

Politivis: Process Book

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DRAFT: Milestone

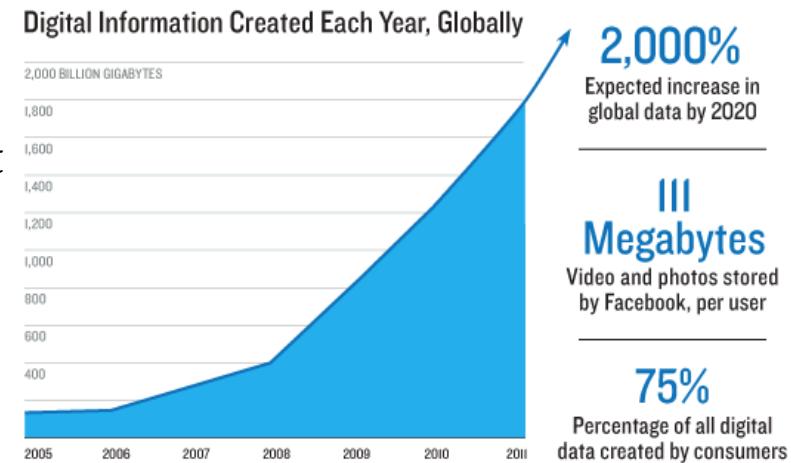
Overview and Motivation

The motivation behind this project is linked to a desire to understand the implications of redistricting, the process of redrawing United States electoral boundaries. The process occurs every 10 years after the U.S census is completed. More often than not, especially in the southern regions of the U.S, redistricting has become more and more susceptible to unfair partisan gerrymandering. When redistricting is being decided, states require that their own redistricting committees comply with the federal Voting Rights Act. However, the impact of redistricting over the years is not entirely transparent to many Americans.

A solid link between redistricting and the movement of socioeconomic transformations within the newly created districts has not been fully established, despite readily available civic data. We aim to combine available data into a presentable form that will allow users to view redistricting in the U.S on a larger scale (and over time).

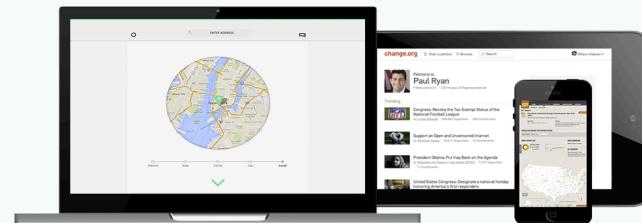
Motivation: New Data

The internet continues to rapidly expand and with that expansion, a plethora of new information becomes available each day. One such example is the Google Civic Information API which provides comprehensive data about representatives for each district. However, there also exists other lesser known sources such as the US Census which has many datafiles that are often difficult to comb through, but nevertheless provide invaluable information that acts as a strong complement to sources like the Google Civic Information API. Our project combines these two data sources to create a powerful and telling visualization about an often unknown topic that impacts Americans yearly.



Sources: IDC, Radicati Group, Facebook, TR research, Pew Internet

Google Civic Information API



Goals

Redistricting is something that is mentioned frequently in the media, but does not garner a lot of visibility by the typical user. We want to ensure that we answer questions that we had as well as answer the questions of those with less familiarity:

- **What is redistricting?**
- **Does redistricting target specific areas the most?**
- **What are abovementioned areas' demographics?**
- **Is there a link between redistricting and education?**
- **What about redistricting and the distribution of age?**
- **What about redistricting and race?**
- **What about redistricting and its relation to unemployment?**
- **How does migration fit into all of this? Are certain districts more prone to unpredictable migration due to changing of districts?**
- **What about political affiliation?**

Benefits of Goals

The benefits of answering these questions through a visualization include, but are not limited to:

