

Harvard University
Due by: 05/02/2016

COMPSCSI -171
Spring 2016

Process Book

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Claims vs Results

talks
promises
fiction

returns
outcome
fact

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Project Proposal

1-2 paragraph abstract. The abstract should include your **motivation** for doing this project, **what you are trying to do** and **which goal you want to achieve**. Also include a description about your **planned datasets** and **where you will acquire them**.

Due 3/21/2016 -- submitted at

https://docs.google.com/forms/d/1owRoNNi37_jcOtgVSJWBgT7RKXZU0pvLG7HSOFLvAWw/formResponse?edit2=2_ABaOnuexff7t2o2f-uhWvwASyRuZz6Ab9viHC5pC0fLDd-jhUZn8oigxBsOsZL
↓

I'd like to examine the relationships between US parties (President, Congress) in office and economic well-being (income, income growth, unemployment) and macro indicators (like gdp, gdp growth, deficit, deficit as % of gdp, deficit growth). The goal is to separate fact from fiction when it comes to claims that two parties make vs empirical data from their record -- statements about small government, job creation, growth of the economy, etc. that, I feel, get over-abused.

E.g.

Select (Median) **Income (Growth)**, and then create a bar graph with all the presidents and how they stack against each other (sort high-low, chronologically)

I think given it's an election year that could be very interesting to the general public. I am not certain whether the scope will be sufficient so that's a risk but we can certainly expand when we start brainstorming...

Initial Data sets

Most of the data is available from census.gov, e.g.

- Median and Mean **Income** from **Table P-4. Race and Hispanic Origin of People (Both Sexes Combined) by Median and Mean Income [XLS - 58k]** -- **this is what we need, and we can calculate growth/decline as percentages, starts from 1947 to 2014**
 - Real Median Household Income in the United States --
<https://research.stlouisfed.org/fred2/series/MEHOINUSA672N>
- **Unemployment** -- numbers, percentages and percentages growth -- a lot to choose from at <http://www.bls.gov/data/#api>
 - Percentage is available at <http://data.bls.gov/pdq/SurveyOutputServlet> from **1947 to 2016**

- Labor Force Statistics from the Current Population Survey
- **Employment-Population Ratio**
- **Budget** Deficit/Surplus -- numbers and percentages of GDP, --
<https://www.whitehouse.gov/sites/default/files/omb/budget/fy2017/assets/hist01z2.xls>
 Table 1.2—Summary of Receipts, Outlays, and Surpluses or Deficits (-) as Percentages of GDP: 1930–2021 41 K XLS
- Federal Debt: Total Public Debt as Percent of Gross Domestic Product
- **Consumer Price Index for All Urban Consumers: All Items**
<https://research.stlouisfed.org/fred2/series/CPIAUCSL#>
- **GDP, GDP Growth**
 - <https://research.stlouisfed.org/fred2/series/GDP/downloaddata> has nominal numbers (units) from 1947 to 2015; also percent change, etc.
 - There's more from the same source -- **inflation**, unemployment, consumer price index

President, Congress Control (question: do we want to include that?): that can be acquired from many places or just created, i.e. we don't need to get it from some place -- it's public record, and we should probably limit from 1947's or whenever the datasets start from.

https://en.wikipedia.org/wiki/Consumer_price_index#/media/File:US_Consumer_Price_Index_Graph.svg

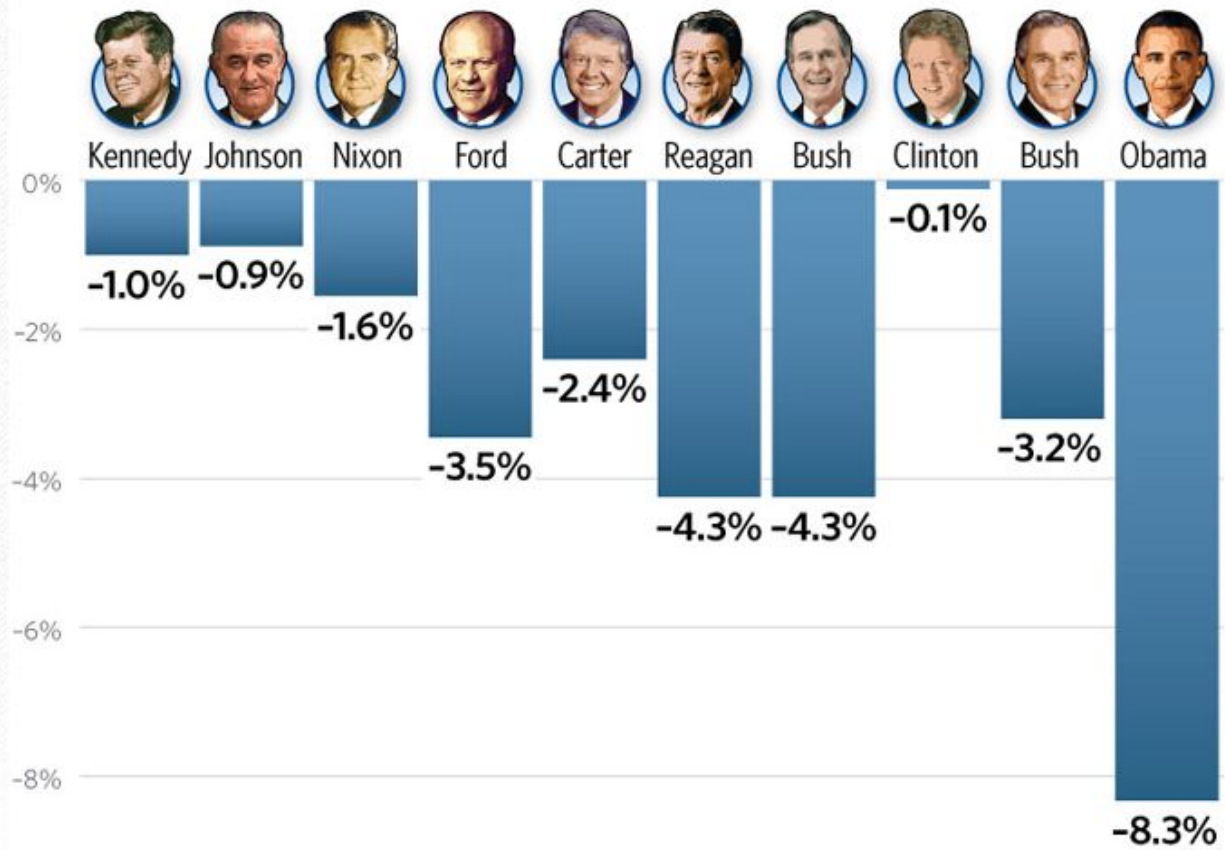
Initial Inspiration

<http://www.usnews.com/news/blogs/data-mine/2015/10/28/which-presidents-have-been-best-for-the-economy> -- but it's not interactive and the conclusions are drawn out by the authors instead of let the data speak to the audience

<http://us-presidents.insidegov.com/compare/2-3-4-7-13-21-26-39/Barack-Obama-vs-Gerald-Ford-vs-Jimmy-Carter-vs-Richard-Nixon-vs-Ronald-Reagan-vs-George-H-W-Bush-vs-Bill-Clinton-vs-George-W-Bush> -- does a nice job to tell a story but i find the visualizations (charts) lacking and in need of better interactivity.

<http://www.dailykos.com/story/2012/9/2/1127055/-Which-party-is-best-for-the-economy-It-s-not-even-close#one>

BUDGET DEFICITS AS A PERCENTAGE OF GDP, BY ADMINISTRATION



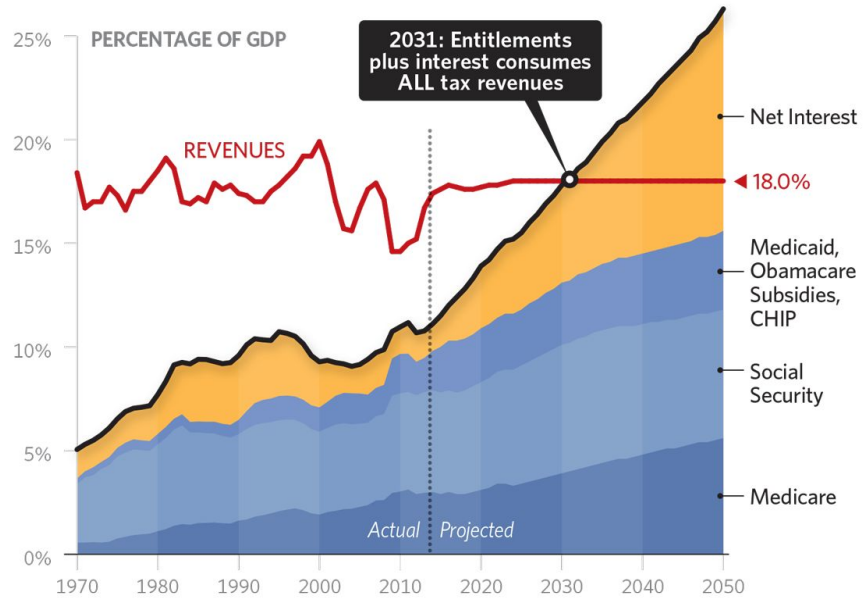
Source: Office of Management and Budget.

http://www.zerohedge.com/sites/default/files/images/user3303/imageroot/2012/05/20120503_FedBudgDebt4.png

CHART 4

All Tax Revenue Will Go Toward Entitlements and Net Interest by 2031

In less than two decades, all projected tax revenues would be consumed by three federal programs (Medicare, Social Security, and Medicaid, which includes CHIP and Obamacare) and interest on the debt.



Sources: U.S. Office of Management and Budget, *Budget of the United States Government, Fiscal Year 2015: Historical Tables*, 2014, Tables 8.4, 8.5, and 10.1, <http://www.whitehouse.gov/omb/budget/Historicals> (accessed January 16, 2015), and Congressional Budget Office, *The 2014 Long-Term Budget Outlook*, July 14, 2014, <http://www.cbo.gov/publication/45308> (accessed January 16, 2015).

From

<http://budgetbook.heritage.org/wp-content/uploads/2015/01/SR-budget-book-2015-chart-4-1600.png>

Goals and Tasks

Define the Goal -

The goal of this project is to help people understand the impact that US parties have had in the periods they have governed the country. We will visually examine **key relationships between US parties in office** (President, and possibly Congress (Senate/House of Representatives)) and various **indicators** (**individual** economic well-being (income (nominal (1000, 950, 990...)) vs income growth (-5%, 5%,...)) unemployment) and various other **national** macro indicators (like gdp, gdp growth, jobs, budget deficit/surplus, deficit as % of gdp, deficit growth)). The goal is to present the audience with visualizations to help separate fact from fiction when it comes to claims the two major US parties make -- statements about the economy, job growth, small government, job creation, etc. -- statements, that in our minds, are over-abused and need to be approached critically by all concerned and continually at that.

