

# A Look into Successful Federal Legislation Bills

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Final Project, CS171 (Spring 2014)

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## FINAL PROJECT PROCESS BOOK – CS171

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## **Initial Project Proposal**

**1. Background and Motivation. Discuss your motivations and reasons for choosing this project, especially any background or research interests that may have influenced your decision.**

The American society is facing many challenges, social, political, and economic. To find solutions to current issues, the general public first needs to be informed of the political directions and decisions that the government is making. What decisions does the Congress make and how they make such decisions?

**2. Project Objectives. Provide the primary questions you are trying to answer with your visualization. What would you like to learn and accomplish? List the benefits.**

We are trying to answer the following questions: What decisions does the Congress make? Are there any clusters of issues that the Congress are primarily concerned with? Is there a party line (Democrats vs. Republicans) on those popular issues? If so, what are the patterns?

We would like to accomplish the following goals through our visualization product (i.e. the benefits of our product to our audience):

- Presenting information of political decisions made by the Congress to the general public in an accurate, visually appealing and easy-to-understand manner
- Explore and identify political dynamics existing in the Congress to gain deeper understanding of the functioning of the Congress

**3. Data. From where and how are you collecting your data? If appropriate, provide a link to your data sources.**

We will collect relevant data from Sunlight Data Services via API calls (<http://sunlightfoundation.com/api/>), in particular the Congress API <http://sunlightlabs.github.io/congress/>

**4. Data Processing. Do you expect to do substantial data cleanup? What quantities do you plan to derive from your data? How will data processing be implemented?**

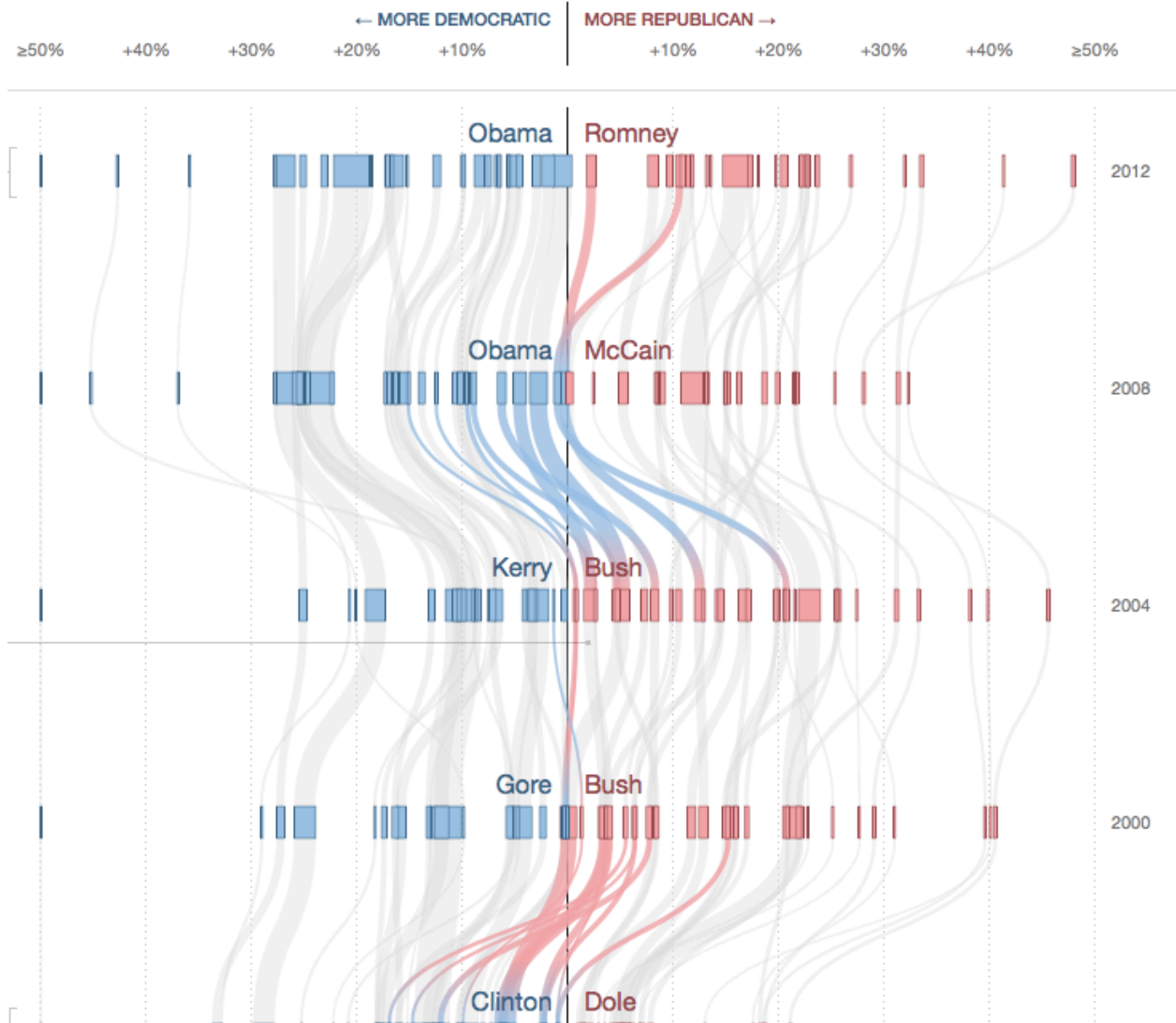
We do not expect to do substantial data cleanup because the API breaks information down into sub-categories that we can select from appropriately. We plan to use all the available data regarding Bills, Legislature, and the votes of each house. The data will be stored in arrays of objects via API calls. This way, this data remains up-to-date and will be used in the creation of the visualization.

