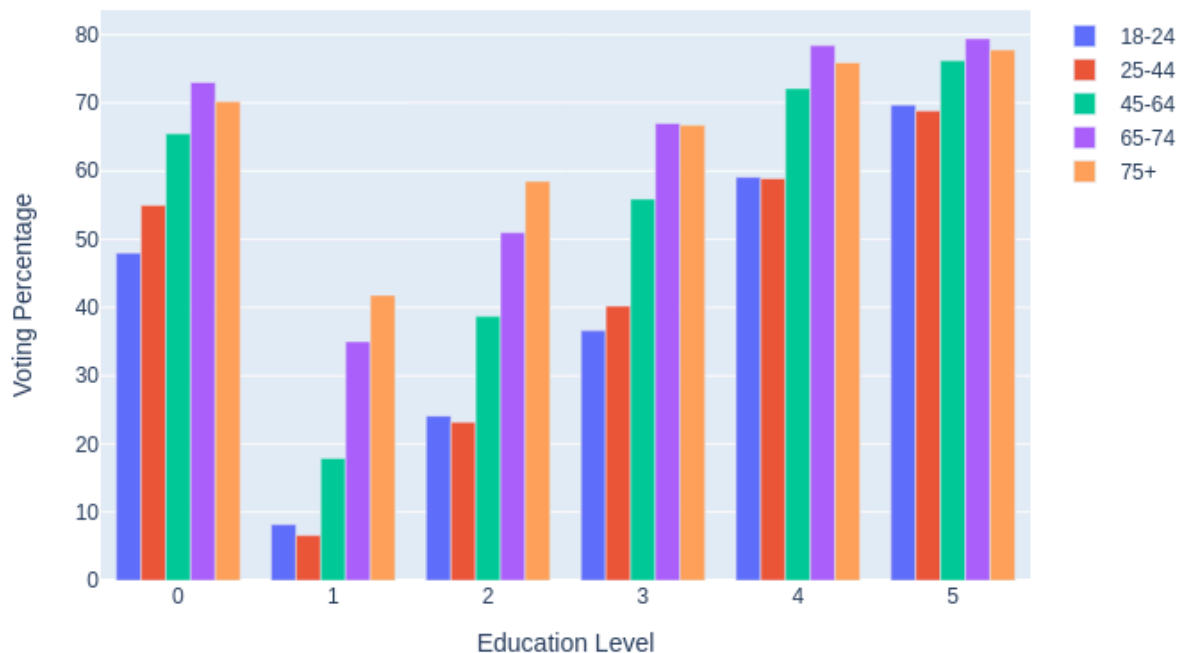


Figure 7 shows a common trend between five of the six job groups, each of those 5 floating around the 59-62% range. However, government workers stand out as an outlier with a whopping 76% voter turnout

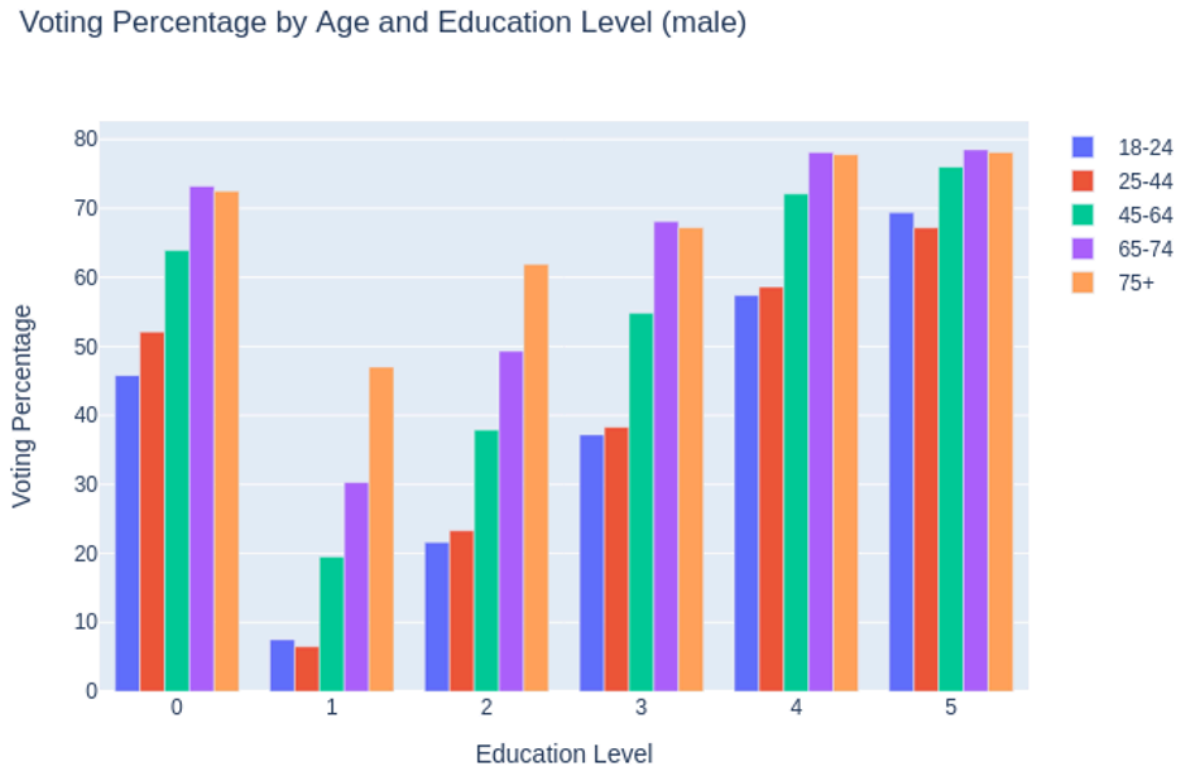
FIGURE 8. Voting Percentages by Education Type. Education types are represented by numbers 1-5; 1 represents less than 9th grade, 2 represents 9th to 12th grade (no diploma), 3 represents a high school graduate, 4 represents some college or associate's degree, and 5 represents a bachelor's degree or more significant. 0 represents the average of each, in other words, the total. Data collected from Table 5.

