

# CSE 564 - Final Project Preliminary Report

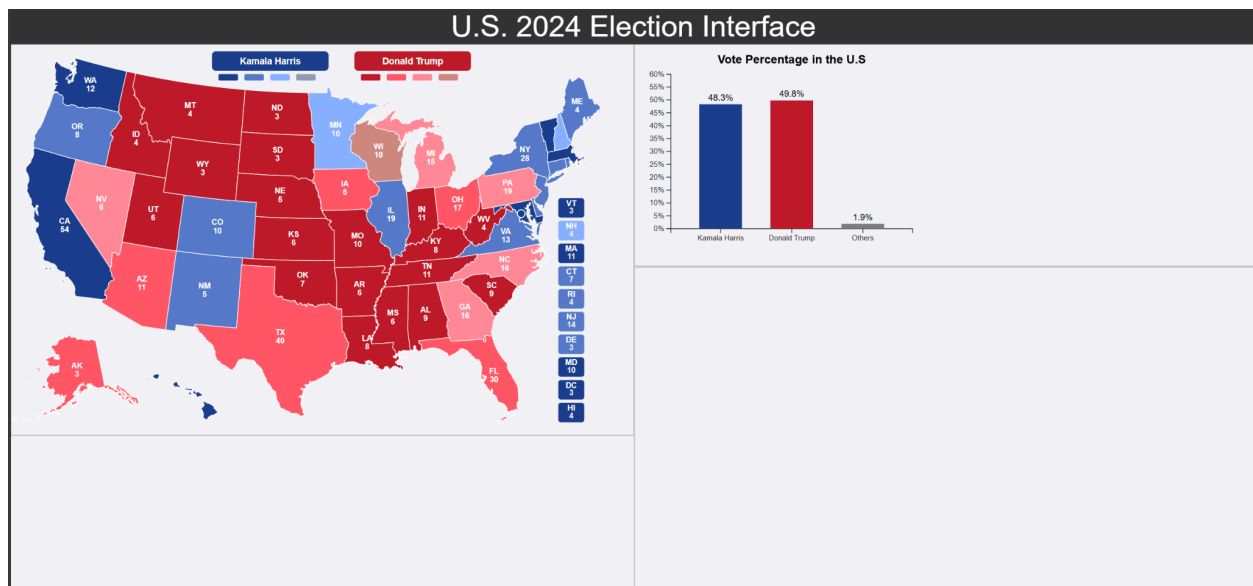
## **An Analysis of U.S. General Elections By Pranav Sista (Group 90)**

### **Problem Statement and Progress**

The goal of this project is to develop an interface which will allow a user to understand how states and demographics have voted in the general elections which have recently taken place in the United States. They will be able to do so by interacting with a map of the U.S. that displays the results of the elections. There will also be plots that provide additional information, such as the margin of victory and turnout across states.

### **Progress so far**

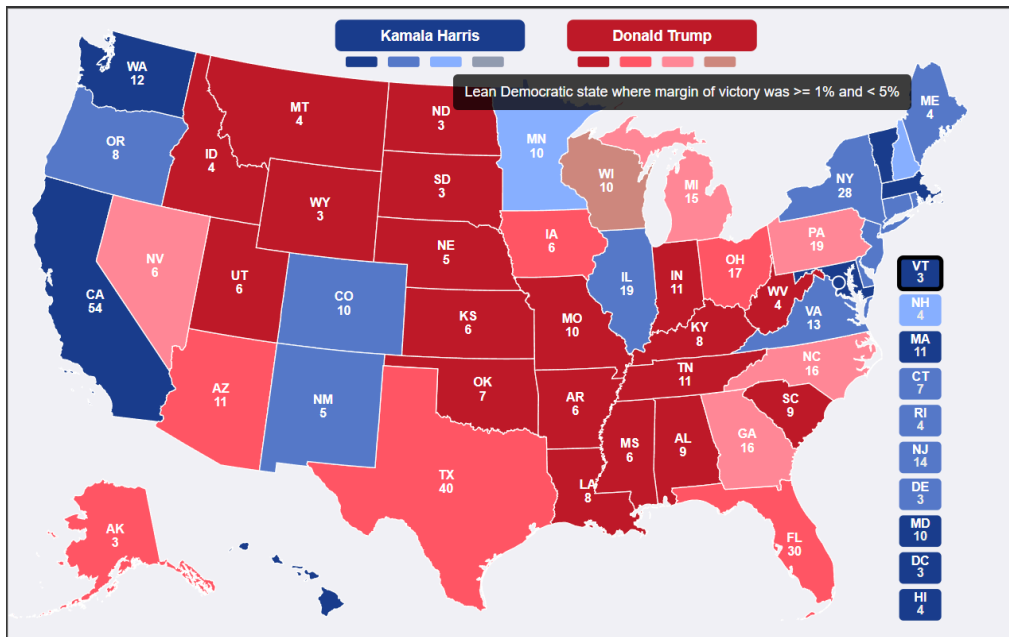
So far, I have only plotted a map of the U.S. that displays the election results, and a bar chart that shows the vote percentage of each candidate. Only the results of the U.S. 2024 elections have been visualized so far.