**5. Visualization. How will you display your data? Provide some general ideas that you have for the visualization design. Include sketches of your design.**

We plan to display our data based upon the selected bill. An individual will have the ability to “mouseover” a bill and see which house/legislature voted in favor

of/against. We are hoping to integrate all the bills into a single, seamless visualization so that the users can simply scroll over all the bills and see the pertinent information.

A sample of what our visualization could look like upon completion is:



**6. Must-Have Features.** These are features without which you would consider your project to be a failure.

One of the most important features that we want for our visualization is a simple visual of how each Bill was voted for. This will allow the user to browse with ease and intuitively know how to go about using our visual. Also, our project should have up-to-date information. Providing information of previous years is useless and cannot be used in today's discussions.

**7. Optional Features.** Those features which you consider would be nice to have, but not critical.

- An implementation of Square's Crossfilter library to show the cross-section of

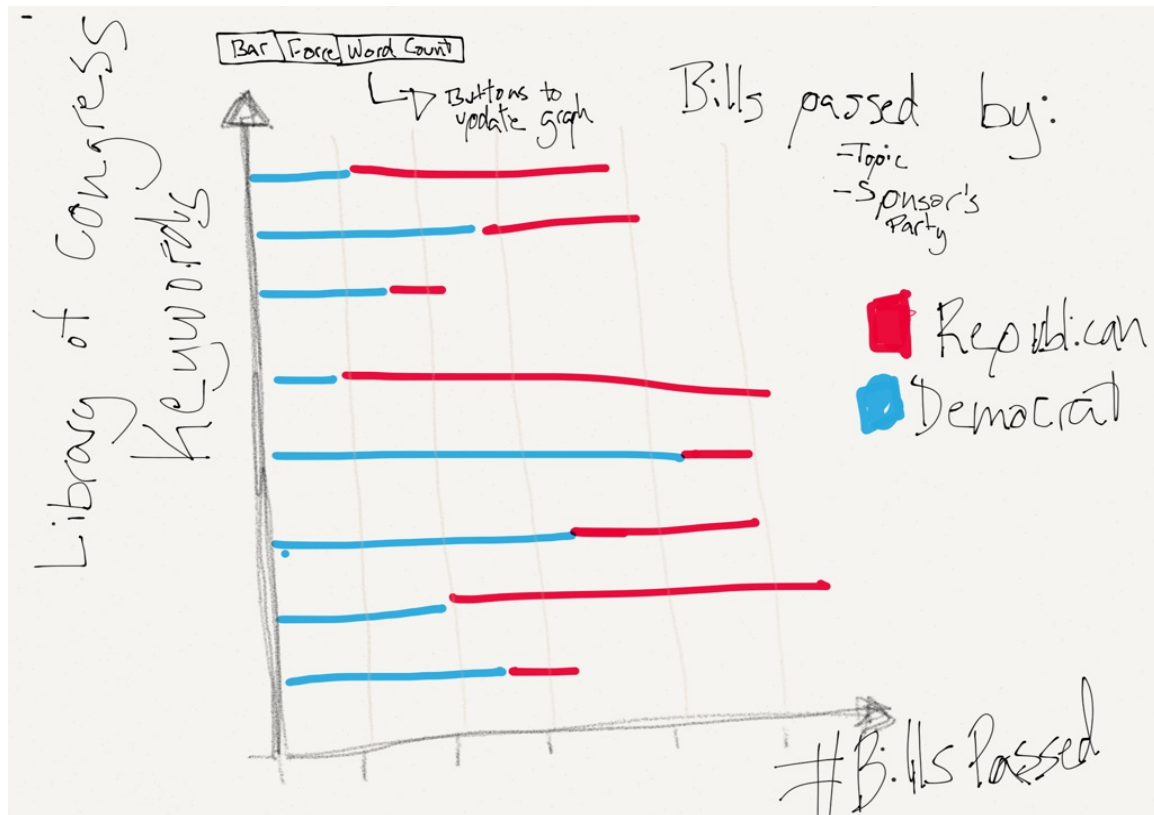
- various bill and legislator attributes
- Create different preset filters based on patterns seen during the exploratory analysis