Voting Percentage by Age and Education Level (both\_sexes)



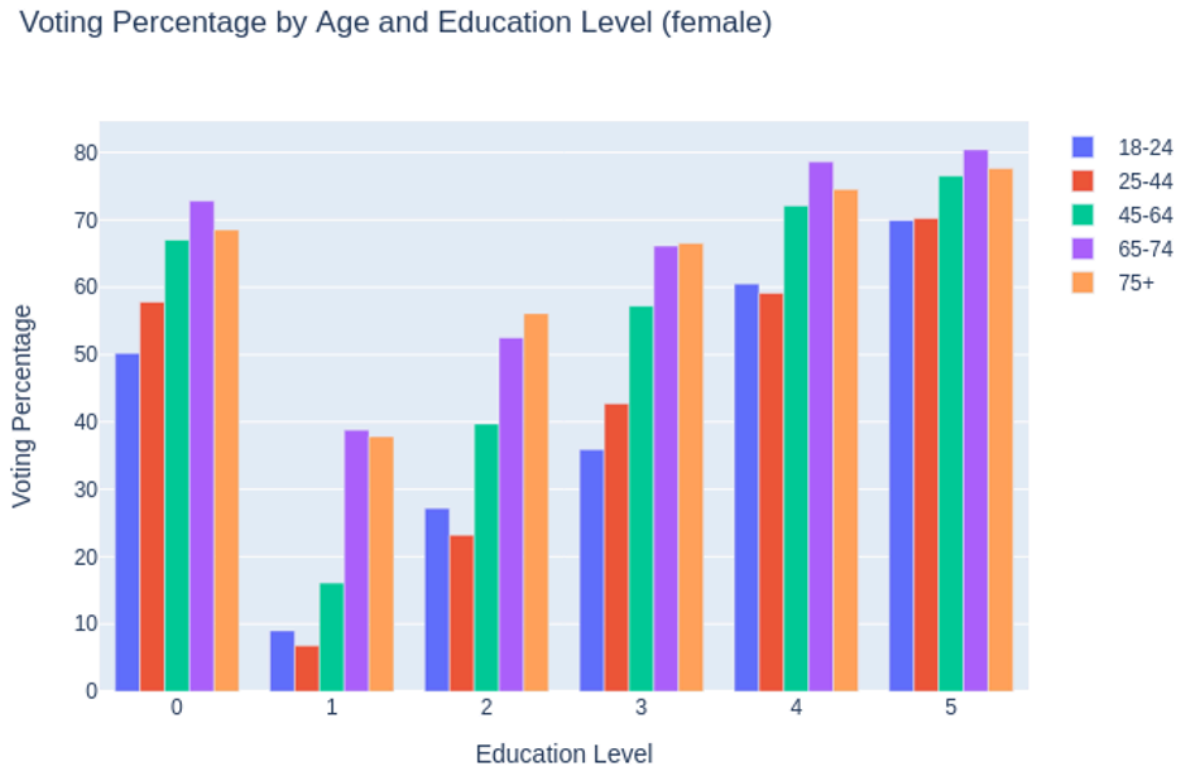
In Figure 8, this graph demonstrates a steady incline for the amount of education and voting percentage. Additionally, it signifies that individuals of greater age are significantly more likely to turn out for voting, relative to their education level.