Disclaimer -- keep our biases in checks; balance

Tasks - (update March 27 - Chris)

For our project we will do few data manipulations so we can use all data sets when we need them. The first manipulation will be filtering the dates. As mentioned in the goal, we will use various indicators provided by US agencies. The data sources of these indicators provide historic data based on the time they were established (e.g. US Bureau of Labor - 1884) or the date they started gathering information (e.g. Consumer Price index - 1913) and of course most these start dates vary in all data sets. We will establish starting and end points of our domain (years), and filter out any information outside those years.

The next data manipulation will be sorting the economic indicators by presidency term. As mentioned in our goal statement, we want to show key relationships between US parties in office and economic indicators. Most of our data sets contain those key indicators separately. For example the World Bank is a source where we could get the gross domestic product (GDP) for the USA in the last 50 years, and the US Bureau of Labor is a source where we could obtain the unemployment rates in the past 50 years. We will need to sort both data sets by presidency periods and group them together, so we can have GDP and unemployment in the same data sets, sorted by period.

As far as visual manipulations, one of the main techniques we will use is selection and navigation. As stated in our goal, we want to separate facts from fiction, therefore our visualizations will be interactive to allow users select different time frames or select specific presidents for a side-by-side comparison. Therefore we need to allow users select bar charts, data points in a line chart or states in a map to find more information about the charts (e.g. tooltips). We will also allow users to navigate the visualization by using check boxes, radio buttons, and time lines.

Tasks - Project Proposal

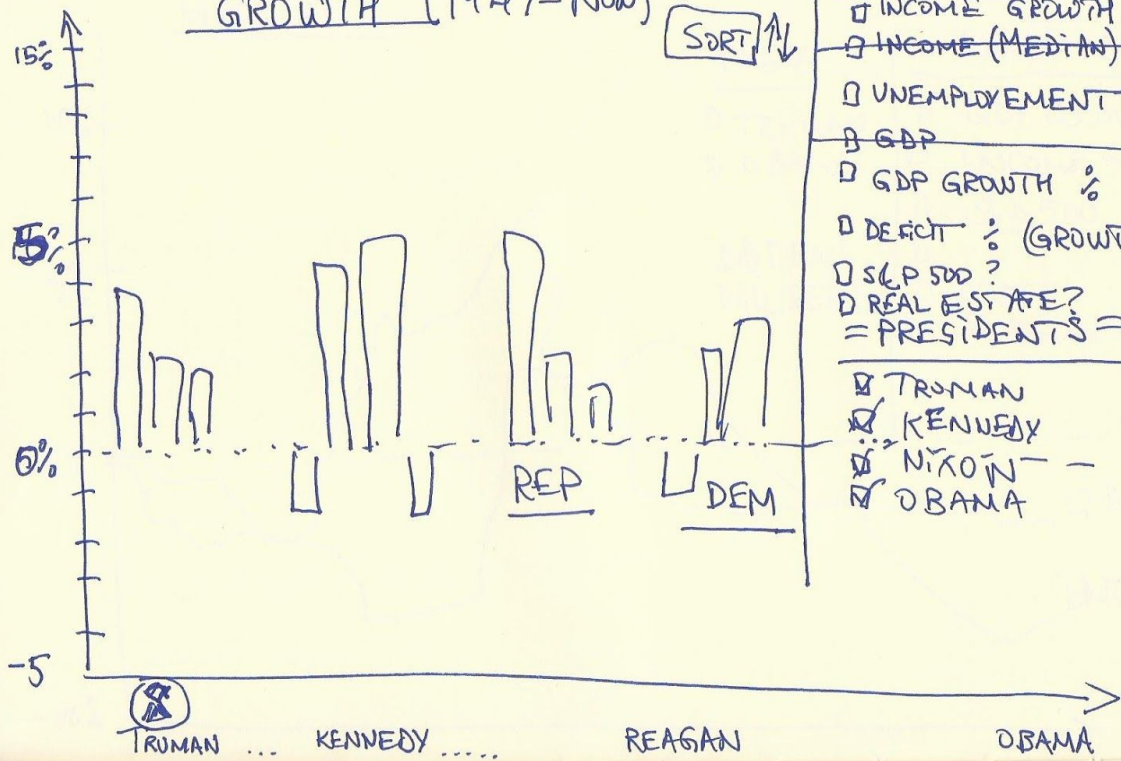
1. Team Formation -- including setting our ground rules and expectations agreement
2. Project Plan

3. Create a process book and document all research, sketches, note meetings, presentations, prototypes and final designs.
4. Gather data
5. Analyse the data
6. Define a concept for the website that will present the gathered data to the audience.
7. Gather information that would help explain our concept
8. Sketch potential visualizations.
9. Get feedback from peers and instructors
10. Prototype the site and visualizations
 - a. We can use <https://pages.github.com/> for publishing too
11. Debug visualizations.
12. Proofread the texts that will be included in the site.
13. Narrow the final texts that will be used in the site.
14. Finalize version 1 of the project
15. Get feedback from peer and instructors
16. Complete the project.

Initial Sketches

GROWTH (1947-NOW)

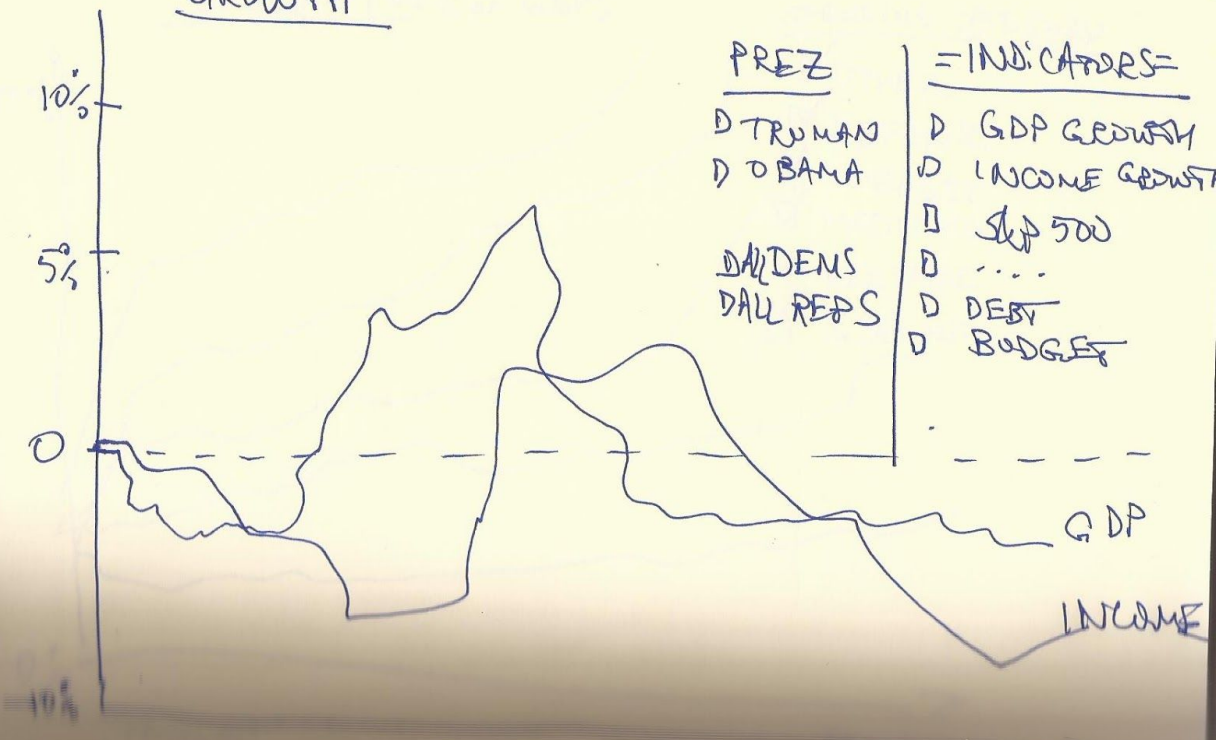
Sort ↑↓



- INDICATORS
- INCOME GROWTH %
 - INCOME (MEDIAN)
 - UNEMPLOYMENT %
 - GDP
 - GDP GROWTH %
 - DEFICIT % (GROWTH)
 - S&P 500?
 - REAL ESTATE?
 - PRESIDENTS =
- TRUMAN
 KENNEDY
 NIXON
 OBAMA

DEM BLUE REP RED

GROWTH



PREZ

D TRUMAN
D OBAMA

D/D DEMS
D/ALL REPS

=INDICATORS=

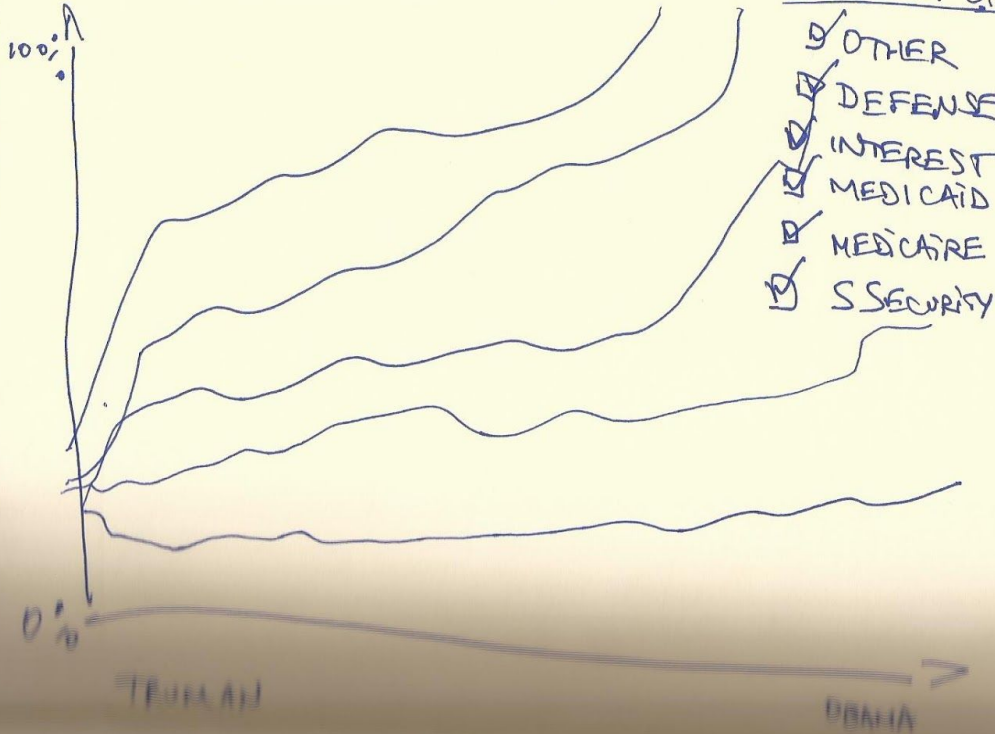
- D GDP GROWTH
- D INCOME GROWTH
- D S&P 500
- D
- D DEBT
- D BUDGET