**8. Project Schedule. Make sure that you plan your work so that you can avoid a big rush right before the final project deadline, and delegate different modules and responsibilities among your team members. Write this in terms of weekly deadlines.**

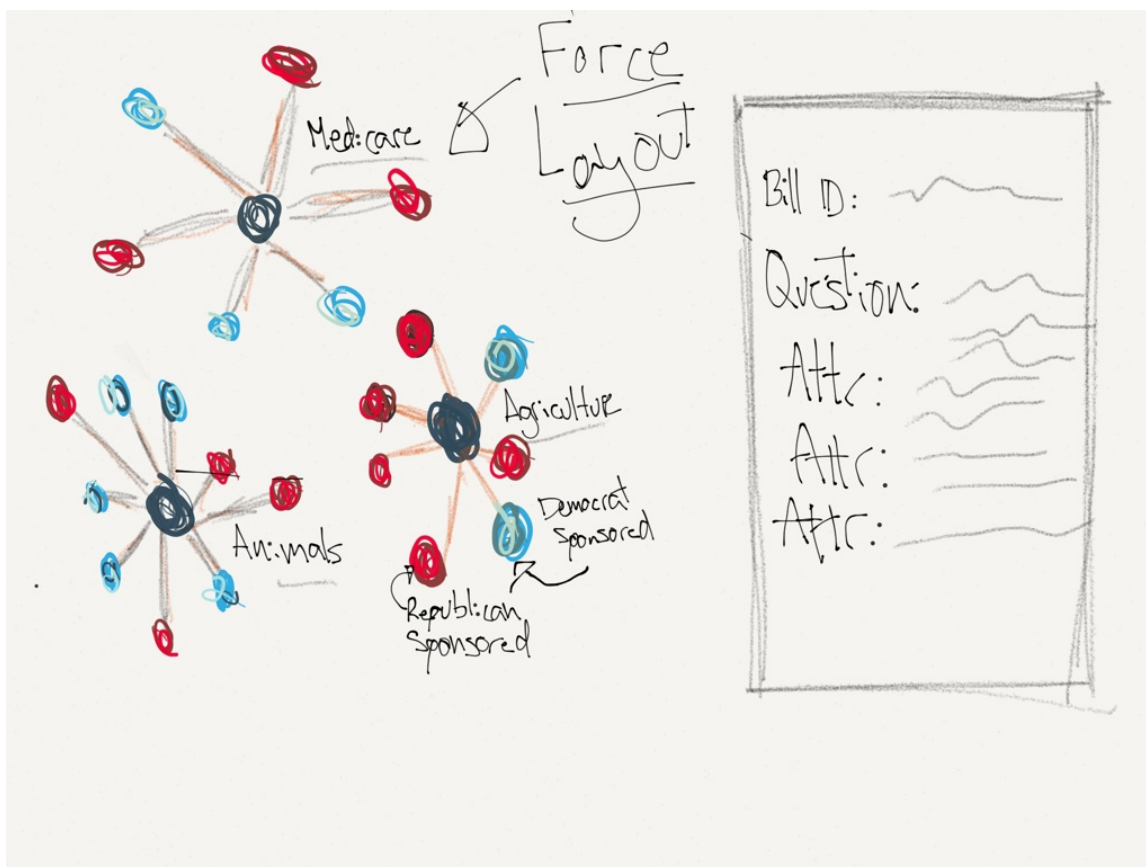
- March 22nd: Have a prototype visualization ready.
- Week of April 14th: Receive feedback from TFs and plan the implementation of the next features to incorporate.
- April 27th: Have the final version of the visualization ready and begin drafting a script for the screencast.
- Week of April 28th: Finish final details of the visualization, documentation, and screencast.
- Lastly, each set of milestones in this schedule should be accompanied by entries into the process book.