FIGURE 9. Same as Figure 8, but it only includes males. Data collected from Table 5.



In Figure 9, this signifies the same trends as Figure 8, just for males.

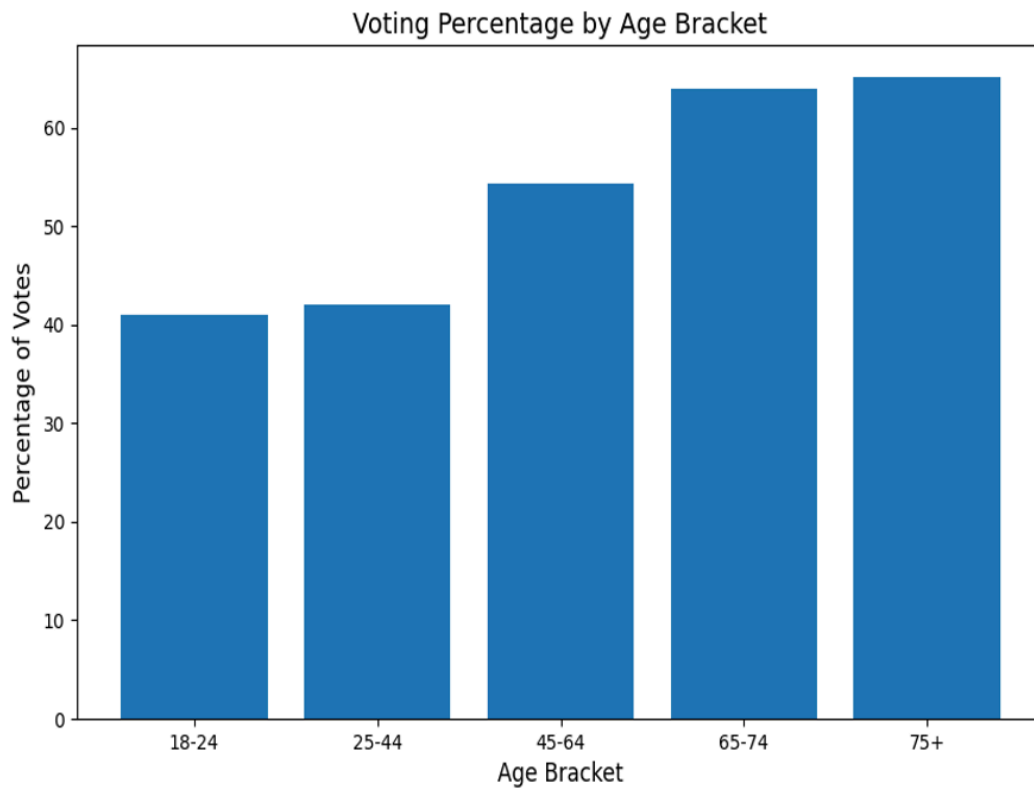
FIGURE 10. Same as Figure 8, but it only includes females. Data collected from Table 5.



In Figure 10, this signifies the same trends as Figure 8, just for females.



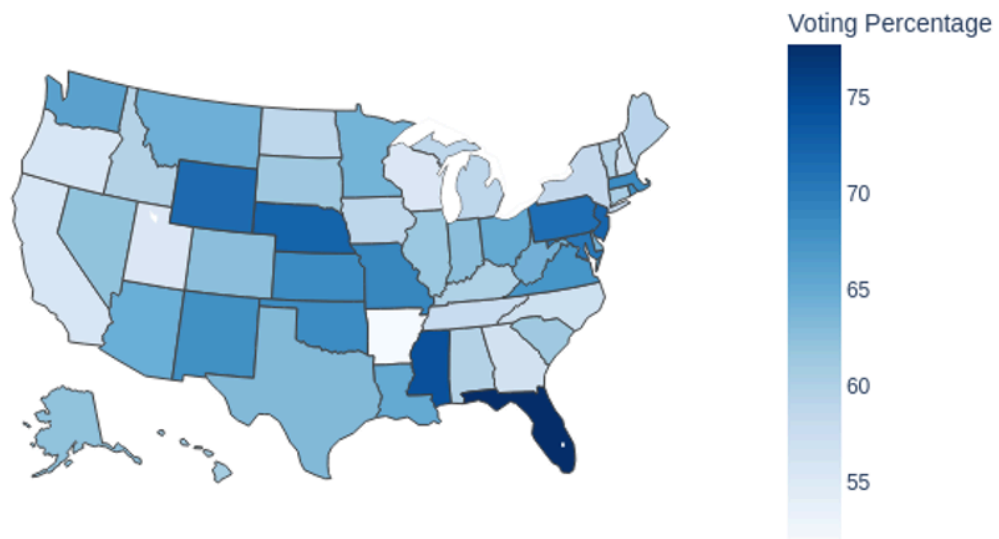
FIGURE 11. Voting Percentage by Age Bracket. Data acquired from Table 5. Ages are split into 5 different bars, the first bar represents the age range of 18-24, the second bar represents 25-44, the third bar represents 45-64, the fourth is 65-74, and the last bar represents those who are aged 75+