GDP

INCOME

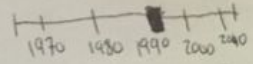
BUDGET (as % of GDP)

SPENDING CATEGORIES





YEAR



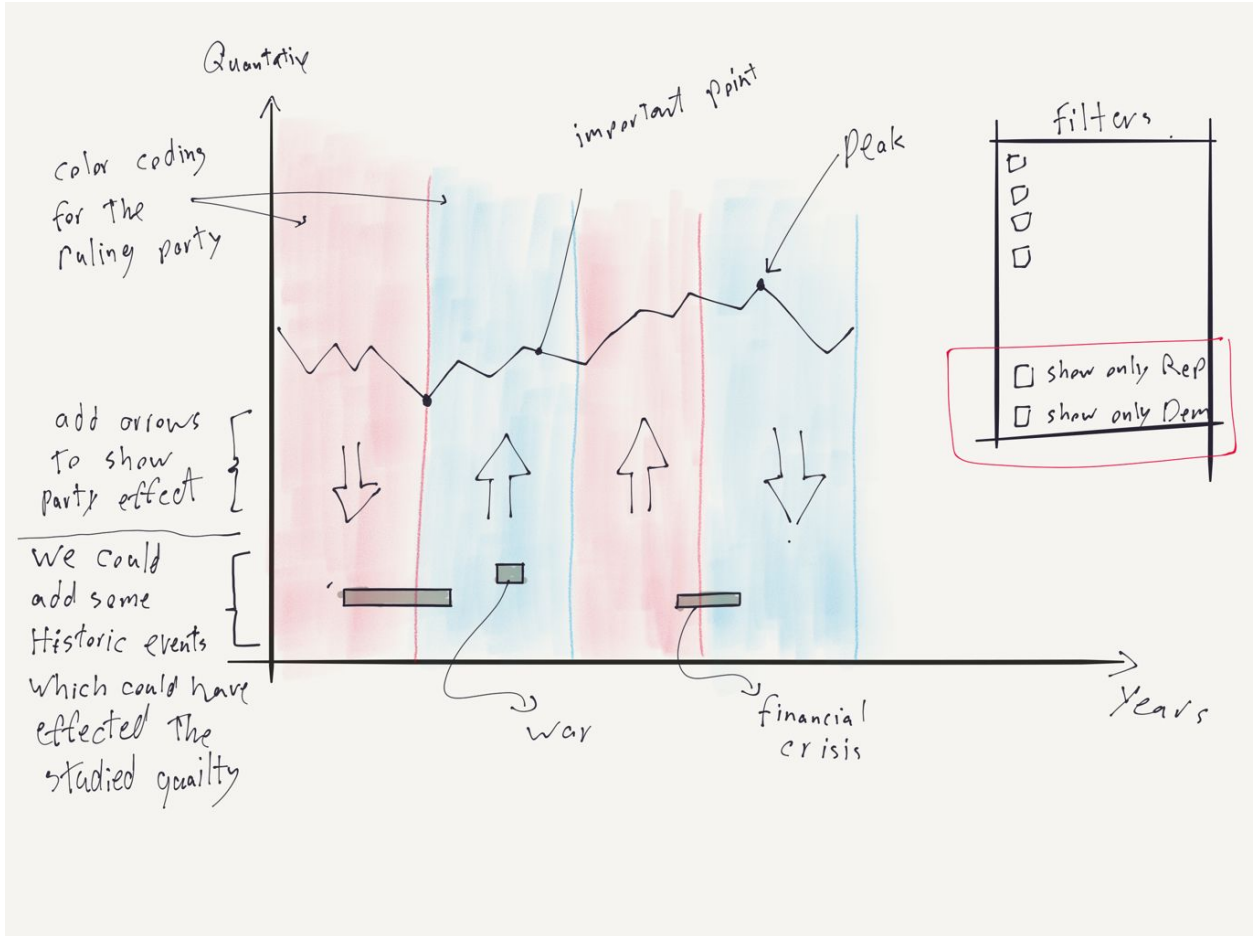
President: GOP

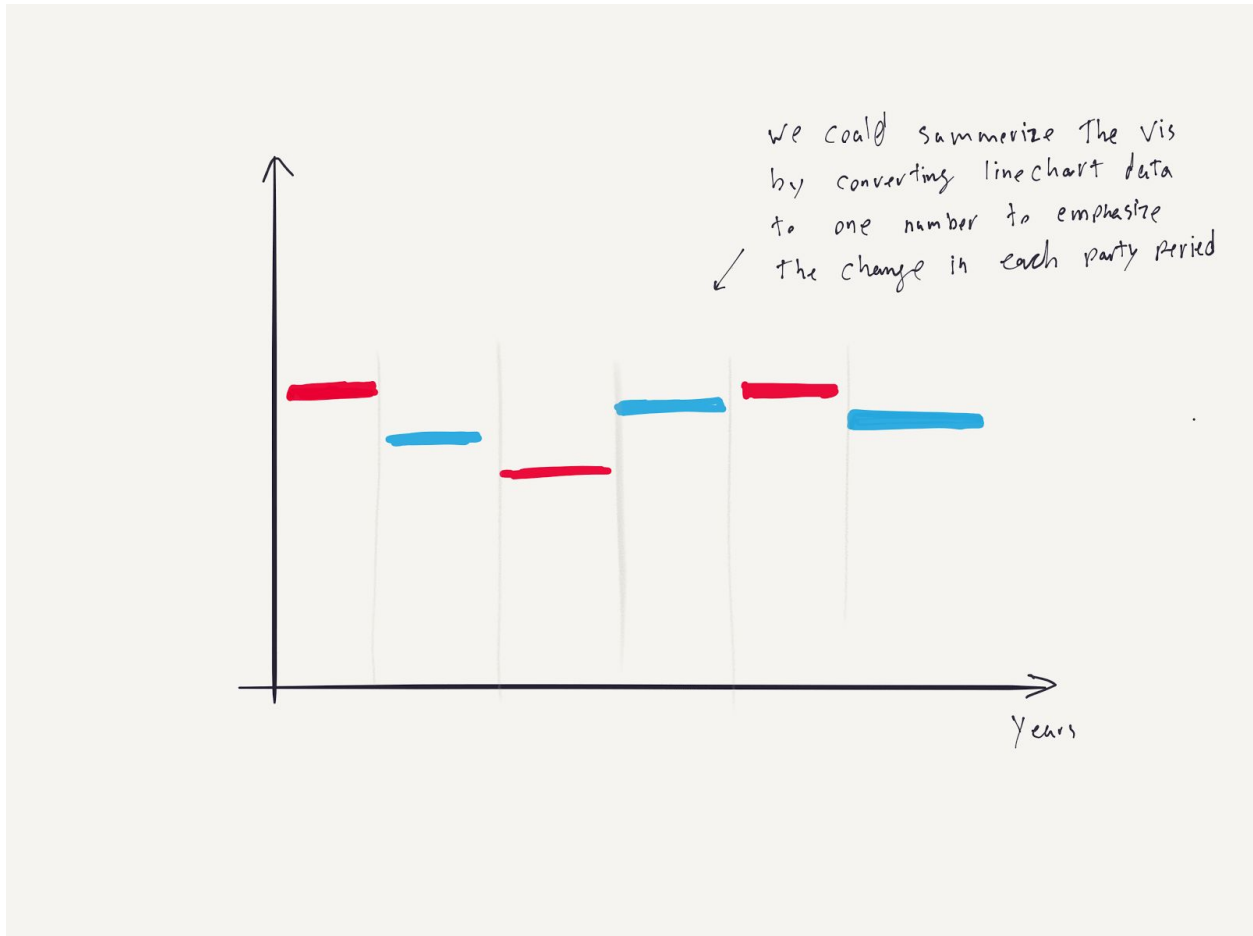
Senate: GOP

GDP 1989 \$6.1B ↑ GDP 1990 \$6B GDP 1991 \$5.5B ↓

Unemployment 1989 13% ↑ Unemployment 1990 17% Unemployment 1991 16% ↓

...
Other indicators





Brainstorming

List of features:

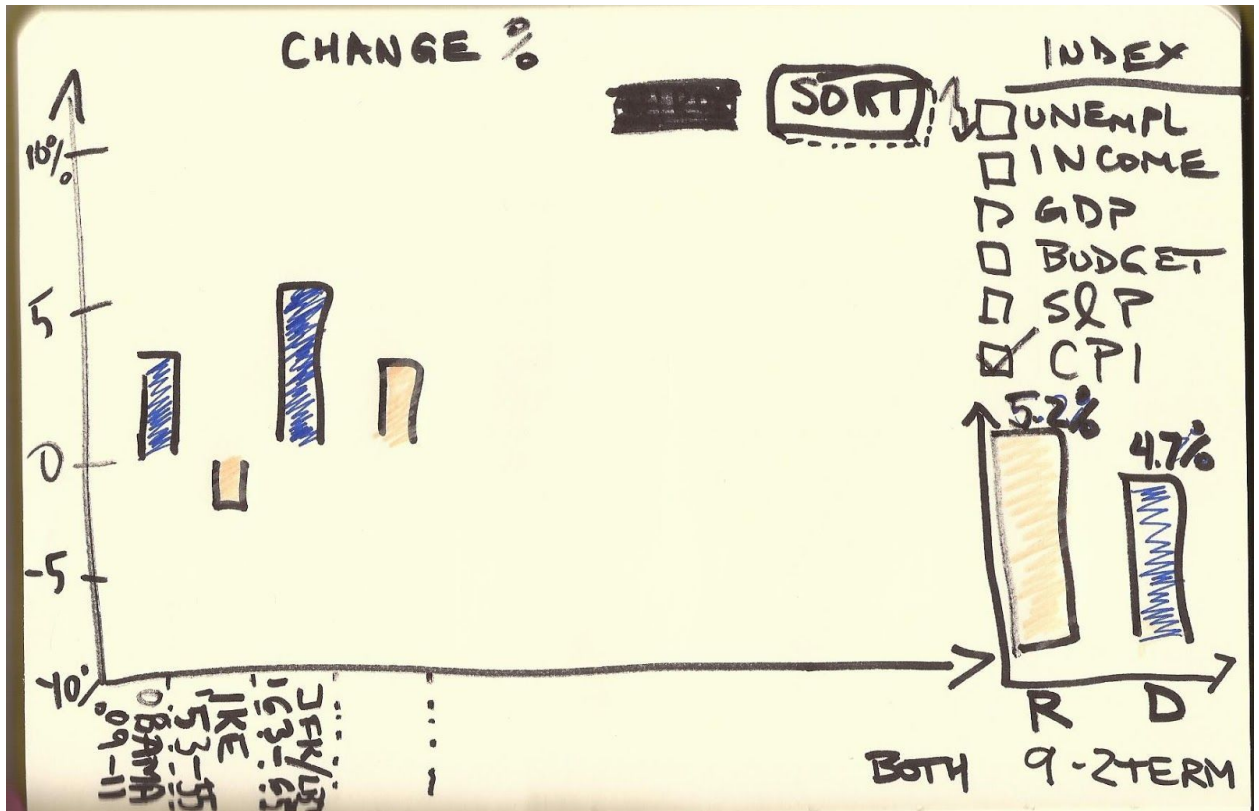
Select - The select features will allow users choose the indicators they want to see in the bar and line charts.

