

# **[WIP] U.S. ELECTORAL MAP**

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## INTRODUCTION

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### Overview and Motivation

For our project, we initially brainstormed several areas of interest, then attempted to find data for those target areas. Politics, especially those involved in the United States presidential election, was one of those areas where our interest intersected with public data that was publicly accessible. The history of the presidential election is not a familiar topic for some, and with this project, we hoped to educate the general public about how the process and the political parties involved have changed over time.

### Related Work

We began brainstorming the overall structure of our data visualization by looking through some of the previous projects listed in the Hall of Fame tab of the course website. We were inspired by the project [Century of Corn](#) and were really interested in creating a choropleth map, especially since none of the course problem sets this year had tackled the implementation of maps. This was relevant to our interest in U.S. electoral votes for presidential elections, and so we decided to visualize our data geographically. In our search for data, we found many maps that visualized election results, but found that most looked like this:



*This visualization shows a static image for the results of the Presidential election. It links to results for the Senate seats and elections, but each view is itself static.*

Our visualization aims to be more informative by turning that static visualization into one that is selectively interactive. We also aim to encode margin of victory for each state, meaning that states that voted very strongly in one direction would have more intense color. We also know that there are a multitude of ways to analyze election results, whether through a state-by-state comparison, a closer look at how certain demographics voted, or general

political party trends through the years. We also want to visualize that data to reveal trends through interactive views below the main visualization.

## Questions

The primary goal of our visualization is to display voting trends in the United States, as well as the changes in political party support through the history of the country. In addition to currently existing parties, the data we visualize will include parties that have faded out of existence. A benefit of this visualization is that we will also be able to visualize the history of the United States and view the growth of not only the states as they exist currently, but also how parties and the election process have evolved over time. Through the creation of this visualization, we wanted to also be able to learn about how certain demographic factors relate to both voting and voter turnout. Not only will we be able to view how each state changes through elections, but also how states differ with each other.

## Data

We have combined data from a number of sources to obtain a comprehensive understanding of changes in American electoral politics over the centuries, and of differences between states for a given election year. Our data files will be a comprehensive list of every presidential election's voting breakdown by political party. We also have collected data for every state that includes various demographic statistics. A list of sources and the specific data we located on each site will be detailed further in this process book.

## Tasks

Our visualization will require a map to visualize our data, with the intensity of the color of the state representing the winning party and by how much they won. We will implement a slider that will allow the user to select a particular election year and update the views accordingly. This feature will also include political parties that had previously been represented in elections. The user will also be able to click on a state to show more detailed statistics for that state during that particular election, which will be represented visually below the United States map.

We would also like to implement a timeline that will allow the user to enter a story mode, which will display a certain number of significant events in the history of the United States and select the corresponding elections. This will ideally communicate how voting was potentially influenced in that period of time. Our visualization will also include greater interactivity through the ability to filter results, like showing only one party (color) on the map.

## Users

The target audience of our visualization is the general population of the United States, especially those interested in political trends. We want to educate those who are most

directly affected by the structure of our government by providing them with a visualization of a comprehensive history of the presidential elections.

## Data Collection (Source, scraping method, cleanup, etc)

<http://www.presidency.ucsb.edu/showelection.php?year=2012>

The above link has data for each presidential election from 1789 to 2012. The data include, for each state: total votes and votes for each major candidate.

[https://docs.google.com/spreadsheets/d/1bH38j6\\_e8yA9xq8OMlyLOL6h\\_iTS7ABQMKNxzFgKBD0/edit#gid=435419492](https://docs.google.com/spreadsheets/d/1bH38j6_e8yA9xq8OMlyLOL6h_iTS7ABQMKNxzFgKBD0/edit#gid=435419492)

The above link has national turnout rate for 1789-2012.

<https://docs.google.com/spreadsheets/d/1or-N33CpOZYQ1UfZo0h8yGPSyz0Db-xjmZOXg3VJi-Q/edit#gid=1670431880>

The above link has the following variables for 1980-2014, by state: voting-eligible population, votes counted, voting-age population, % non-citizen, and population of prison/probation/parole/ineligible felon. Unfortunately, there are some missing values in the spreadsheet. We will attempt to fill in those values from another data set, or find a better data set and not use this one at all.

<http://www.presidency.ucsb.edu/data.php>

The above link contains a ton of other data that we'll think of as best-case features for now. This includes not only more detailed election data, but also data on the presidencies themselves, which could be an entirely new component of the overall visualization. This includes things like number of vetoes, number of executive orders, and approval ratings. Approval ratings in particular have a direct link to election data - we may be curious to see, for example, if there are presidents who were elected by a landslide but who ended up with low approval ratings. This whole section is a "maybe" feature, because it would be an entirely separate and non-essential wing of the overall visualization.