In Figure 11, this bar graph represents that on average, as an individual increases in age, they are significantly more likely to turn out to vote.

FIGURE 12. Voting Percentage for US States, highlights each state by total voter turnout from 55-60% in increments of 5, the map is in the style of a map of the United States, and each state is shaded representing their total voter turnout, the darker the state the higher the turnout.

### US Voting Percentage by State



In Figure 12, it is shown that the states are around the 55-70% voter turnout range, with the middle/mountain states being on the higher end, however Florida has a >75% voter turnout, making it an extreme outlier.

FIGURE 13. Same but for whites only. Data is acquired from Table 4a.

### US Voting Percentage by State (White alone)

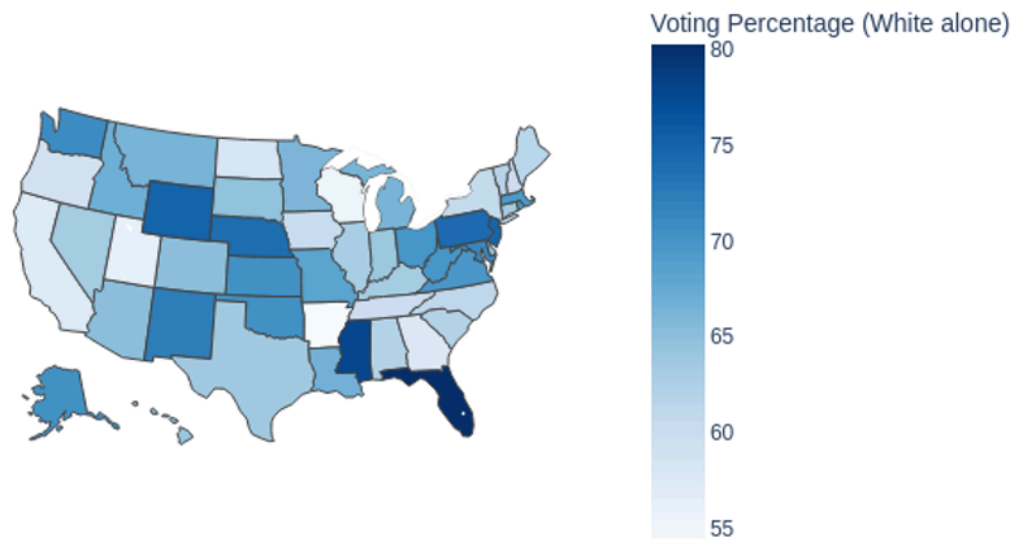


Figure 13 shows the same table but for White voters only. This map is very similar to that of Figure 12.

FIGURE 14. Same but for African American citizens only. Data is collected from Table 4a.