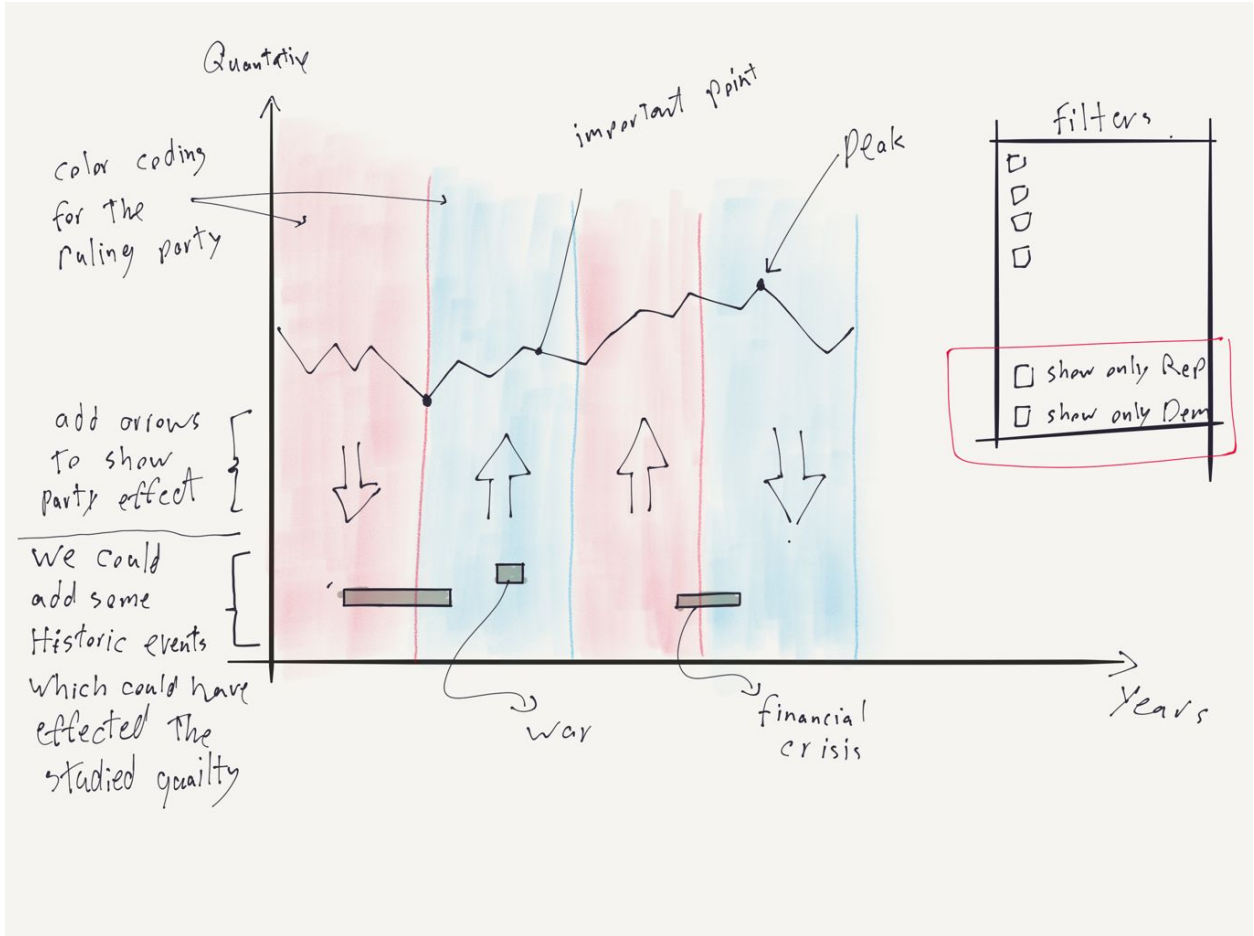
Hovering - Additionally, all line and bar charts we will have tooltips to provide additional information.

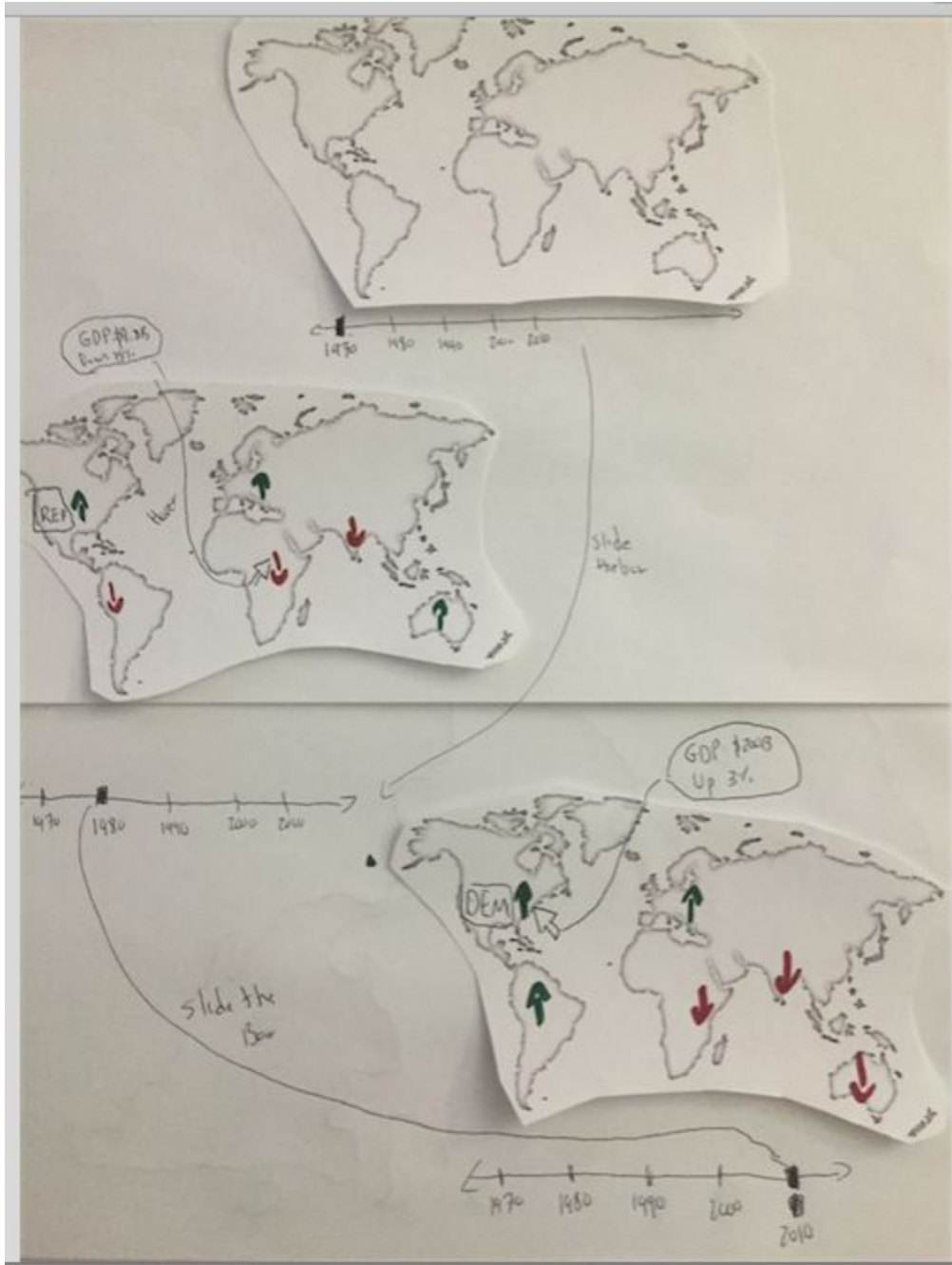
Filtering - The map visualization with global GDPs will have a filtering bar to allow users select different years

Brush + Link - The stack chart with budget percentages (see below) will have a brush+link feature to allow the user select individual line areas or time periods in the graph

