

## Drafts

During the design studio my first idea was to work with multiple brushes to allow the user to select multiple time ranges to compare. Therefore I based most of my draft visualizations on this idea.

### Visualization A

Allows the user to select two areas using two brushes to compare.

The countvis will then for each question show two bars next to each with the number of votes for each question during the selected time spans. On top of these sets of bars, labels show the growth rate from one timespan to another.

For each set of bars a line will show the average number of votes for each question during the complete timespan that is available in the dataset.

### Visualization E

Also features two brushes for selecting, but ranks the questions in a table. The table shows the ranking based on the timespan selected by brush 2. It shows the difference in votes from brush 1 to brush 2 as a field in the table. It also shows how the ranking of the questions changed from the brush 1 to brush 2 selections in parenthesis after the ranking indicator (for example +1 rank). Furthermore it shows the average number of votes for each question during the complete timespan that is available in the dataset as a table field.

### Visualization D

Only employs one brush for selection and shows for each question using line charts, the trend of how the number of votes for the individual question development during the selected time frame.

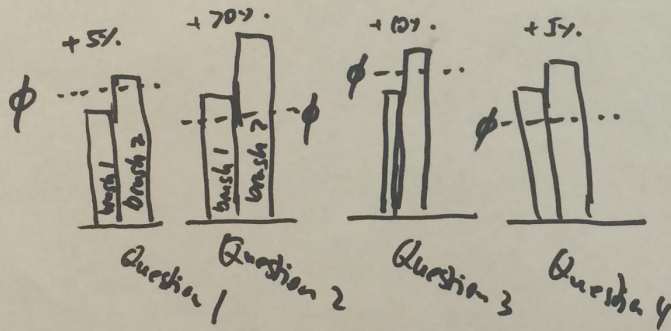
### Visualization B & C

Are based on feedback from a TF during the design studio and show alternatives of comparing data from two different times to showing two barcharts next to each other.

One option is to show two charts, with the second chart mirrored on the x axis.

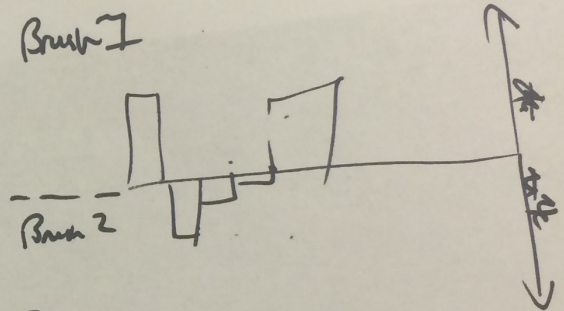
Another option is to only show one bar for each question that only shows the difference between the number of votes for a question between the two selected timeframes. So if the difference is negative, the bar will extend below the x axis.

B+C → how to represent averages?

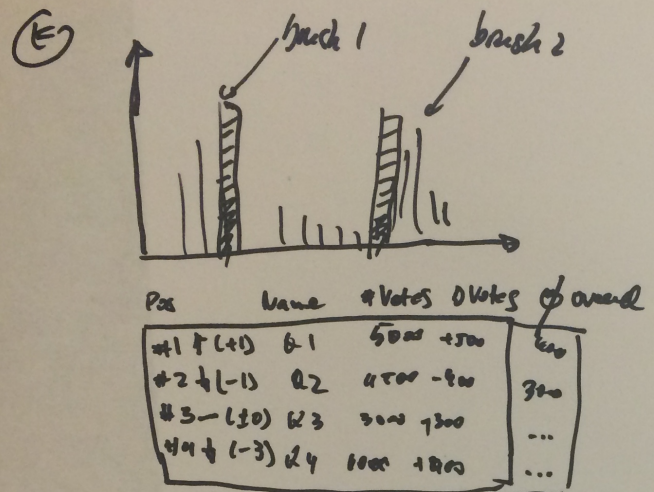
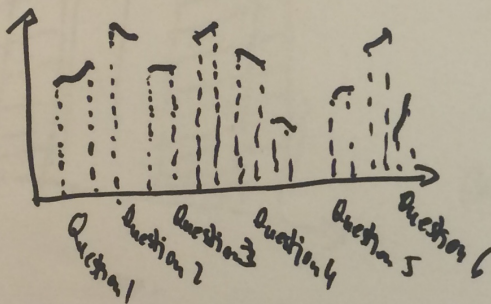
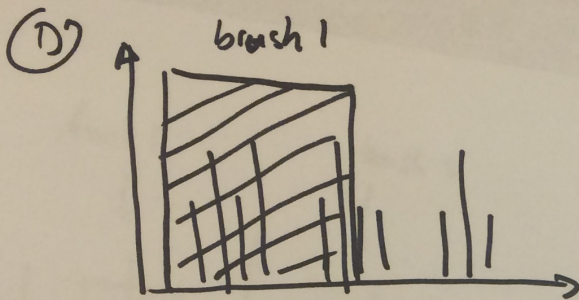
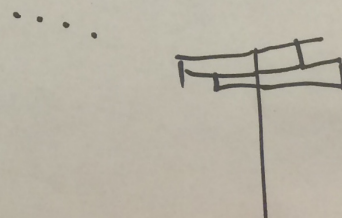