**Note: In problem 5, we were told to supply an image of what our visualization could look like. After much consideration, we decided to change it to the following:**

Visual 1 – Overview Visual



Visual 2 and 3: Table of force layouts and detailed view of Bill  
(Each force layout is a classification and each node is a bill)  
(When a node is clicked, the detailed layout will appear on the right with the appropriate bill information)



## **Feedback on Initial Project Proposal From TF**

Hi, Freddy, Allie, and Yash,

Please see the feedback below for your project 1 proposal:

**1. Topic Scope:** You have a very interesting and ambitious topic and access to a great dataset. This project should be complex enough in scope to reflect the work of three people.

**2. Design Sketches:** I think it would help if you sat down together and created detailed sketches of how you want to visualize the data, as the presidential election screenshot is vague. For example, what does the viewer see after the mouseover? How are you going to visualize the party division over a bill? Make sure you include these sketches in the process book. We can also discuss the sketches if you would like to meet up.

**3. Data Wrangling:** For the first milestone, since you are using the Congress API, you should understand how to capture the data and pass it into a D3 visualization.

**4. Working Visualization:** For the first milestone, you should have a working visualization with your main view, though at this time I understand it might not be as complex or have a lot of interactivity yet. For example, you might aim to pull up at least at least a few bills with the party breakdown and other details. Of course, if you want to get more work done go for it. Professor Pfister emphasized this first milestone should be the equivalent effort of at least one homework.

**5. Project Management:** To help with project management, you might want to break down your project into tasks/subtasks, teammate responsible, group check in date, and deadline. It's meant to keep you on track and encourage you to collaborate with your teammates if you get stuck.

(sample table below or see screenshot attached)

Task / Subtask	Who's Responsible	Group Check In	Deadline
Pull Bills from API	Teammate A	Tues 4/1	Wed 4/3



6. **Meeting.** If you would like to meet to discuss the project further, I can meet with you altogether or meet one designated teammate. I'm usually available in the evenings via Google Hangout. Let me know what works for you!

7. **Project Info:** <http://www.cs171.org/#!/project.md>

I'm looking forward to seeing your project results!

### **GIT Repository Now Set Up for Group Collaboration**

I have set up a private GitHub repository (<https://github.com/yashspatel23/cs171-final-project>) for my group so that everyone can share their contribution code easily rather than having code mailed around. Moreover, I have shared this repository with cs171tf so that they will be able to pull and test our code.

## **Sunlight Foundation API**

Needing an API to gather information for the Federal Legislation Bills, we decided as a group that Sunlight Foundations Congress API would suffice and work well for our visualization. The API can be found at <https://sunlightlabs.github.io/congress/>. Some information about the API:

A live JSON API for the people and work of Congress, provided by the [Sunlight Foundation](#).

- Look up members of Congress by location or by zip code.
- Official Twitter, YouTube, and Facebook accounts.
- The daily work of Congress: bills, amendments, and nominations.
- The live activity of Congress: past and future votes, floor activity, hearings.

All requests require a [Sunlight API key](#). An API key is free, and has no limits or use restrictions.

Some information about methods to gather information:

<b>Path</b>	<b>Description</b>
<a href="#">/legislators</a>	Current legislators' names, IDs, biography, and social media.
<a href="#">/legislators/locate</a>	Find representatives and senators for a latitude/longitude or zip.
<a href="#">/districts/locate</a>	Find congressional districts for a latitude/longitude or zip.
<a href="#">/committees</a>	Current committees, subcommittees, and their membership.
<a href="#">/bills</a>	Legislation in the House and Senate, back to 2009. Updated daily.
<a href="#">/bills/search</a>	Full text search over legislation.
<a href="#">/amendments</a>	Amendments in the House and Senate, back to 2009. Updated daily.
<a href="#">/nominations</a>	Presidential nominations before the Senate, back to 2009. Updated daily.
<a href="#">/votes</a>	Roll call votes in Congress, back to 2009. Updated within minutes of votes.
<a href="#">/floor_updates</a>	To-the-minute updates from the floor of the House and Senate.
<a href="#">/hearings</a>	Committee hearings in Congress. Updated as hearings are announced.