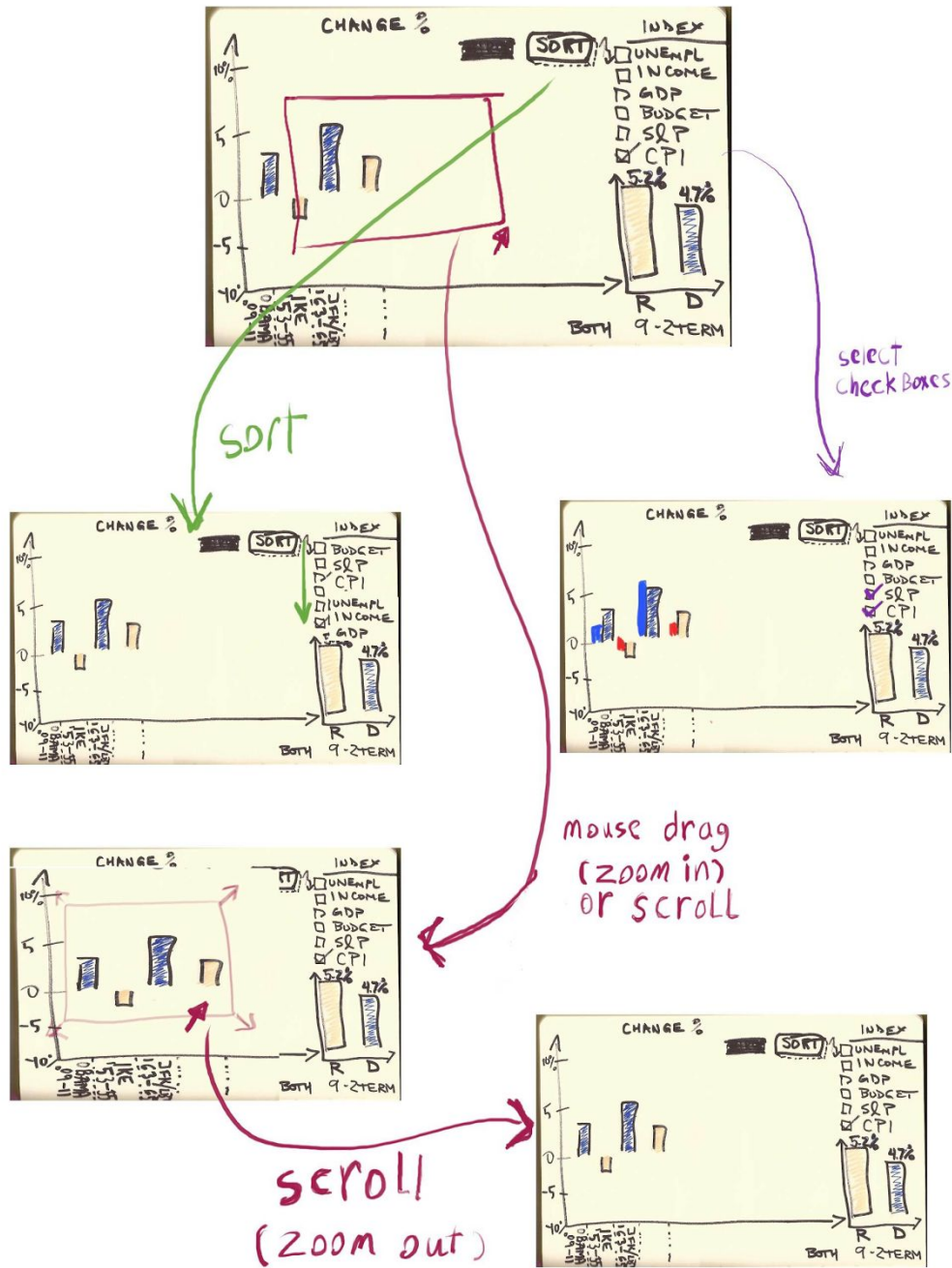
Second iteration of sketches

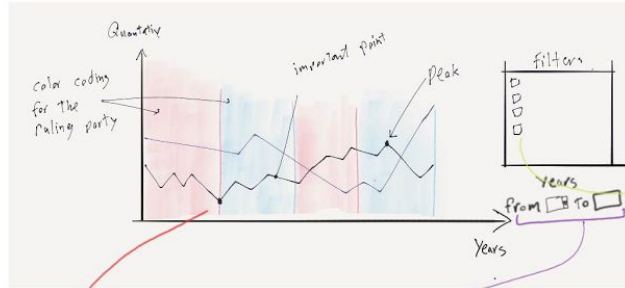






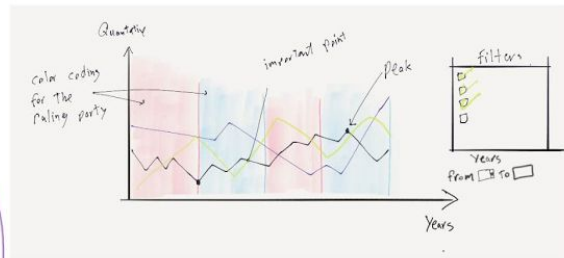
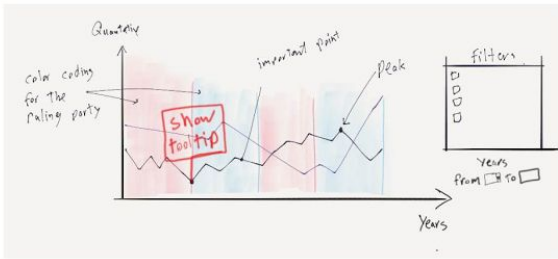
Storyboard



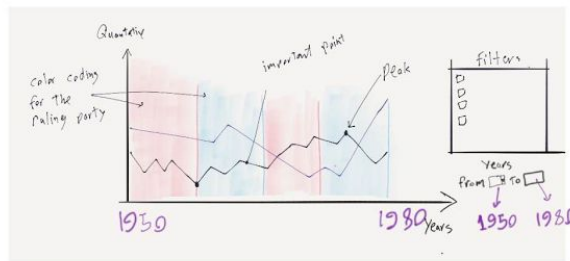


select check boxes

click on point



write on years

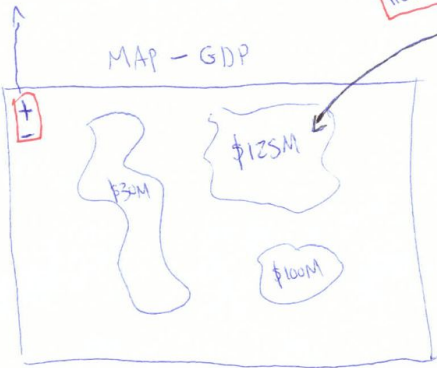


Tentative zoom feature

hover over

Country: USA
GDP: \$125M
... etc

ToolTip



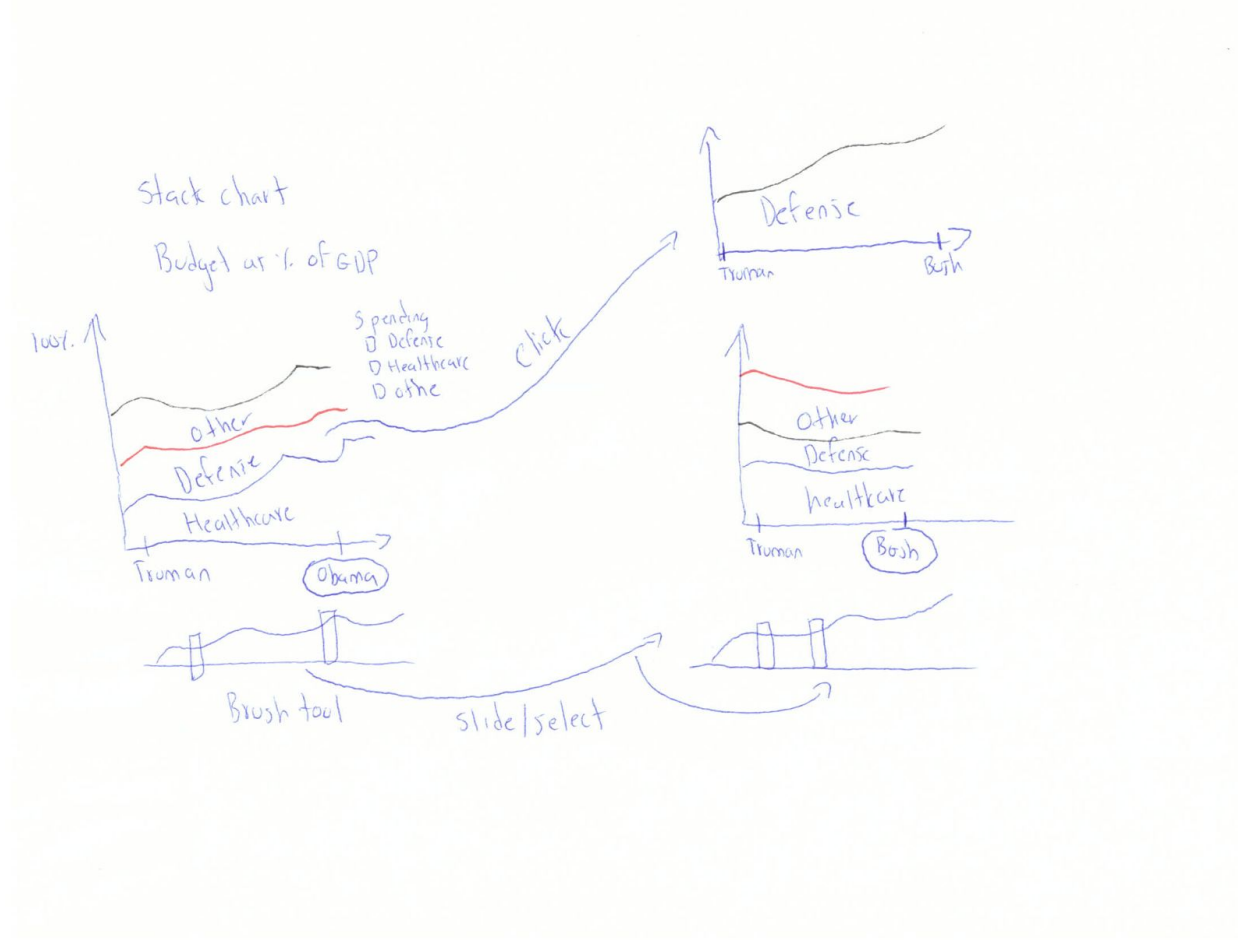
1945 1950 2015



arrow showing change from last period/year

scroll over / move

1945 1970 2015



Timeline

	03/22 - 03/28	03/29 - 04/04	04/05 - 04/11	04/12 - 04/18	04/19 - 04/25	04/26 - 05/02	05/02 - 05/04	05/05 - 05/08
Project Proposal								
Detailed project plan								
Final Project Plan								
Project re-design								

Project Prototype V1								
Project Prototype V2								
Project Review in Studio Session								
TF/peer Feedback								
Final project screencast								
Final Project submission								
Group peer evaluation, and project demos								

Description of data

Major data dimensions from 1949 to 2012:

1. Political Parties in Power
2. Unemployment
3. GDP
4. CPI
5. S&P500
6. Median Income
7. Unemployment
8. Budget Deficit
9. Select Countries GDP

- Upload on git/shared repository () - <https://github.com/vielgi/d3/research data>
- **Data Yearly Range:** Ideally data should be from April 1945 (**Truman** took over) onward, maybe till Feb 2016 (unemployment rate source has it); we would have a parity then
 - **Just a thought:** maybe we focus on full terms only so i.e. from Truman's second term to Obama's first, 1949 to 2012
 - Final thought: if we extend to include two years before (Truman 47-49) and two extra years for Obama (13-15), then we will have equal number of terms (2 years) of Dem and Rep Presidencies
- Presidents' and Congress' **Start and End in office:** We should be consider either Jan or Feb till either Dec or Jan, correspondingly. Leaning towards Feb -- i.e. they had one month in office and any change may be attributed to them.
- We focus on the President's party affiliations instead of the individuals -- see my note about JFK and Nixon
- **Consistent** number format -- We need to calculate to the same decimal point, e.g. talking about percentages should be 0.4%, 0.41% or 0.419%
- CSV format

1. **Parties in Power --**

- Congress -- 2 year terms
- President -- 4 year terms
- Years -- 1949 to 2012 (including)
- We need to be careful about a couple of blips in our data -- JFK's assassination and Nixon's resignation means that they didn't serve full terms; however the president's that took over were still of the same party so maybe we just focus on that vs the individuals.