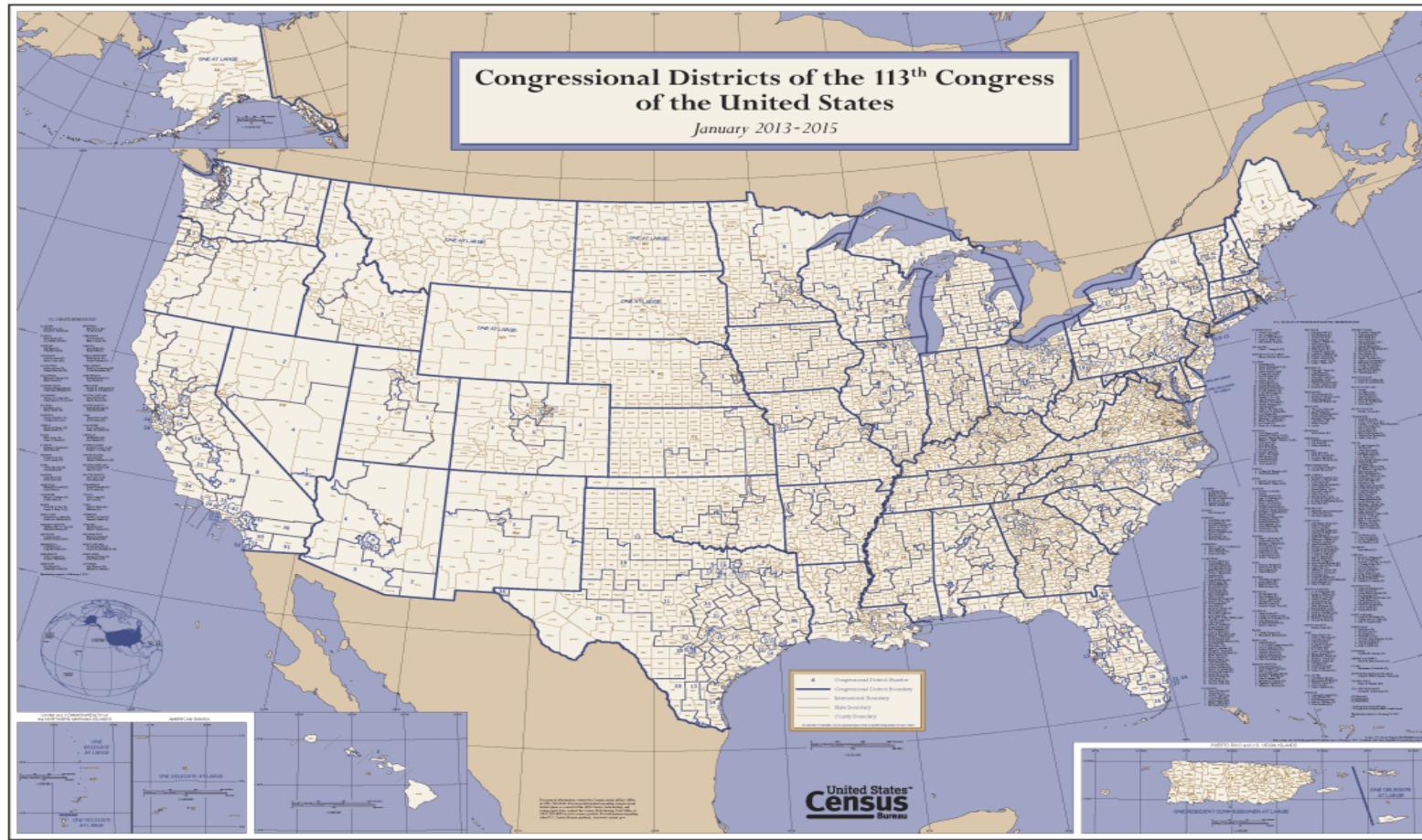
- **Greater understanding of a topic that has a tremendous impact on voting, especially in states that do not particularly lean towards a certain party**
- **Allows any user who is interested in the visualization of data to understand a comprehensive and often unknown topic (learn what redistricting is in a comprehensive, but intuitive manner)**
- **Notice any of the abovementioned patterns and see if redistricting is unintentionally restricting one's ability to vote.**
- **Gain a broader comprehension of domestic migration in the U.S over a decade (between the 2000 and 2010 census)**

Related Work

We were inspired by two websites, one being the US census website (www.census.gov) which has myriad of redistricting and demographic data and the other being Mike Bostock's redistricting visualization (

<https://f.cloud.github.com/assets/230541/522393/db95f2d2-c029-11e2-88e8-713345e1693d.png>

Related Work – Census Data



Related Work – Census Data

- This expansive map inspired the motivation for the idea of visualizing redistricting in the United States.
- However, there was no information provided as to how to create such a map (thus the introduction of Mike Bostock's visualization, which will be mentioned further in the data section). Furthermore, the map was static and we wanted to observe different patterns (see Background and Motivation).
- In addition, we wanted to use d3 for interactivity, thus furthering the motivation for using Mike Bostock's interactive topojson format .