$\phi$  = average for this question over whole dataset

(B) Show differences



(C) Rotated 2 Bar charts



## Implementation

I decided to implement visualization A with one average line that shows the average number of votes across all questions during the selected timespan.

I prefer this visualization over visualization D, since it allows more flexibility in the selection of the time spans given that it uses two brushes.

I prefer it over visualization B, which only plots the absolute differences of the number of votes between two time spans, because visualization b does not allow the user to see the distribution of votes across different questions.

I would have chosen visualization C if I wanted to make it easy for the user to tell how the distribution of votes for different questions have changed over time.

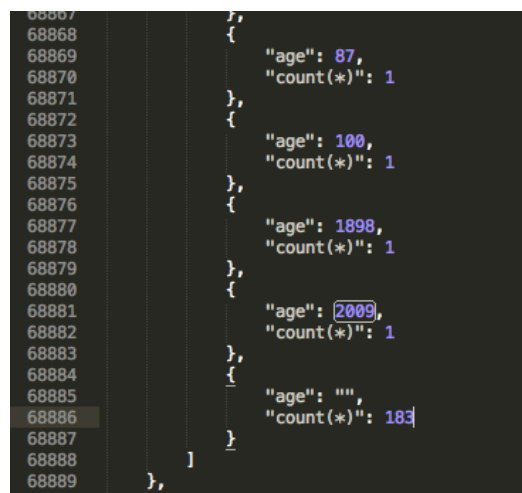
However, I think that the visual proximity makes it easier to see how the number of votes for a specific question has changed over time, if they are represented using adjacent bars as in visualization A.

During the implementation I came across a few issues.

For example the age data in the perDayData.json sometimes contain very high ages like 149, 150 and sometimes uses the birth year instead of the age. (See screenshot below)

I handled this by adjusting the Y axis of the agevis chart to show ages up to 120 if there are ages between 100 and 120 for the selected timespan available. If the highest age in the selected timespan is below 100, the Y axis will range from 0 to 100.

I ignore all ages with values over 120. (So I also ignore ages like “2009”, etc.). I chose 120 as cutoff because according to Wikipedia this is roughly the age of the oldest person alive.



```
68867  },
68868  {
68869    "age": 87,
68870    "count(*)": 1
68871  },
68872  {
68873    "age": 100,
68874    "count(*)": 1
68875  },
68876  {
68877    "age": 1898,
68878    "count(*)": 1
68879  },
68880  {
68881    "age": 2009,
68882    "count(*)": 1
68883  },
68884  {
68885    "age": "",
68886    "count(*)": 183
68887  }
68888  },
68889  }
```

I used [this](#) plugin for the multibrush implementation, however I had to manually patch a bug, that prevented the brush areas from being displayed and patched the plugin so that it is only possible to selected a maximum of 2 brushes at the same time.

I decided to show the distribution of ages across both timespans if 2 brushes are used.