2. **Unemployment Rate** - excel spreadsheet - 1948 to 2016 (uploaded to git)

Bureau of Labor Statics <http://data.bls.gov/pdq/SurveyOutputServlet>

- Monthly data**
- Unemployment Rate** -- **unemployed** as % from **total labor force**
- Year-on-Year Change** -- we need to come up with a way to calculate this with the most precision.
- Min: 2.5 Max: 10.8 Avg:5.8% -- for the unemployment
- Ideally our data would be like this:

Month-Year	Pre z	Congress	Unempl oyed #	Tota l Lab or Mar ket #	Unem ploym ent Rate	Change %
Jan-2000			5	100	5.00%	
Feb-2000			6	101	5.94%	15.83%

3. **Consumer Price Index** - excel spreadsheet (uploaded to git)

<https://research.stlouisfed.org/fred2/series/CPIAUCSL#>

- Monthly data -- must convert to annual
- Ideally our data would be

Month-Year	CPI	% Change
Jan-2000	169.300	
Feb-2000	170.000	0.41%

4. **GDP, etc - 1930 to 2015 -**

<https://www.whitehouse.gov/sites/default/files/omb/budget/fy2017/assets/hist01z2.xls>

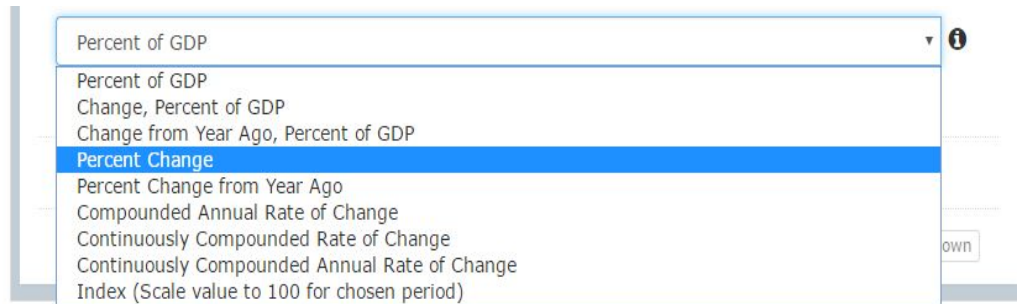
- Yearly data of GDP (in billions of dollars)
- We can calculate **change of gdp %**
- Yearly**
- Ideally our data would be

Year	GDP Nominal	GDP Change in %
2000		6.71%
2001		4.10%

5. **Budget**

- From <https://research.stlouisfed.org/fred2>
- Federal Reserve Bank of St. Louis and US. Office of Management and Budget, Federal Surplus or Deficit [-] as Percent of Gross Domestic Product [FYFSGDA188S], retrieved from FRED, Federal Reserve Bank of St. Louis <https://research.stlouisfed.org/fred2/series/FYFSGDA188S>, April 2, 2016.
- Yearly

○ Additional Data



○ Data

Year	Budget as Percentage of GDP	Budget as Percentage of GDP
2000		6.71%
2001		4.10%

6. **World's GDP Per Capita** in percentage - 1960 to 2015 - excel spreadsheet

(uploaded to git) <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>

○ There's no good data set so far -- I'm even re-considering it

○ I found the following data that has GDP Per Capita for

Italy United Kingdom United States Japan China India Chile

South Africa South Korea Australia Sweden World

Average

But only till 2008, from 1944

○ Data

Year	GDP Nominal	GDP Growth
2000		6.71%
2001		4.10%

7. Median Income -- **Race and Hispanic Origin of People (Both Sexes Combined) by Median and Mean Income** [XLS - 58k] -- this is what we need, and we can calculate growth/decline as percentages,
- starts from 1947 to 2014
 - Yearly!!
 - In 2014 dollars
 - Ideally our data would be

Month-Year	# Population with Income	Median Income	% Change
2000		\$29,578	
2001		\$29,330	0.41%

8. **S&P 500** -- from okfn.org ; <http://data.okfn.org/data/core/s-and-p-500> → <https://raw.githubusercontent.com/datasets/s-and-p-500/master/data/data.csv>
- <http://data.okfn.org/data/core/s-and-p-500/r/data.json>
 - Monthly -- must convert to annual
 - Our data is:

Month-Year	Nominal	Change % from Year before
2000		
2001		

Ideas for the site

- <http://tympanus.net/Tutorials/FullscreenBookBlock/>
- <http://tympanus.net/Tutorials/ExpandingOverlayEffect/>

- <http://designdrizzle.com/15-amazing-page-transitions-effects-tutorials-in-jquery-and-css3/> -- 20 links
- <http://ninodezign.com/20-jquery-plugin-for-page-transition-effects-with-css3/> -- 20
- <http://git.blivesta.com/animations/zoom/>
- <https://codyhouse.co/demo/animated-page-transition/index.html>
- <http://tympanus.net/Development/PageTransitions/>
- <http://tympanus.net/Tutorials/ExpandingOverlayEffect/>
- <http://tympanus.net/Development/FullscreenLayoutPageTransitions/>
- <http://tympanus.net/Tutorials/VerticalShowcaseSlider/>

Site Structure proposal

1. Problem -- introduce, splash on page, the questions arising from the indiscriminate statements that the parties make ("grow the economy", etc.), 5 (+story)
2. The line graph is then slowly rolled out -- implicit instructions (+story)
3. "Which Term has been the Best for the [econ/unemployment/etc.] (+story)
4. "Final Thoughts" Disclaimer --
 1. world-map Compare GDP with other countries world map
 2. Stacked line
 - 2.1. Stacked line chart with Brush tool -- tool budget breakdown -- as % of GDP
 - 2.2. Stacked line chart with Brush tool -- tool budget breakdown -- as % of GDP Change in %
5. *Methodology -- should also be accessible but only on demand; i like the show/hide effect -- let the user be in command of what they're shown...

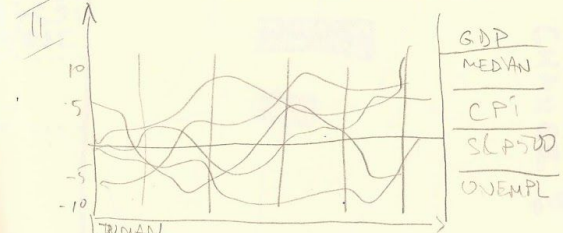
POL. PARTIES' TRACK RECORD

I SPLASH

- GROW THE ECONOMY
- ① JOBS CREATE, SOLVE UNEMPLOYMENT
- BALANCE THE BUDGET
- ② BOTH US PARTIES MAKE THESE CLAIMS
- ③ WHAT IS THEIR PAST PERFORMANCE?
- FACTS OR FICTION
- ④ HIDE TO THE TOP ↑ Q: FACT VS FICTION

* MANY FACTORS... WE ARE JUST EXAMINING CORRELATION
B/W POWER + ECONOMY AND IN NO WAY SUGGESTING
CAUSALITY

I US PARTIES TRACK RECORD HEADER
ALL THE PRES, ALL THE DATA



ABOUT THE MEDIAN
R HOUSE
BEST PRESIDENT FOR THE
ECONOMY (UNEMPLOYMENT)

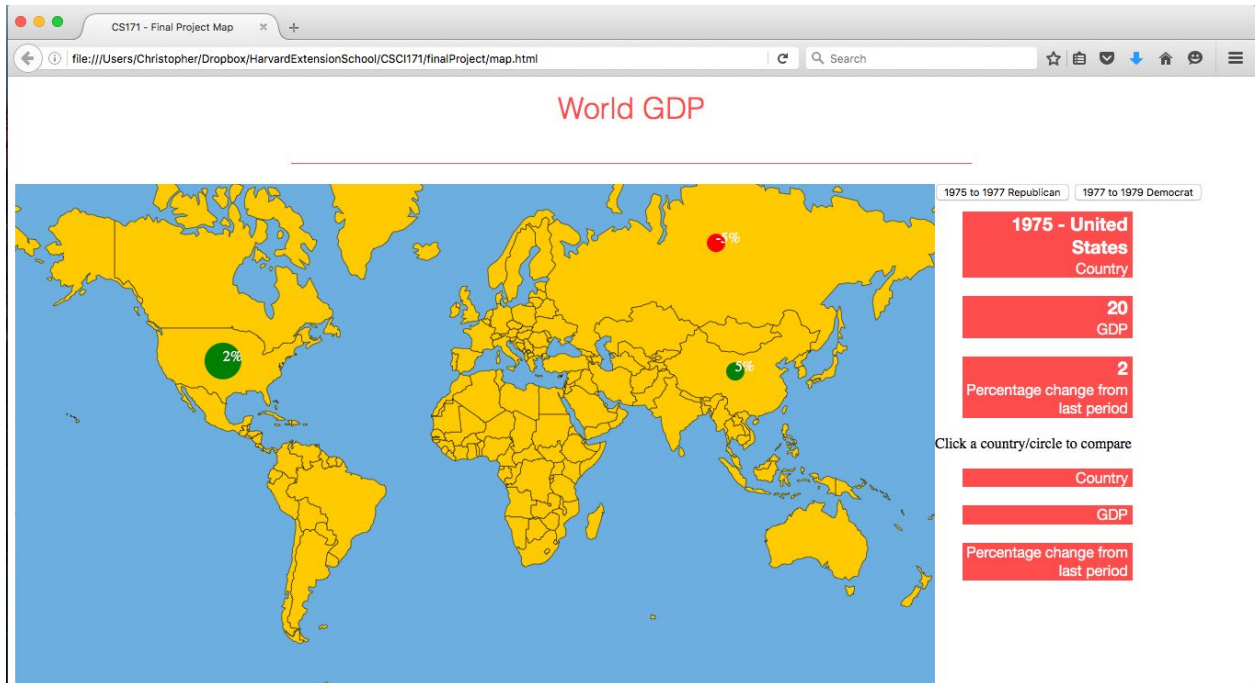
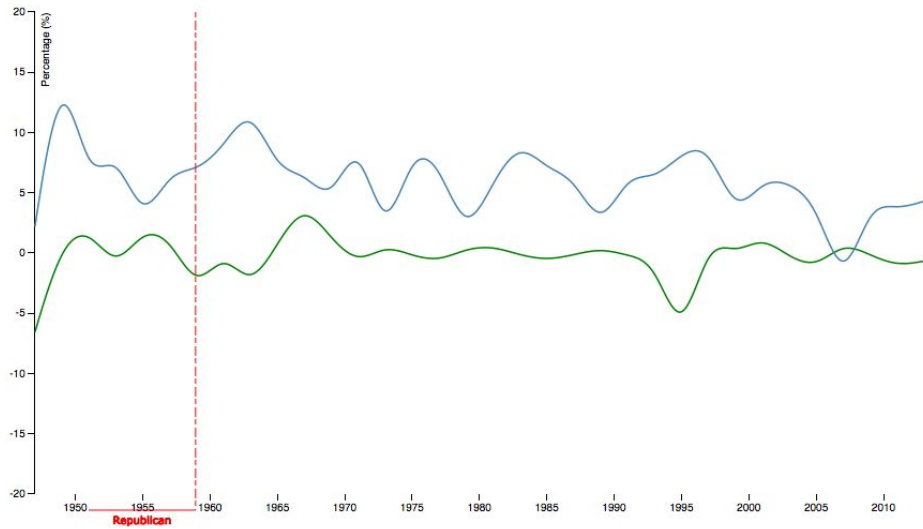