<a href="#">/upcoming_bills</a>	Bills scheduled for debate in the future, as announced by party leadership.
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The following is a sample result of vote numbers and the Bills result:

```
"results": [
  {
    "breakdown": {
      "total": {
        "Yea": 222,
        "Nay": 190,
        "Not Voting": 19,
        "Present": 0
      }
    },
    "result": "Passed",
    "roll_id": "h43-2013"
  },
  {
    "breakdown": {
      "total": {
        "Yea": 261,
        "Nay": 154,
        "Not Voting": 16,
        "Present": 0
      }
    },
    "result": "Passed",
    "roll_id": "h44-2013"
  }
  ...
]
```

## **Constructing the Data Structure**

In order to get to get our data structure working, we had to learn how to pull information from the API. In doing so, we wrote some notes for others to understand how we created our data structure:

- apikey = 2282ac571e0b46b69bb7879f4de9b158
- 1. There is no sentiment analysis. Despite classifying bills by different keywords there is no visibility into the goal of the bill
  - To counter this it could be useful to display a column chart that shows how many times D vs R sponsored each type of bill.
  - It might be unnecessary to go beyond showing simply D and R regardless of chamber. Yet chamber could be incorporated by having two columns per party: one column for each chamber and one group for each party
- 2. Upon highlighting a bar, a pie chart could appear that shows the number of bills passed vs failed for this query.
  - This could also be a vertical bar graph to the right
  - There could also be a second chart or graph that shows how many bills of this type were enacted vs vetoed
  - This could be efficiently displayed by using a stacked column chart where one column shows bills rejected and the other column is a stacked column that is composed of bills enacted and bills vetoed (with vetoed bills at the bottom?)
- 3. Bills:
  - Top Keywords: <http://thomas.loc.gov/cgi-bin/bssQuery/?&Db=113&srch=/home/LegislativeData.php?n=BSS&Opt=f>
  - List:
    - Agriculture and food, Animals, Armed forces and national security, "Arts, culture, religion", "Civil rights and liberties, minority issues", Commerce, Congress, Crime and law enforcement, Economics and public finance, Education, Emergency management, Energy, Environmental protection, Families, Finance and financial sector, Foreign trade and international finance, Government operations and politics, Health, Housing and community development, Immigration, International affairs, Labor and employment, Law, Native

Americans, Private legislation, Public lands and natural resources, "Science, technology, communications", Social sciences and history, Social security and elderly assistance, Social welfare, Taxation, Transportation and public works, Water resources development

### **Working query for vote breakdowns:**

[http://congress.api.sunlightfoundation.com/votes?vote\\_type=passage&result=Passed&fields=voted\\_at,chamber,bill\\_id,question,result,breakdown.party&apikey=2282ac571e0b46b69bb7879f4de9b158&per\\_page=50&page=1](http://congress.api.sunlightfoundation.com/votes?vote_type=passage&result=Passed&fields=voted_at,chamber,bill_id,question,result,breakdown.party&apikey=2282ac571e0b46b69bb7879f4de9b158&per_page=50&page=1)

#### **1. Filters:**

- Vote Type = Passage
- Result = Passed

#### **2. Fields:**

- Chamber
- Bill ID
- Question
- Result
- Breakdown by party
- Page 1

Needs to iterate through:

[http://congress.api.sunlightfoundation.com/votes?vote\\_type=passage&fields=voted\\_at,chamber,bill\\_id,question,result,breakdown.party&apikey=2282ac571e0b46b69bb7879f4de9b158&per\\_page=50&page=1&query=](http://congress.api.sunlightfoundation.com/votes?vote_type=passage&fields=voted_at,chamber,bill_id,question,result,breakdown.party&apikey=2282ac571e0b46b69bb7879f4de9b158&per_page=50&page=1&query=)

### **Working query for bills:**

[http://congress.api.sunlightfoundation.com/bills?actions.result=pass&fields=short\\_title,bill\\_id,history.vetoed,history.enacted&apikey=2282ac571e0b46b69bb7879f4de9b158&per\\_page=50&page=1&keywords=](http://congress.api.sunlightfoundation.com/bills?actions.result=pass&fields=short_title,bill_id,history.vetoed,history.enacted&apikey=2282ac571e0b46b69bb7879f4de9b158&per_page=50&page=1&keywords=)

#### **1. Filters:**

- Keywords = [keyword]
- Actions.result = pass

#### **2. Fields:**

- Short title
- Bill ID

- Was the bill vetoed?
- Was the bill enacted?