<https://cse.google.com/cse/publicurl?cx=002720237717066476899:v2wv26idk7m>

The above link leads to Google's Datasets Search Engine, which we have been using to find a lot of this data. We will continue to use it, in addition to general Google and sites that specifically compile political/electoral/demographic data from various sources, to continue bolstering the above data and introducing the below data.

<http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

The above link yields race and ethnicity data by state and year from American FactFinder, powered by the U.S. Census Bureau.

<https://www.census.gov/popest/data/state/asrh/1980s/tables/estage80.txt>

The above link yields age data by state and year from census.gov.

[http://en.wikipedia.org/wiki/List\\_of\\_U.S.\\_states\\_by\\_GDP#2005.E2.80.932009\\_lists](http://en.wikipedia.org/wiki/List_of_U.S._states_by_GDP#2005.E2.80.932009_lists)

The above link yields gross state product data by year from Wikipedia.

The following is a run-down of what each file in our repo's Data folder contains.

- us\_states.json and us\_states\_small.json: not created by us; downloaded for the purpose of generating our central map
- forDataCleaning: a working file (nothing to see here) for parsing and cleaning and formatting tables from the Web; basically holds scraps of various data sets
- masterSpread: a single (cleaned and parsed and formatted) spreadsheet compiling many data sources

- jsonMain: simply masterSpread converted to .json; the only data file we created to load into D3

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Cleaning, parsing, and formatting the data has been reasonably straightforward. Most of our data come from tables. Some are HTML, others tab-delimited, others comma-delimited, others fixed-width .txt. The big-picture process is: copy and paste table into Excel (perhaps using forDataCleaning as an intermediary, or going straight to masterSpread). Cut out unwanted data. Layout table and format values to match desired layout and formatting in masterSpread. Formatting values involves removing commas from numbers over 1,000, removing % signs from percent values, removing asterisks from a few cells (flagged for notes by our sources), etc. Finally, convert masterSpread to jsonMain using:

<http://www.convertcsv.com/csv-to-json.htm>

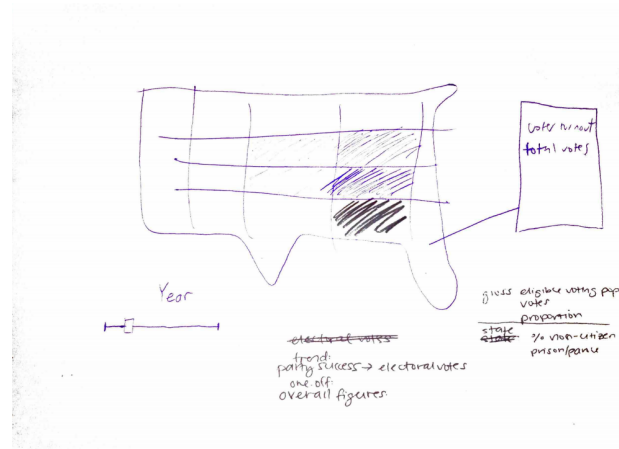
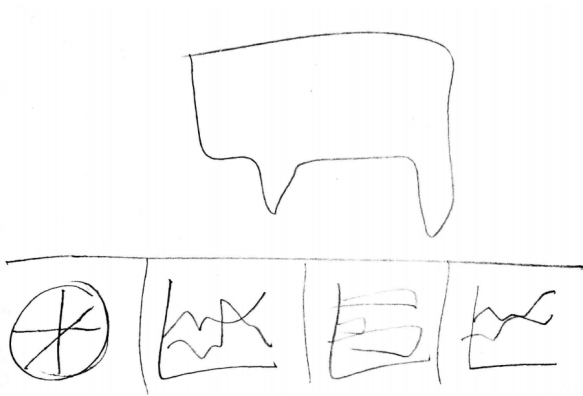
## Process & Design Evolution

What visualizations did you use to initially look at your data? What insights did you gain? How did these insights inform your design?

What are the different visualizations you considered? Justify the design decisions you made using the perceptual and design principles you learned in the course.