DECLINING
(DISEN
(R)HOUSE
(ALL TERMS)

SEE ALL
* Page Transition
WHAT'S NEXT =>

Prototype V1

BUDGET



- Real data

- Circle size domain
- Indicators changes

1. Bars viz

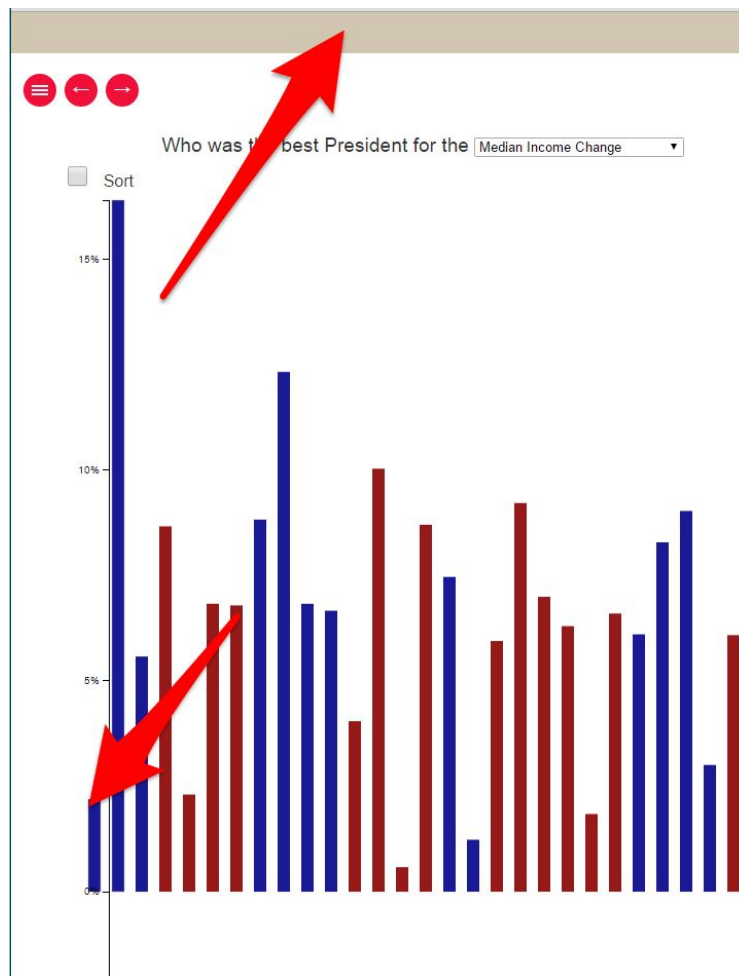
1.1. Implement some labels for each bar with Icons --- can somebody implement?

1.1.1. Heads of all presidents -- png; Ghaith

1.1.2. Some icon/pngs for US House/US Senate/color_coded for Republicans and Democrats -- Ghaith

1.2. Extra drop-down for president/house/senate -- vg will try

1.3. Bug when integrated all the external css and js



1.4. review

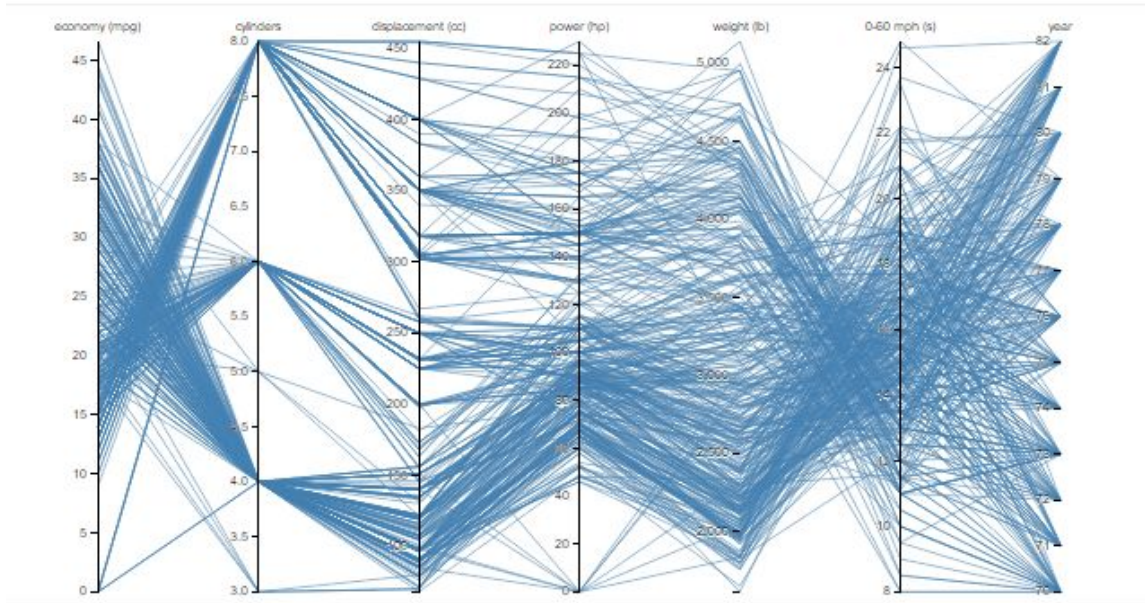
2. HTML page -- some incompatibilities/conflicts when the js scripts (for the page turn jquery effect) are activated -- bug: can't show tooltips of the bars chart -- can somebody investigate?
 - 2.1. review
3. Html page -- content walktru; VG
 - 3.1. review
4. Submission of Monday's submission and to vielgi.github.io; VG

Next Week:

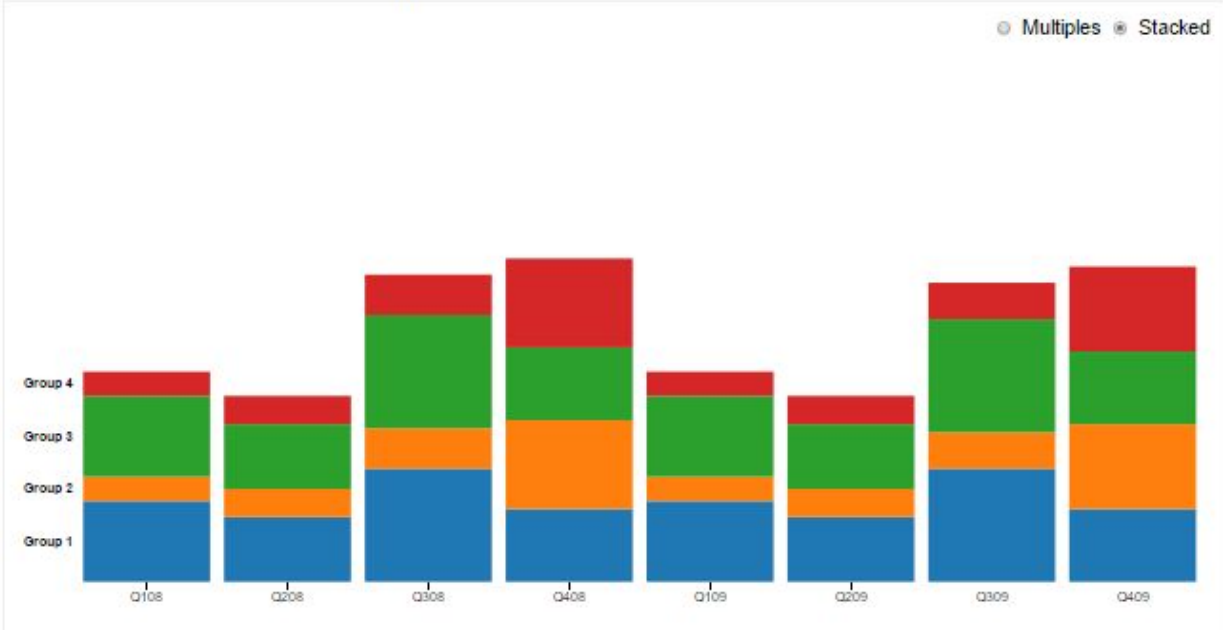
5. responsive?
6. OOP code
7. Coordinated view
8. Complex viz -- maybe scatterplot?