### **Data structure layout:**

#### **Array**

[Keywords]:

Bill\_ID

Voted at

Chamber

Question

Result

Breakdown:

R:

Yea

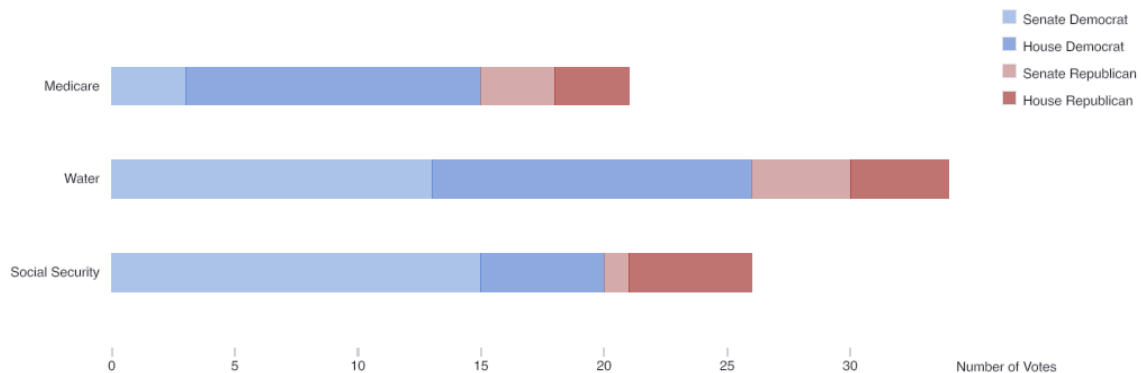
D:

Yea

### ***Creating the Main Overview Visualization***

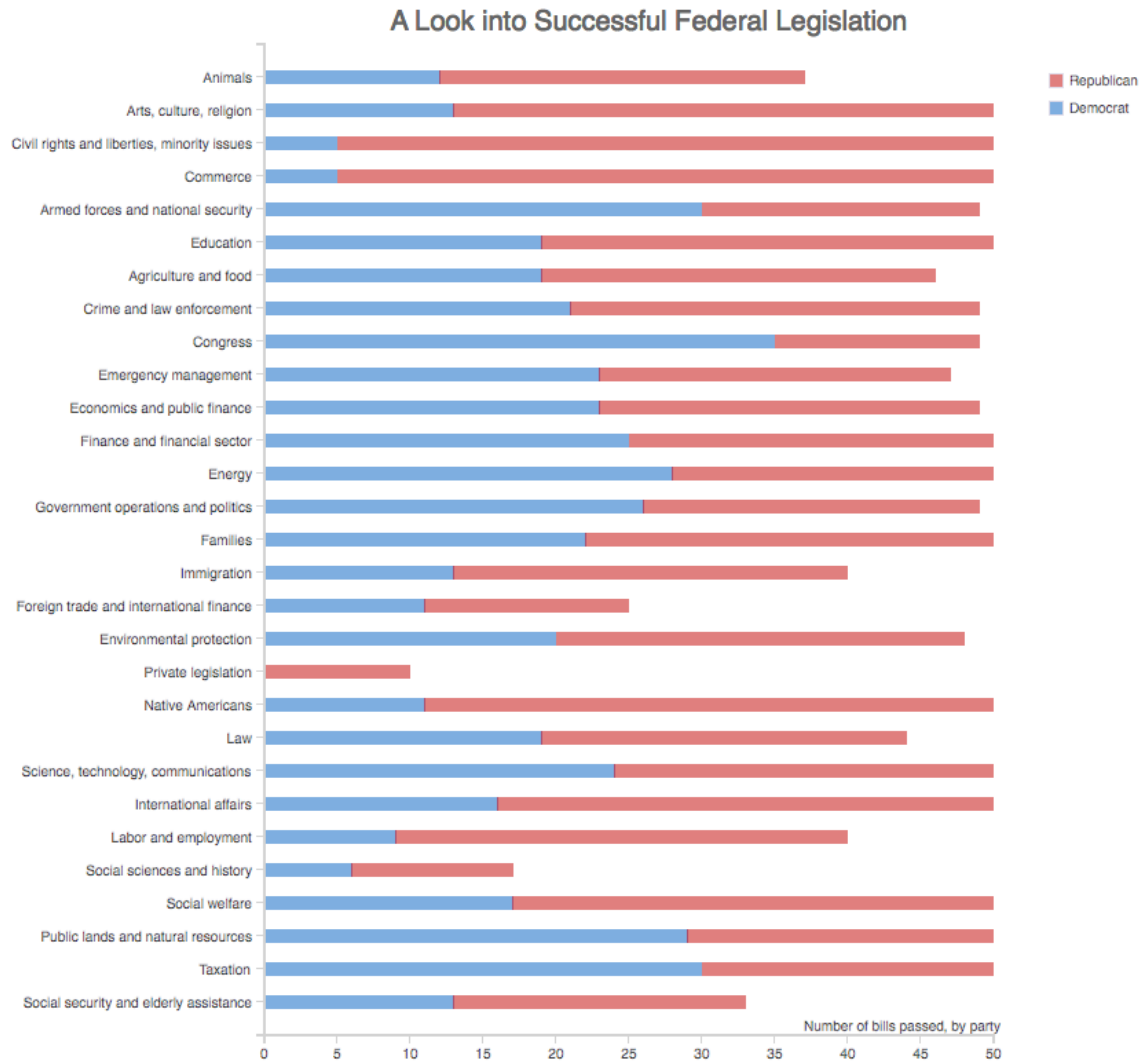
After much thinking, our group decided that the best way to present our information would be in a bar graph. The first view, an overview visual, will be displayed in a bar graph that shows approximately 30 classifications (a category to which a bill belongs) and show how many bills passed and which House was responsible. This view will help show viewers what each House is interested in and what classification receives the most attention. For example, if the House of Republican is responsible for 30 bills being passed in Transportation and Public Works, which is the classification with most bills passed, we know that the main focus of Republicans is for said classification and that this is viewed as the most important.