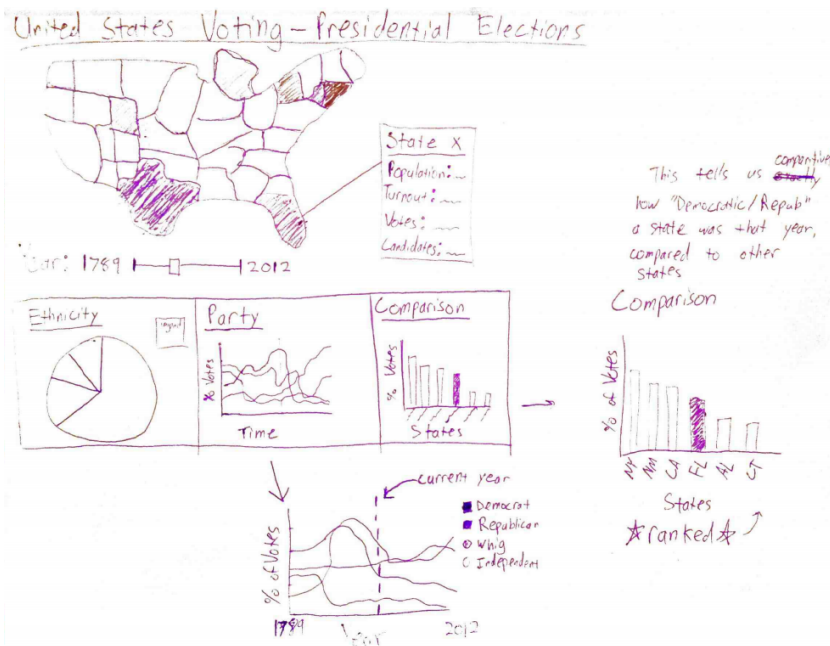
### First Concepts

In all of our prototypes, the main visualization is the United States. We focused on developing the main map to include interactivity through hover-over pop-ups that would give more information about the particular state. The main map would show the national level of politics, while the smaller views at the bottom would show the more local statistics at the state level.

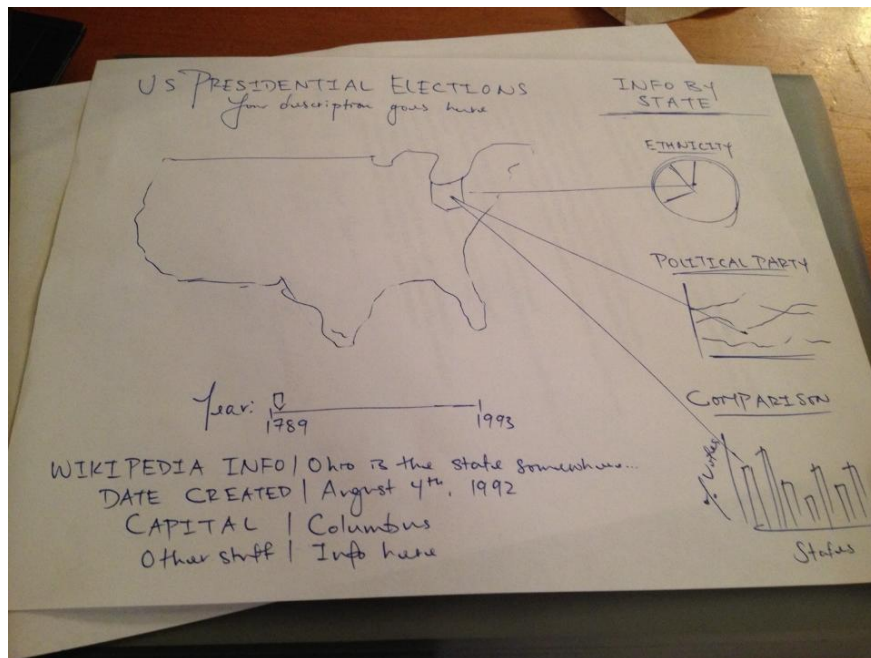


### Design Studio

partner group: Angela Jiang, Jason Shen, Kit Wu



At our design studio, we presented the above prototype. From our first sketches, we turned our vague concepts of the smaller views into more developed views with specific datasets. Feedback that we received included concerns about including political parties that once existed, as well as the change in US states over time. These concerns we plan on addressing by 1) including different colours for past parties (i.e. Whigs will be encoded with shades of green) and 2) to simplify the task at hand, we will keep the current map of the 50 United States, but keep states greyed out until they come into existence. We also received the suggestion to include exogenous information per state (such as gross state product and median age), possibly from Wikipedia. Below is a new alternative mockup for the overall view, produced during the studio.