In the U.S. map, the states have been colored by the margin by which it was won. They are classified as such -

- Safe states: States won by greater than or equal to 15%
- Likely states: States won by greater than or equal to 5% but less than 15%
- Lean states: States won by greater than or equal to 1% but less than 5%
- Tilt states: States won by less than 1%

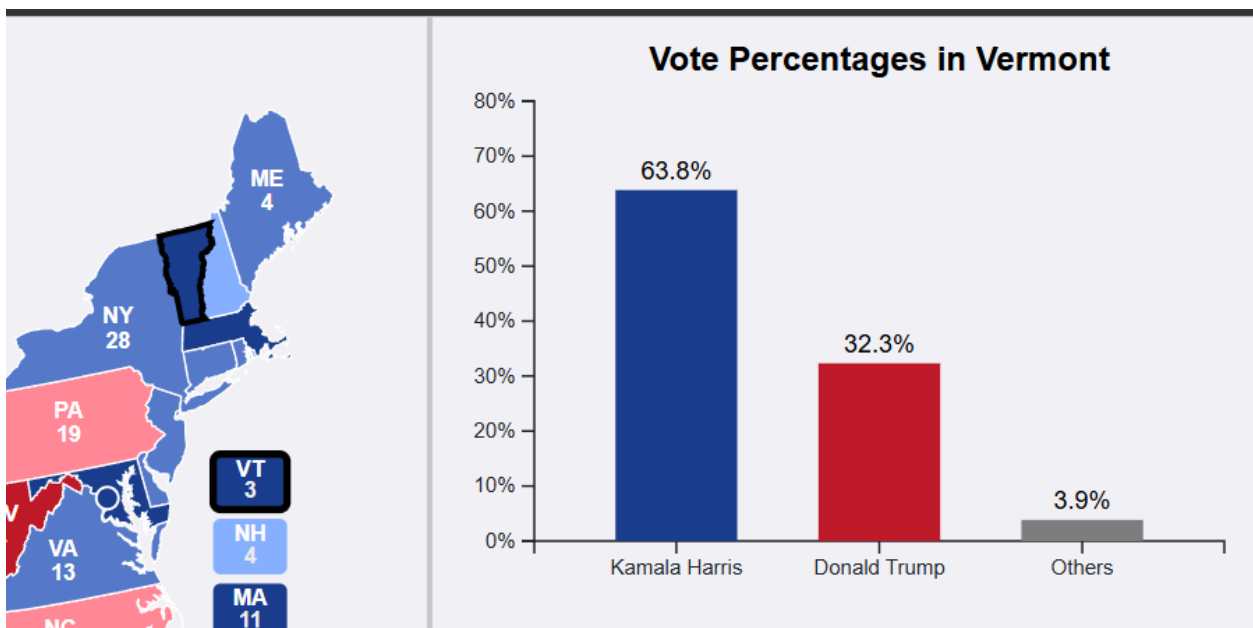
States won by the Democratic candidate have been colored blue and those won by the Republican candidate are colored red. Based on the margin, the states are colored with different shades of blue and red. Details of each color can be observed by hovering over the labels on top of the map of the U.S.



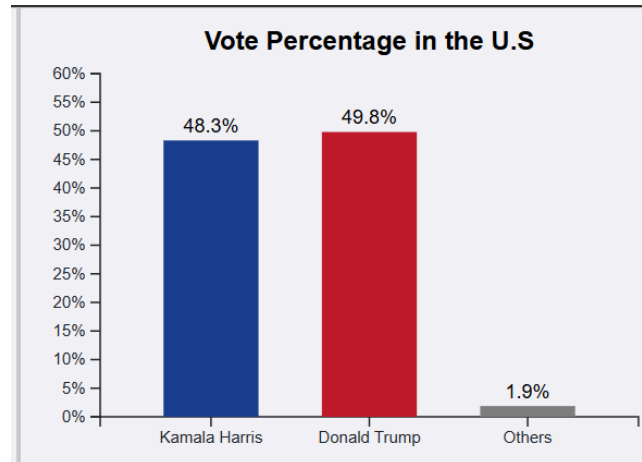
I have added labels for some of the states to the right of the map because of how small they are. This is so that such states can be selected easily. Each state in the map is labeled with -

- A code that represents the state's name
- The number of electoral votes a state has

The states in the map can be selected to see more details about them. Currently, selecting a state will cause a change to be reflected in the bar chart. The bar chart shows the percentage of votes won at the national level, and the state level between the two main parties and other candidates. Below is an example of the results in the bar chart when "Vermont" is selected (the state is highlighted as well) -



If a selected state is clicked, it gets deselected and the national results are displayed again.



### **Next Objectives**

Within the scope of the U.S. 2024 election, the following plots need to be drawn -

- Drawing a parallel coordinate plot at a county level that shows voting patterns on the basis of age, race, and sex. This will be displayed below the bar chart.
- A pie chart or a bar that shows the breakdown of electoral votes based on the margin of victory. This will be displayed below the map of the U.S
- A scatter plot that shows how various congressional districts voted for their representative and president. This will be drawn in a plot that has 4 quadrants. There will also be an option to view how a state voted for a senator and president.
- A scatter plot that compares the turnout rate of a state with the margin of victory in the state. I'm still looking into what properties of a state I can use for comparison against the turnout rate of a state.
- Providing an option to view the map of the U.S. such that the size of each state is proportional to how many electoral votes it has.

Additionally, I would like to visualize insights into how much of the population did not vote in this election. I have decided to do this by providing a toggle that allows users to include non-voters in the visualizations. By doing so, the colorings of states and the electoral votes will change depending on whether there were more non-voters in a state. The bar chart will also include a bar for non-voters. I'm still looking into how this information can be reflected in the scatter plots I've described above.

I would also like to visualize how states have trended in terms of their voting patterns over multiple election cycles. For example, this would involve coloring states based on how much they have shifted with respect to another election cycle. I would also like the user to view the results of past elections using the same interface. Although these goals were a part of my initial proposal, they may get cut if I don't have enough time to finish them.