Initially, we began by creating a bar graph with fake local data while our data structure was still being constructed. The visual looked like this:





Then, after getting our data structure working, we replaced this false data with real data and the visualization began looking much better:

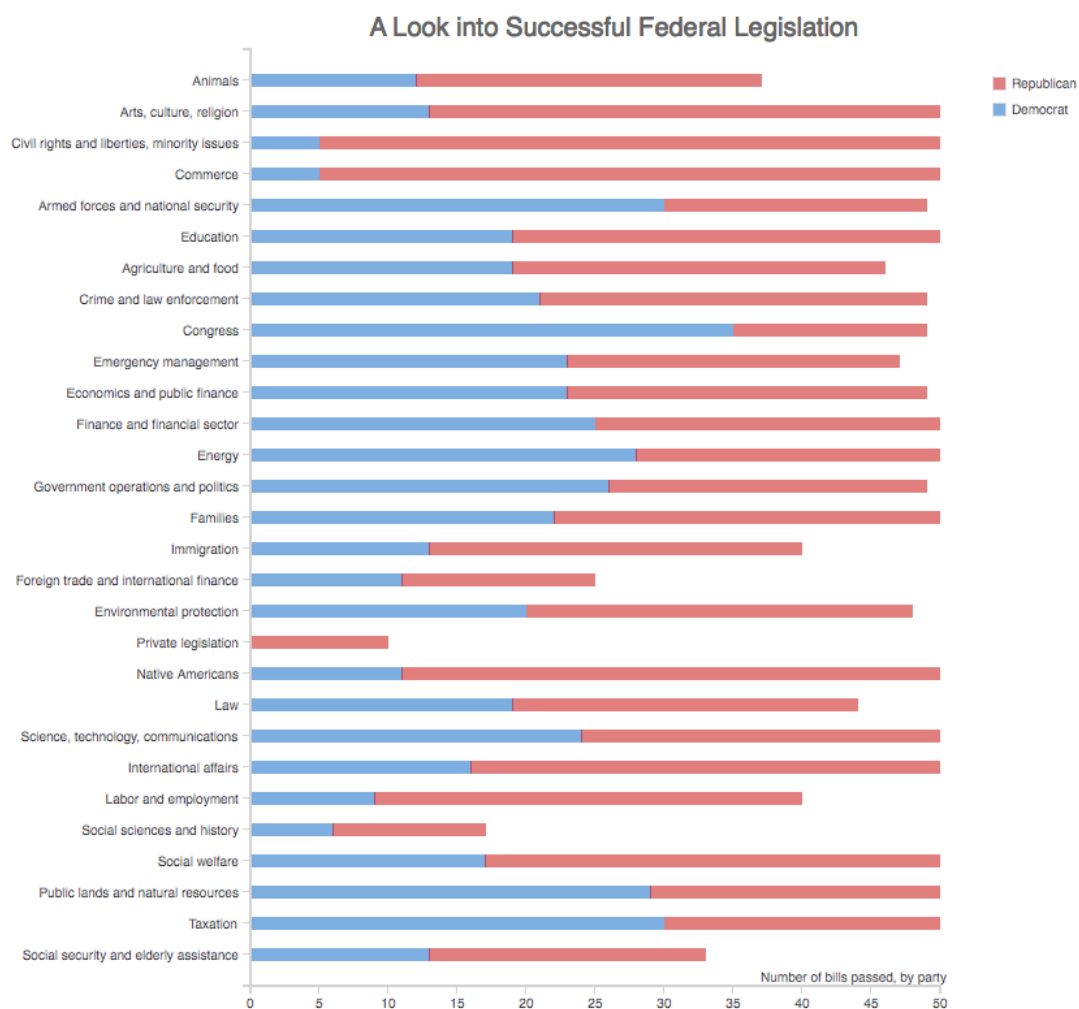


Also, in order to connect the overview layout with the other layouts, we created radio buttons atop the graph:

Display as: ☒ Bar ☐ Force ☐ Word Cloud

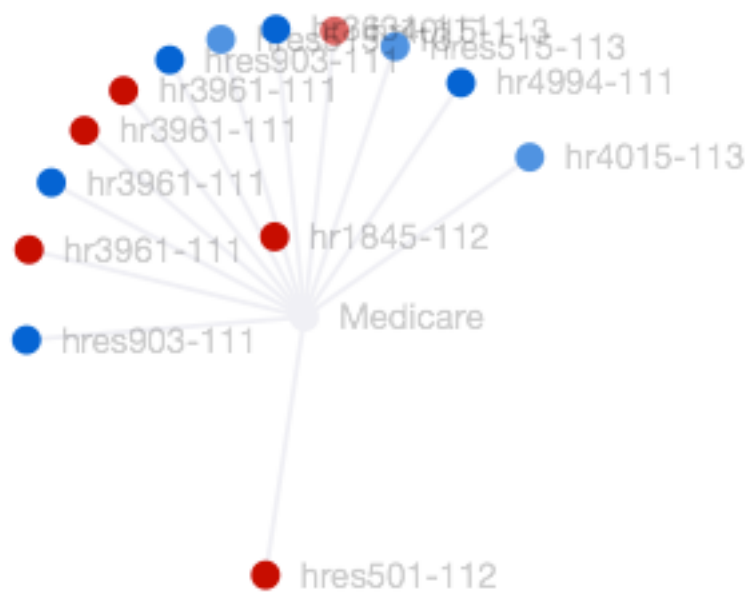
With this, the main overview visual looks like:

Display as:



### **Force Layout and Detailed Visualization**

Now, a user wishes to view more specific details about a bill, they have the ability to switch to a force layout by clicking the force button atop the bar graph. This will take them to a visualization that looks something like:



As we can examine, this is a classification (a category to which a bill belongs) force layout. For each classification, each node represents a bill. As a user, we can click on a node and to the right of this visualization, a box with specific details will appear:

**Vote question:**

On Motion to Suspend the Rules and Pass, as Amended  
-- H.R. 1845 -- To provide for a study on issues relating to  