Data

- This leads us to the next question – how did we obtain the data?
- The U.S census has a plethora of shapefiles (files that eventually can be converted into a map) that contain the id of the congressional district and its coordinates for boundary drawing.
- However, the current shapefiles were unusable until we ran a few commands in the terminal.

Data, cont.

```
// convert Shapefile (obtained from U.S Census) for 2013  
year to GeoJSON format  
  
Ogr2ogr -f GeoJSON districts.json tl_rd13_us_cd113.shp  
  
//convert GeoJSON to TopoJSON  
  
Topojson -s 7e-9 -id-property=+GEOID -o us-  
congress-113.json -districts.json  
  
//We then use congress-113.json as our source for creating  
the map for the 2013 congressional district
```

Data – What did this do?

All we essentially did was clean up the data, convert it essentially. Once it was in its current form, we did not need to clean any data up. It was just a matter of obtaining the shapefiles for the 108th, 111th, 113th, etc. congressional district from the U.S census database and converting it. In d3, we merely took advantage of the topojson feature in d3 to create a mesh of those boundaries that we appended to an svg.

Data- Now What?

This data conversion method allowed us to successfully show maps of different congressional districts via a slider. While we have not incorporated transitions between the maps for the milestone, we plan to do so for the final version as our main goal was to visualize our main source of data.

Before we display our other views, we wanted to make sure we were able to merge data from the google civic API with our topojson map. **Thus, for our milestone we obtained data for 2013 as a starting point. As of now, we have obtained all necessary data from our main sources.**

Data- Google Civic API

We used Google's Civic Information API to render the congressional district data. The API contains information on each congressional district which can be accessed with an ocdID (open civic data identifier). The information includes: representative name, social media links, party affiliation, photo, among other things.

To implement the API we first had to select whether we were using Google's Election or Representative information. For us, it was the latter. Then we had to decide if we wanted to look up by division (ocdID) or by address. Since we're focusing on congressional districts, it made sense for us to use the former for convenience and ease. ocdID turned out to be difficult to obtain because our census data is not formatted that way. Rather, the Census assigns its own special ID to the district. The first two digits are the state, the last two are the congressional district number. We did some data wrangling by mapping the first two digits onto a separate dataset and obtaining the state. We then combined that information to create the ocdIDs in a new dataset (modifiedDataSet). We then used this ocdID to look up the representative information via the API and then rendered it on the map.

Exploratory Data Analysis

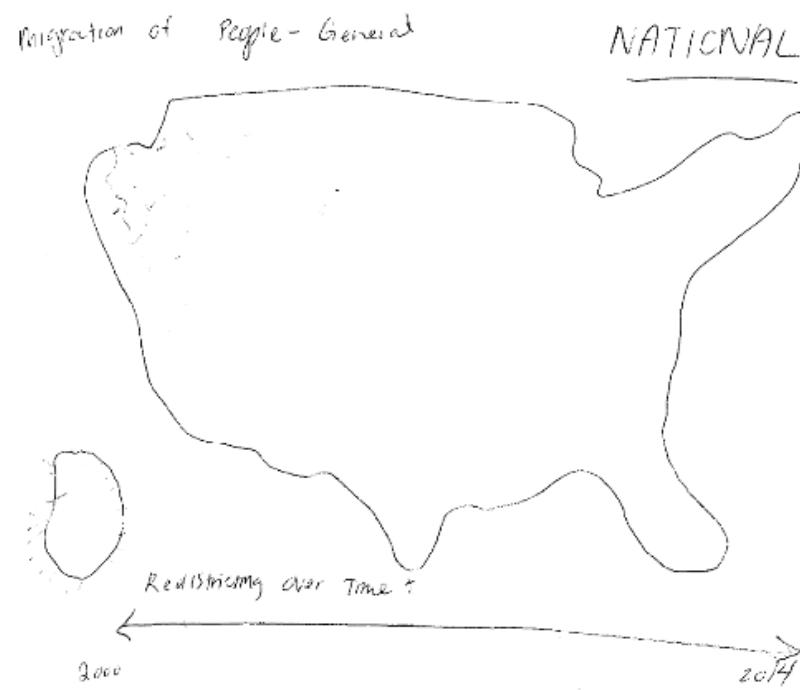
- Our current visualization to look at the data is just the map we have generated for each new congressional district over the past decade. Since we have now scraped all necessary data, we plan to finish the rest of our views.
- Viewing the data initially with the map has allowed to see that it might be more visually appealing and beneficial for the viewer to see greater use of hovering over the state rather than just generating many views when clicking on it.
- **As of our milestone, this aspect of the progress book is still incomplete.**

Design Evolution

- As of right now, we have only considered the sketches we have created so far.
- As we move beyond the map, since we have collected all of the data for the other views, we will have a greater idea of how our design will evolve.