### US Voting Percentage by State (Black alone)

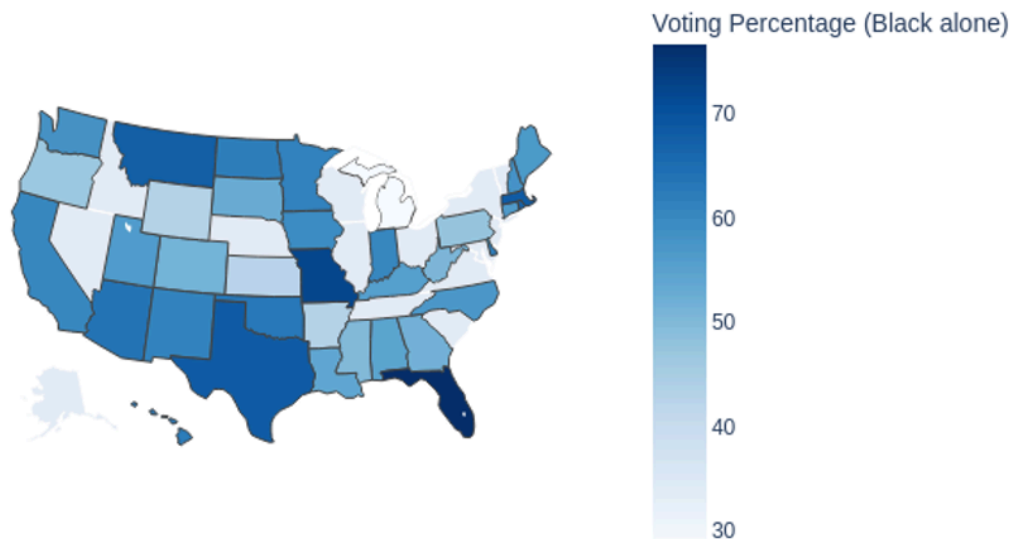


Figure 14 shows the same table but for Black voters only, Black voters show larger voter turnout in the southern states compared to their white counterparts.

FIGURE 15. Same but for Asians only . Data is collected from Table 4a.

### US Voting Percentage by State (Asian alone)

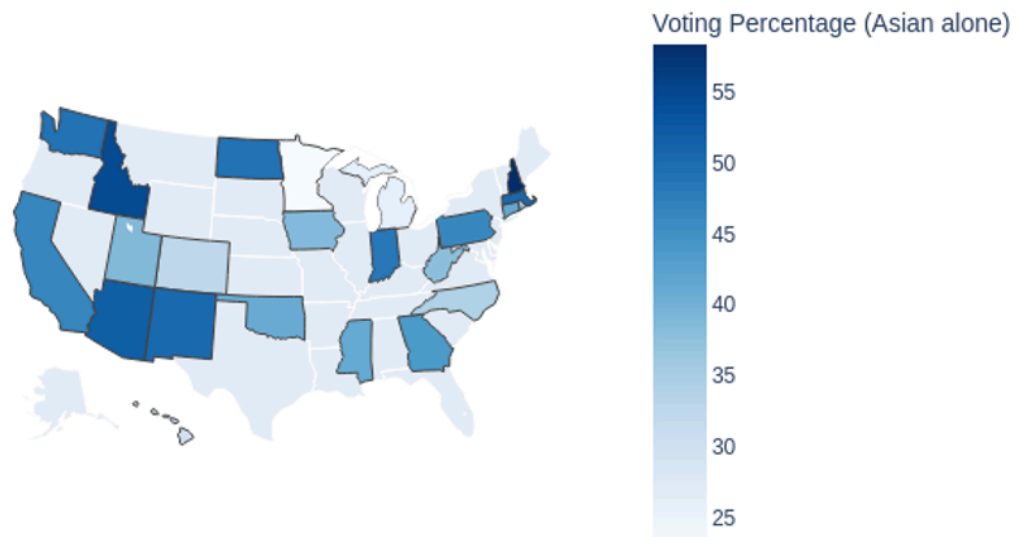


Figure 15 shows the same table but for Asian voters only and many states are lacking in data due to repression of discrimination against a minority.

In conclusion, the data we found cemented a bunch of conclusions for us. The voter age range with the highest turnout was the range of 75+. This could easily be inferred due to them having seen the most elections and understanding the power to vote, whilst also feeling more patriotic due to growing up in times of propaganda such as World War 2 or the Vietnam War. The racial group that voted the most was white people, with Black people quickly falling into second place. Almost every state was consistently the same in age range on voter turnout, but a few stood out as outliers for racial voter turnout, such as Florida having almost 75%+ in terms of minority voter turnout compared to the rest of the nation's ~60% voter turnout for minority voters, this could be due to Florida being a hotbed for immigrants and how they may want to vote in order to protect themselves and their jobs.

In terms of gender, jobs, and education level, our results were about what we expected. Women had more of a voter turnout than men across all aspects of the board, with the biggest disparity being between black men and women at an almost 8% difference in voter turnout. In terms of education, there was a clear correlation between the amount of education received and the amount of voter turnout, this could be due to the fact that a proper education may help the average citizen understand how much a vote matters in the grand scheme of things. For jobs, we imagined that most of them were going to be even in terms of voter turnout. They did end up being exactly this, with around a 1% average difference between any two jobs shown on our graph. However, there was one outlier, the group of citizens with government related jobs showed almost a 15% increase in voter turnout compared to the other two groups. This statistic isn't hard to imagine as those with government jobs might feel a lot more personally about elections, given that they directly benefit or don't benefit from whoever is voted in. In conclusion, our data answered our question on how voter turnout varied between these various

groups, and even showed us some outliers in terms of voter turnout that could be examined even further if given the time.

### **Works Cited**

1. U.S. Census Bureau 2020. Voting and Registration in the Election of November 2020.

Retrieved from <https://www.census.gov>.