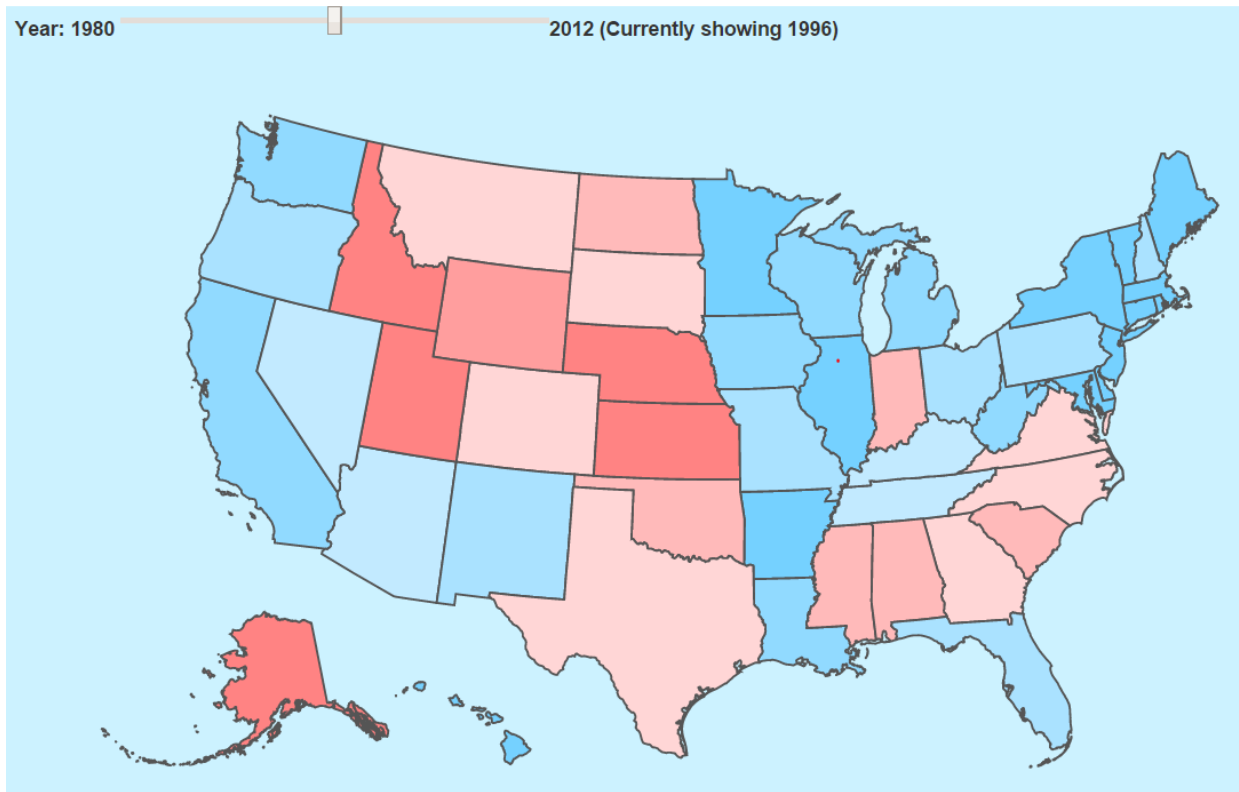


## IMPLEMENTATION

Describe the intent and functionality of the interactive visualizations you implemented. Provide clear and well-referenced images showing the key design and interaction elements.

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### MAP



*Our main visualization, as it exists in its current, preliminary form.*

The map shows the election results for each state for each election. The states are colored red or blue if they voted republican or democrat, respectively. There are also bins for the intensity of the color, where lighter reds/blues represent a narrower margin of victory. The slider at the top of the map can move from 1980 to 2012, and as it does, updates the graph to the relevant election year data.

We showed this preliminary visualization to a group of non-visualization students and a few questions were brought up.

1) How do we know what year the current map is showing?

To address this we added the “Currently showing YEAR” feature next to the slider.

2) What does pink represent?