Design Evolution – Cont.

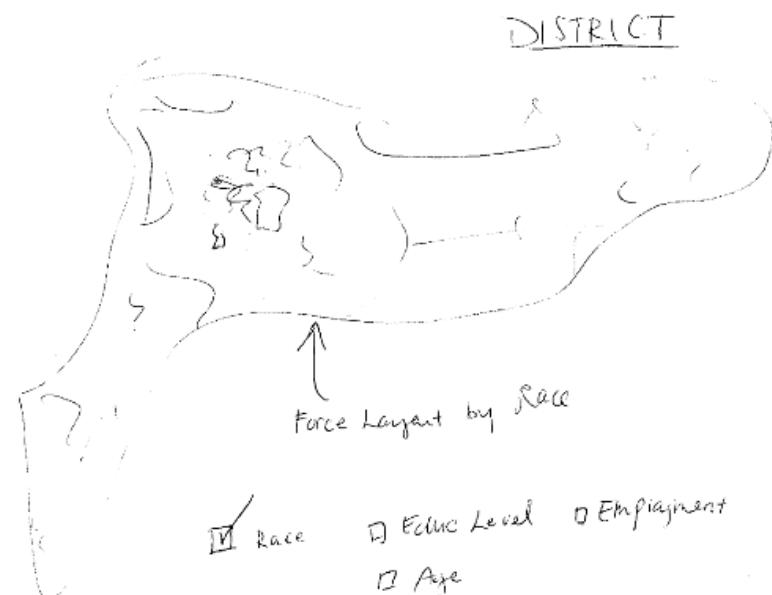
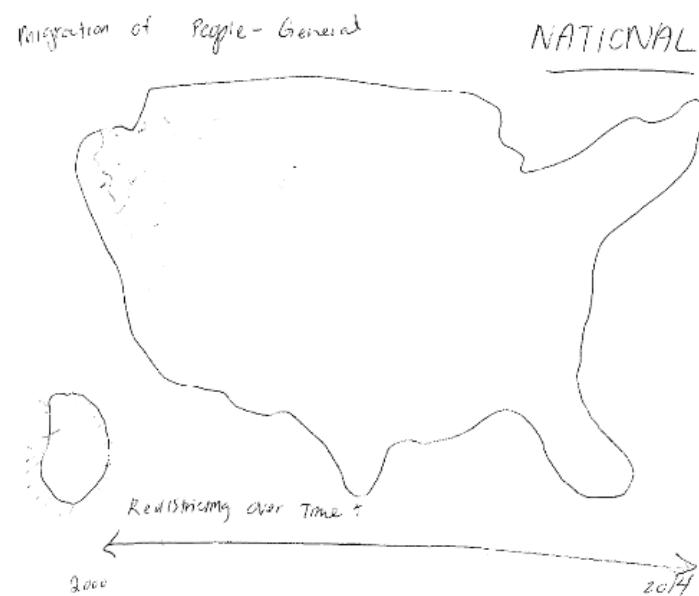
- The first sketch that we created is based off of our national map. It will depict a map of the United States with a time slider below. As the person drags across the slider, the districts will change on the map.



Design Evolution – Cont.

The second component is state. If you click on a state on the national map, it will zoom into it. The state level will provide a clearer depiction of what is happening in the districts and how people are migrating over time (a slider will also be displayed here). In addition, hovering over a district in this view will allow the user to see more information. This information includes demographics and elected officials of the district. Our third component is the district which you can access by clicking on it in the state view. Here, we will be implementing force layout to illustrate how neighborhoods have been pushing away from each other based on demographics and see if there is any relation to how the district has been sliced.