Search for an Innovative Viz

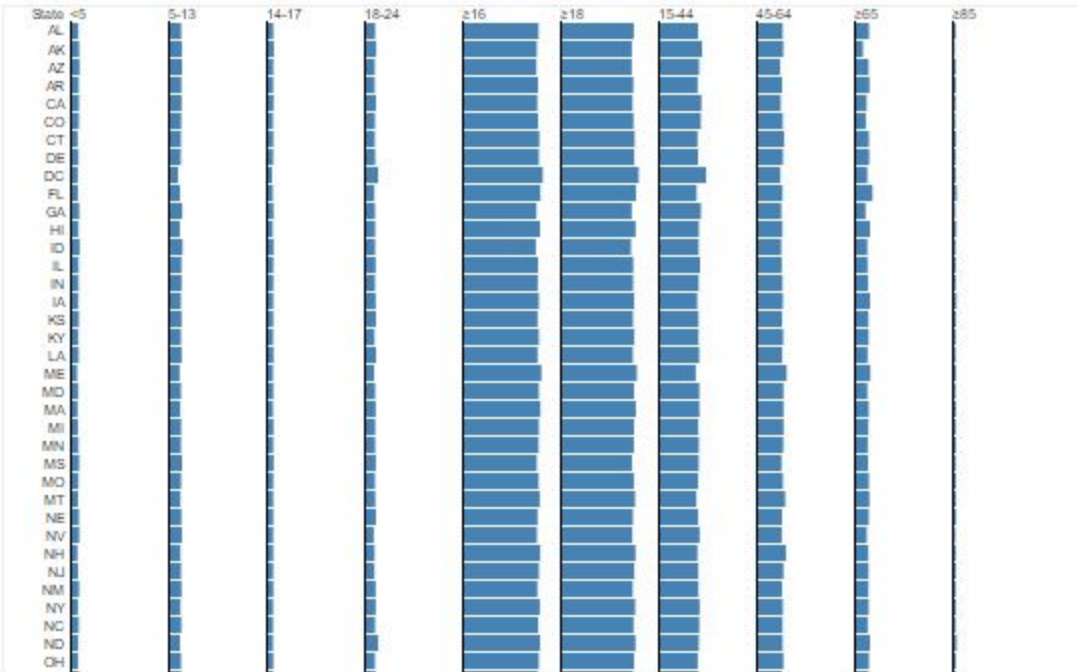
Parallel Coordinates



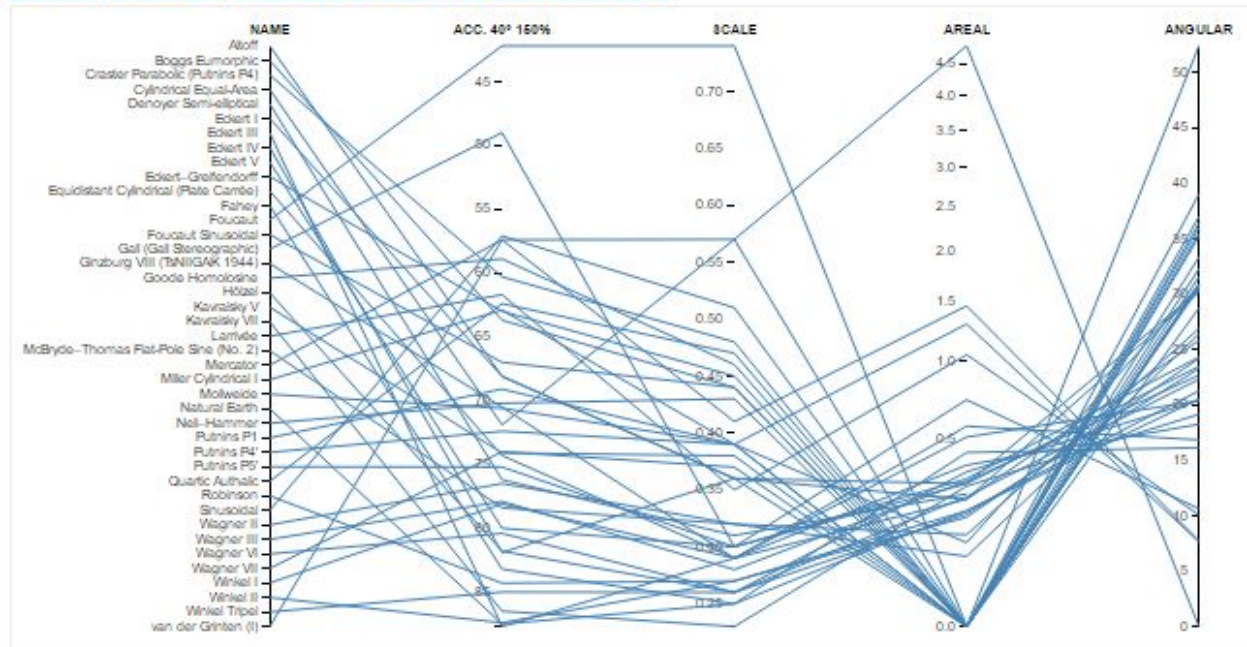
Stacked-to-Multiples



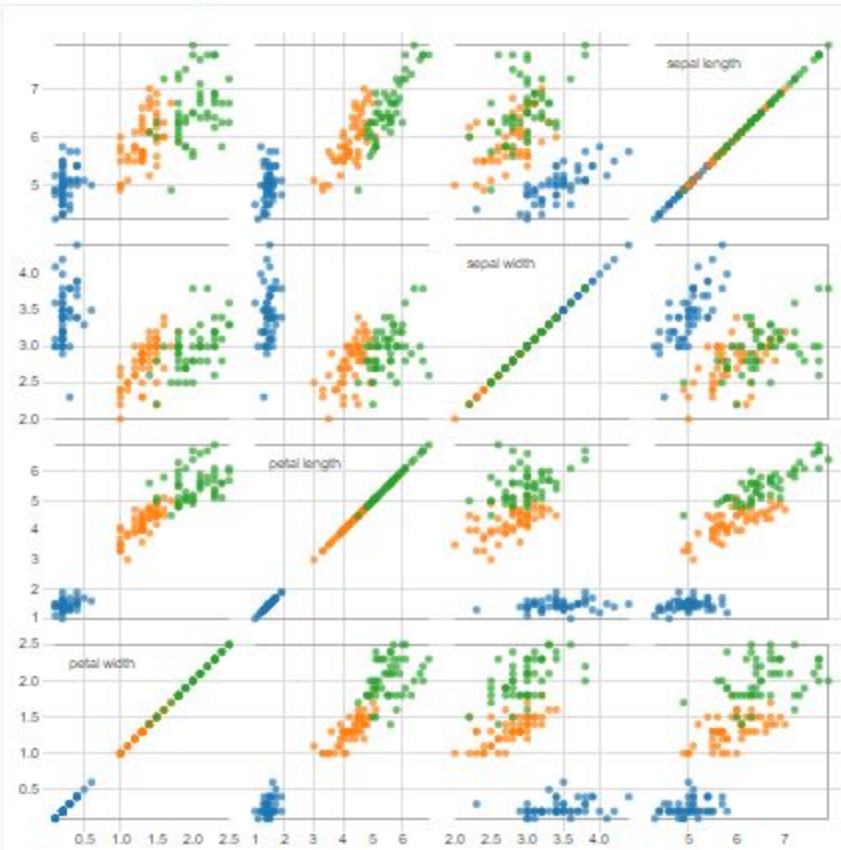
Sortable Table with Bars



Map Projection Distortions

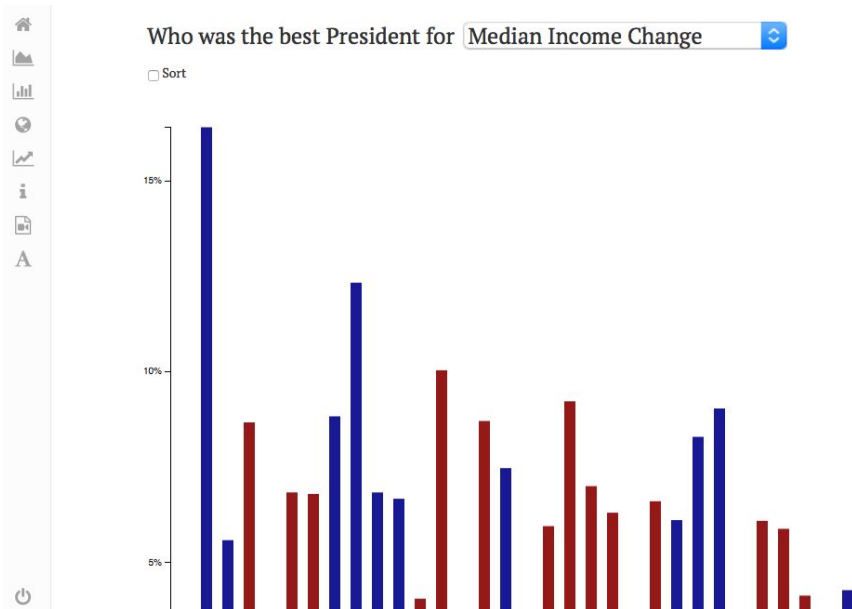
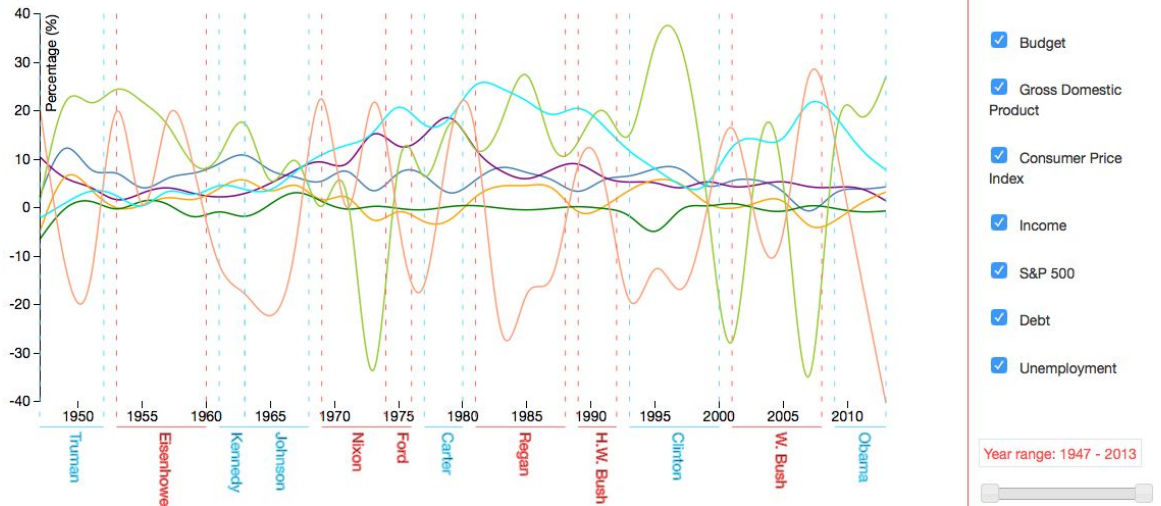


Scatterplot Matrix



Prototype V2 and final site

Comparing presidential periods



World GDP per Capita



1951

1951 - United States
Country

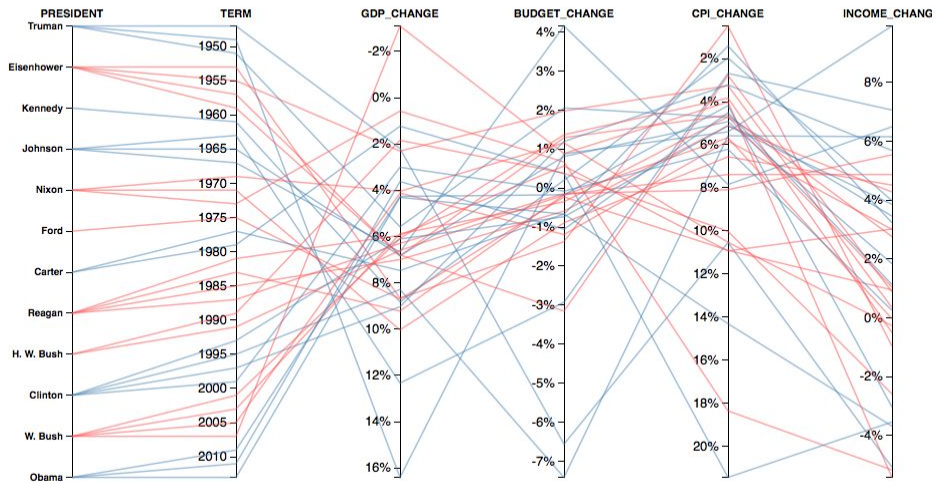
\$10,116
GDP per Capita

5.80%
Increase from 1949

Click a Circle
Country

\$0
GDP per Capita

Presidents and Their Numbers Per Term



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