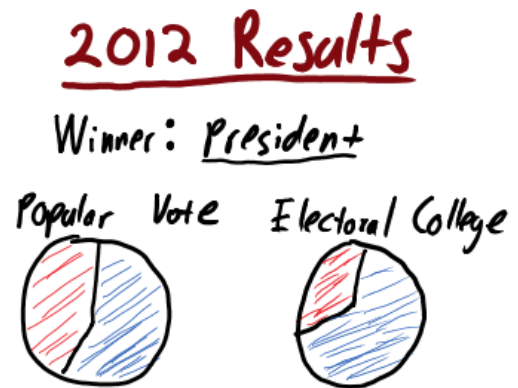
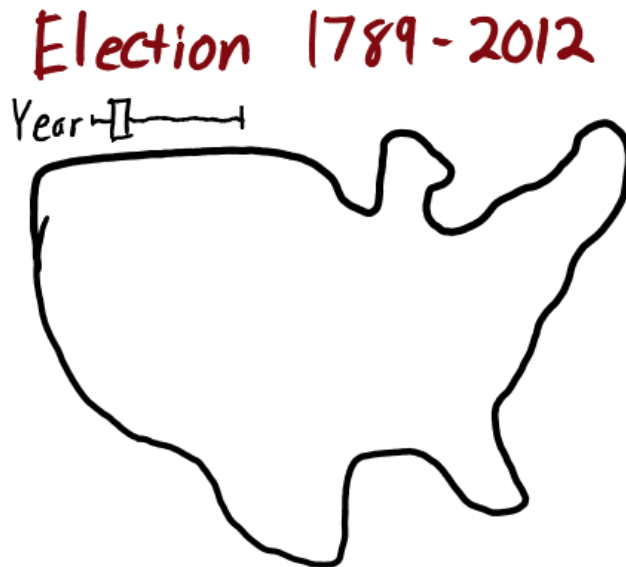
There was some confusion regarding what the lighter colors meant. We now plan to add some sort of legend or key to let users know what each color represents.

3) How do we know who won the election?

We realized that one of the most integral pieces of information is who won the election, so we revised our design to have the right panel to be overall election data (detailed in additional views)

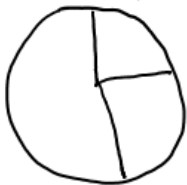
## Additional Views

Below is the most updated sketch of our additional views



### Florida

Ethnicity



Parties over time



Compared to Nation



On the right panel we will have a view that states the president who won and the president he was running against. We will display the voting data for that election by both raw votes and electoral votes.

On the bottom we will have our state-specific visualizations. These will appear when the user clicks on a state. These visualizations will then be updated each time the slider moves, so you can see state-specific trends over time. The views will be demographic breakdown pie chart, party votership over time line graph, and a comparison to the nation for that particular election in bar graph form.

### EVALUATION

What did you learn about the data by using your visualizations? How did you answer your questions? How well does your visualization work, and how could you further improve it?

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We haven't finished inputting all the data into our existing structure, so we aren't ready to draw sweeping conclusions about electoral or state trends over a long time period. At the moment we have a relatively small sample size (1980 to present) - less for some variables. We also have only implemented the bare essential component (choropleth and slider) of the overall visualization suite.

Looking at what we've got so far, however, does already display some interesting trends. We can see both individual election trends, like Ronald Reagan's strong victories. we can also see the general trends in the past few elections where very few states have changed which party they vote for. There are countries that are almost always more partisan than others, and we can clearly see the "swing" states like Ohio by their pale color.

Also, the sheer process of cleaning the data unearths a lot of fascinating outliers and noteworthy data points, such as faithless electors, states with unusual electoral law, etc. These outliers will be noted in the end story of our overall visualization!

In terms of how well our visualization works right now, we obviously have a long way to go toward the final implementation. Further improving our implementation will take the form of finishing up the ideas mentioned throughout this book, as well as potentially drawing in more and more new data fields for state-level analysis.

## SOURCES

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### CODING

<http://bl.ocks.org/mbostock/4060606>: Choropleth (Bostock, Mike; 2012): Basic choropleth example.

<http://d3js.org/> : d3.js (Bostock, Mike; 2015): D3 library.

### DATA

<http://www.presidency.ucsb.edu/showelection.php?year=2012>  
presidential elections from 1789 to 2012, per state: total votes and per candidate

[https://docs.google.com/spreadsheets/d/1bH38j6\\_e8yA9xq8OMlyLOL6h\\_iTS7ABQMKNxzFgKBDo/edit#gid=435419492](https://docs.google.com/spreadsheets/d/1bH38j6_e8yA9xq8OMlyLOL6h_iTS7ABQMKNxzFgKBDo/edit#gid=435419492)

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The above link has the following variables for 1980-2014, by state: voting-eligible population, votes counted, voting-age population, % non-citizen, and population of prison/probation/parole/ineligible felon.

<http://www.presidency.ucsb.edu/data.php>

more detailed election data + data on the presidencies themselves

<https://cse.google.com/cse/publicurl?cx=002720237717066476899:v2wv26idk7m>

Google's Datasets Search Engine

<http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

race and ethnicity data by state and year

<https://www.census.gov/popest/data/state/asrh/1980s/tables/estage80.txt>

age data by state and year

[http://en.wikipedia.org/wiki/List\\_of\\_U.S.\\_states\\_by\\_GDP#2005.E2.80.932009\\_lists](http://en.wikipedia.org/wiki/List_of_U.S._states_by_GDP#2005.E2.80.932009_lists)

gross state product data by year