Design Evolution – Sketches



Implementation (In progress)

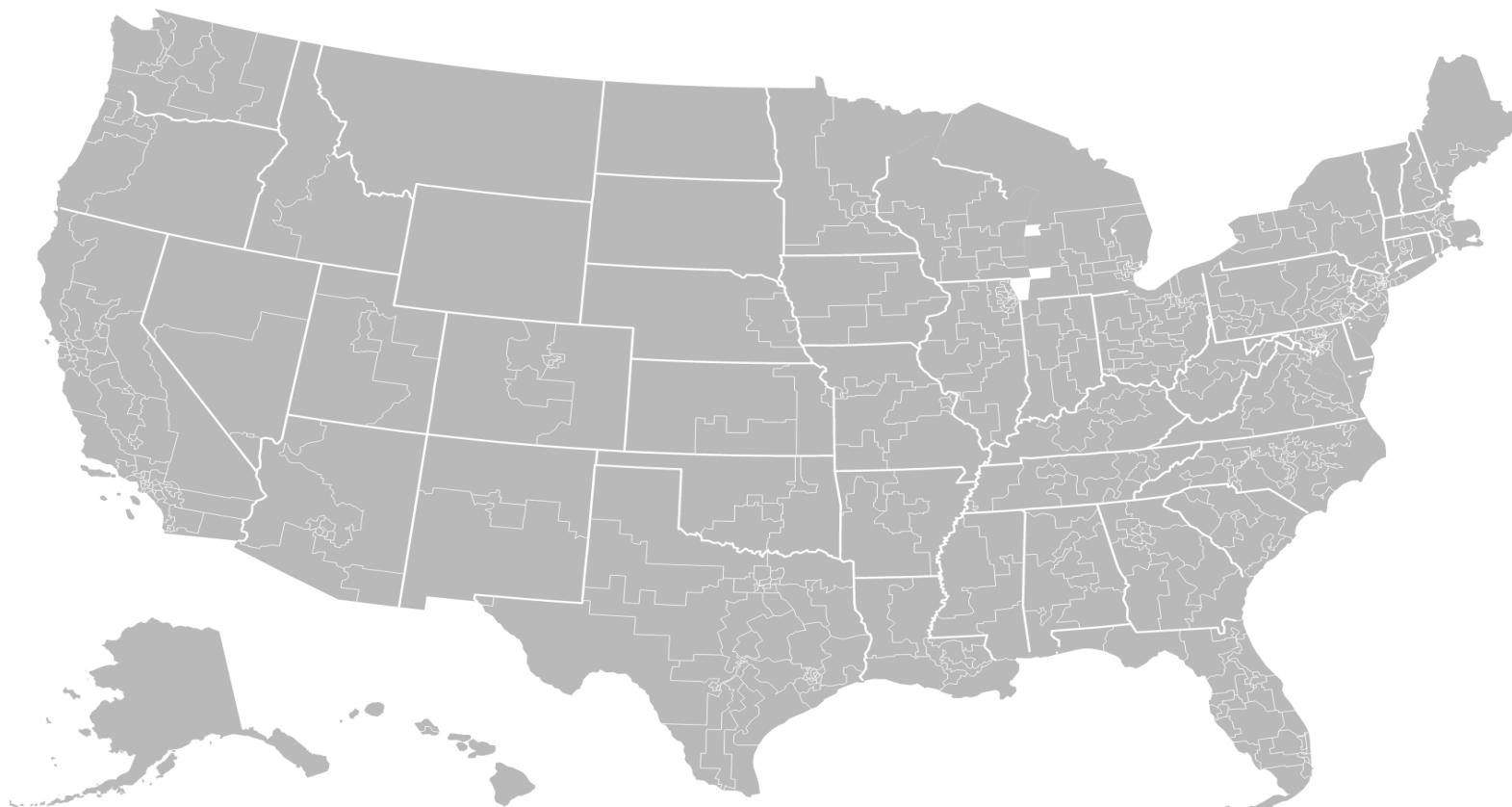
The first image shows the map, which changes as the user presses the slider. The slider goes from the dates 2003 – 2013 and is based on congressional district. Viewers can view maps from the following years/congressional district over the past decade:

- 2003 – 108th congressional district
- 2011 – 111th congressional district
- 2012/2013 – 113th/114th congressional district