access to intravenous immune globulin (IVIG) for Medicare  
beneficiaries in all care settings and a demonstration  
project to examine the benefits of providing coverage and  
payment for items and services necessary to administer  
IVIG in the home

**Vote ID:**

hr1845-112

**Voted Year:**

2012

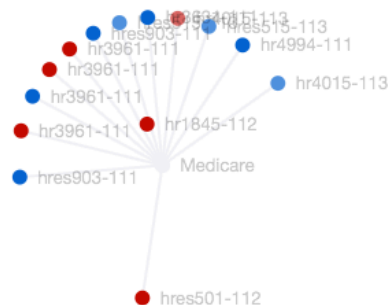
**Result:**

Passed

**Source:**

<http://clerk.house.gov/evs/2012/roll634.xml>

The combined visualization is:



**Vote question:**

On Motion to Suspend the Rules and Pass, as Amended  
-- H.R. 1845 -- To provide for a study on issues relating to  
access to intravenous immune globulin (IVIG) for Medicare  
beneficiaries in all care settings and a demonstration  
project to examine the benefits of providing coverage and  
payment for items and services necessary to administer  
IVIG in the home

**Vote ID:**

hr1845-112

**Voted Year:**

2012

**Result:**

Passed

**Source:**

<http://clerk.house.gov/evs/2012/roll634.xml>

In order to cover all the classifications, we intend to create a table of said force layouts, one for each classification. Then the user will be able to view each bill and its importance. Moreover, we intend to adjust the nodes in size to the House who is responsible for the bill passing. These customizations will happen really soon.