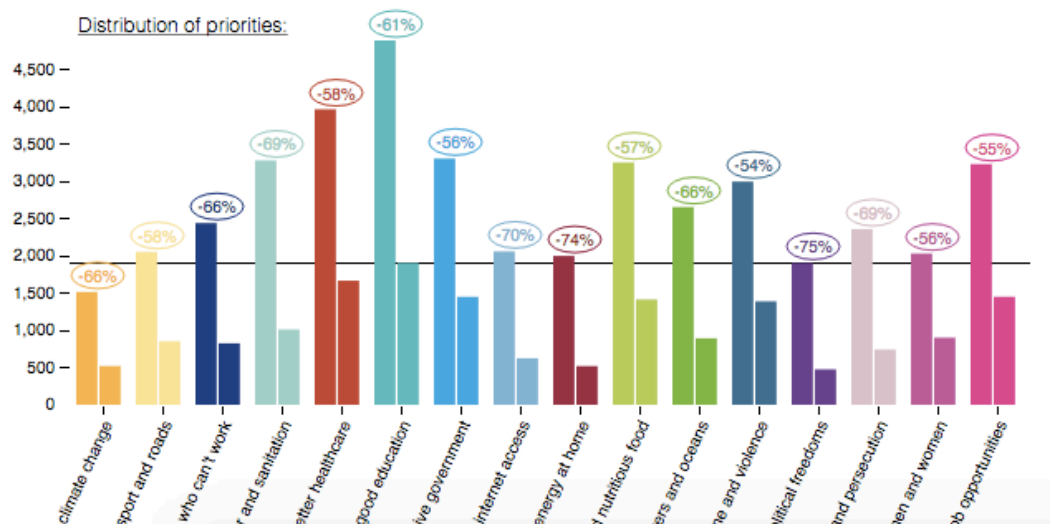
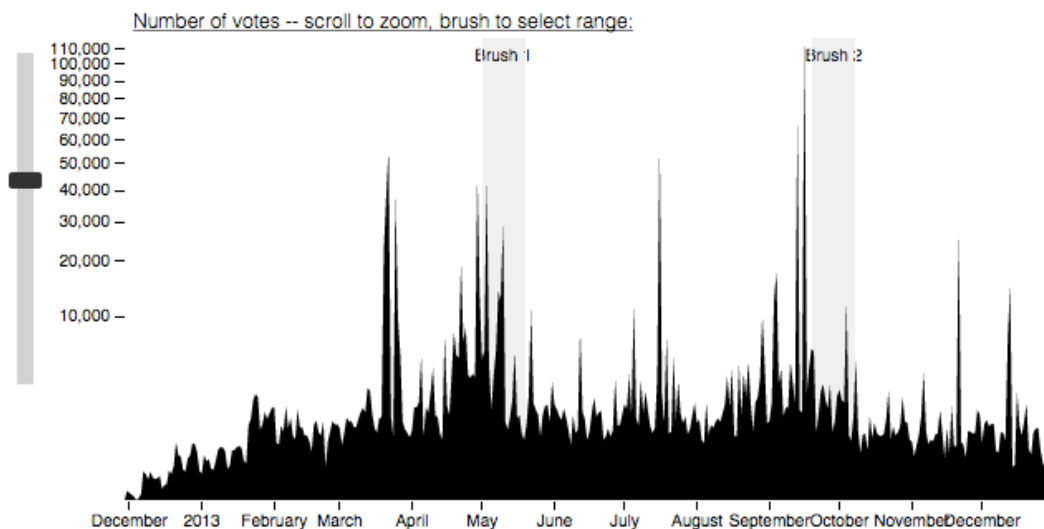
After finishing the visualization I realized that comparing the number of votes per question from different time spans is difficult if the number of votes are shown in absolute terms. The reason is that for example if I select two time spans as in the screenshot below and if I want to

know if the attention towards a specific question has increased over time, the absolute numbers will be distorted by the general trend in the number of votes for all questions in the dataset.

Therefore I decided to show the number of votes per question as a relative distribution instead.

I also added labels to the brushes, after I noticed that without labels it can be difficult to track which brush refers to which bars in the priority visualization.

current brush(es): 2013-04-30 -> 2013-05-19 & 2013-09-18 -> 2013-10-08



## Pattern

Since towards the end of the data collection period, more people have voted through a social network campaign, the age distribution has shifted more towards younger voters.

Interestingly this can also be seen in the distribution of priorities: (see screenshot below)

- The priority with the highest growth rate tends to be phone and internet access
- Climate changes loses in terms of importance

Both these trends are in line with the shift in demographics.