Note: These were the only congressional districts with major redistricting

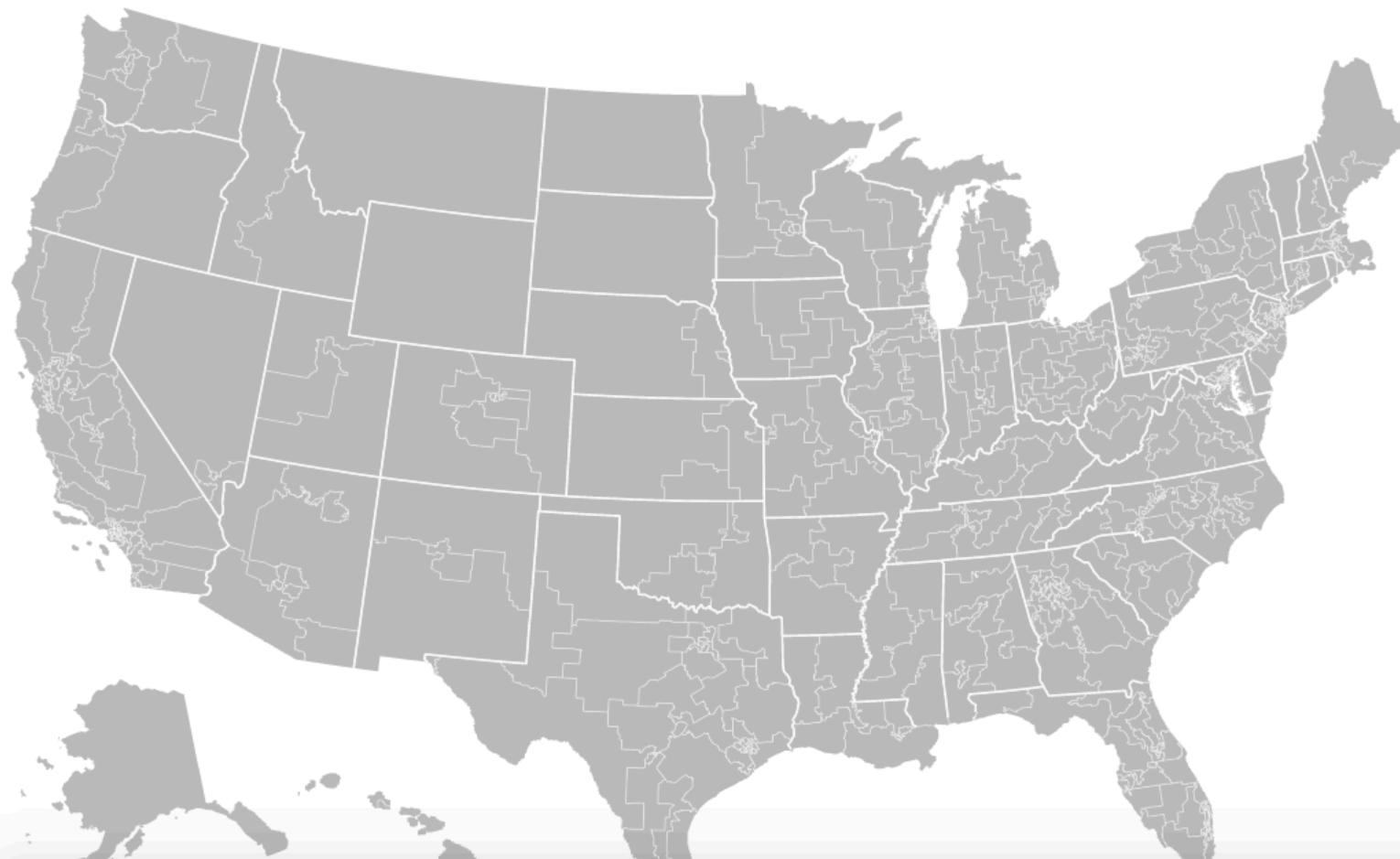
Image/View 1

Time: 2003 — 2013



Image/View 1 cont.

Time: 2003  2013

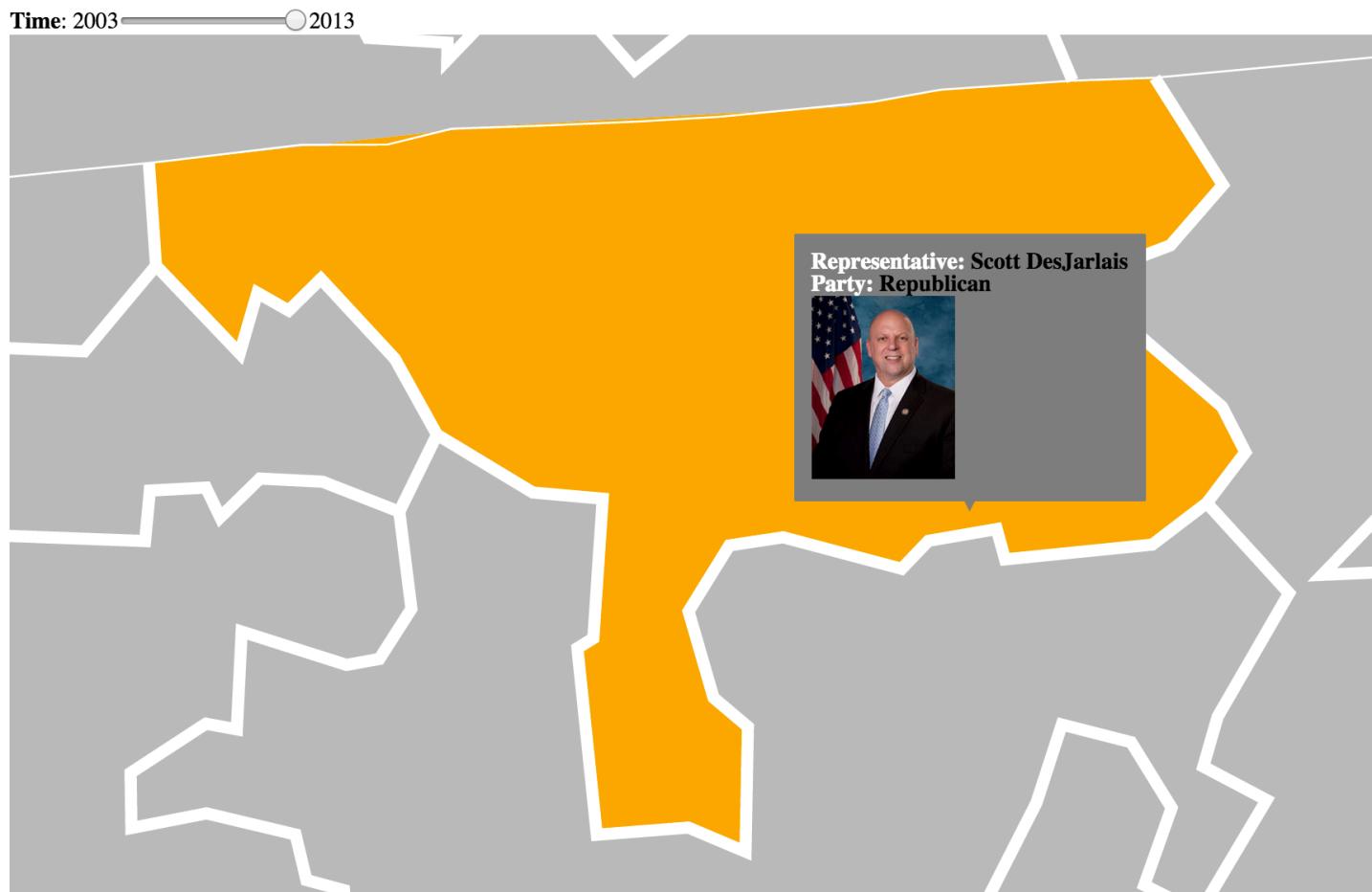


Implementation (In progress)

In addition to being able to view the congressional districts over time, the user can now hover AND zoom over each state to obtain representative data for each new district (2013 only, will implement later for the other years).

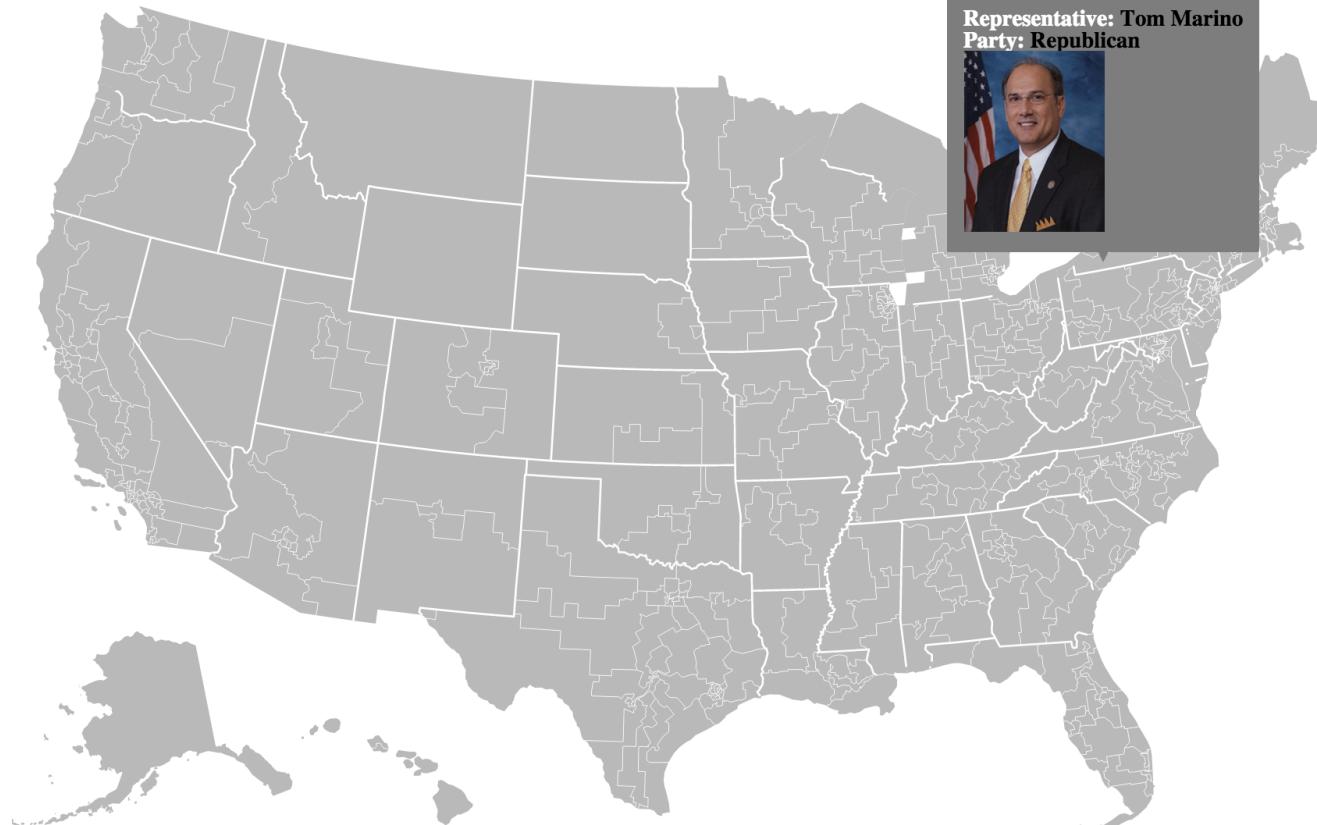
This will provide the representative name and their image. Our goal with this implementation is that viewers are able to see redistricting over time and note the geographical patterns. In addition, we hope that the viewers will link this information through the representative information we have provided via the Google Civic API

Image/View 2



Image/View 2 Cont.

Time: 2003 — 2013



Observed Trends

So far with just our two views we have been able to view the following trends:

- Redistricting is significantly more prevalent in the south than the north.
- Districts that tend to have primarily republicans seem to also have continuously changing boundaries and are most affected by redistricting.

Evaluation

We are currently fulfilling our questions about geography and redistricting and this impact over time (i.e the prevalence of redistricting in the South over the past decade).

So far, we have completed the following:

1. Obtained all relevant data for the visualizations via the census data and the Google Civic Data API (obtained API key).
2. Implemented change over time for redistricting
3. Obtained data from the Google Civic Data API and matched its fields with the keys provided by each district in our map
4. Implemented a hover and representative feature
5. Implemented highlight, zoom in, and zoom out.

Next Steps

We are aware of the following tasks that we have to complete:

1. Use google civic API data for the other years (implement hover for representatives)
2. When state is clicked, link to the other bar graphs we are going to use via data that is easily accessible from the API (via the sketches that we provided in the previous slides)
3. Have seamless transitions between the maps as they change over time
4. Make the overall visualization more aesthetically pleasing.
5. Make the process book significantly more comprehensive - expand on evaluation and design process.