Swiss Parliament Voting Visualization

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Objectives

Provide simple interactive visualizations on the vote that take place at the Swiss National Council. Specifically, we worked on two main problems:

- Accessing and visualizing how a deputy votes, compared to its party as well as the rest of the Council.
- Retrieving and displaying all information regarding a law that has been voted, including all the possible modifications it went through.

Overview of the project

Motto of the project:

- Make all the available data from the National Council accessible quickly, in order to provide useful information to people with a greater expertise in the field of political science.
- Use as many raw data as possible: those are not influenced by our assumptions.

Issues with the current available visualizations from Parlament.ch

- No simple way to follow the modifications of a given law as it goes through the National Council
- Impossible to quickly see how a single deputy voted on different subjects.
- The available visualizations focus on displaying the outcome of a vote.

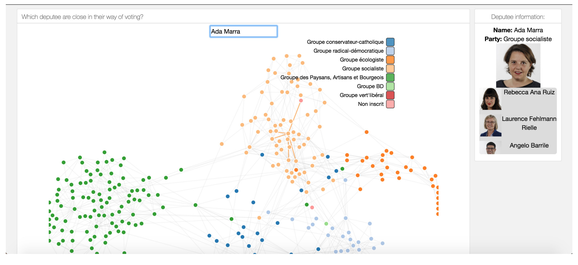

Figure 1: Voting profile of each deputy: each node corresponds to some deputy, and is positioned depending on how he voted. The edges correspond to the deputies with most similar voting pattern.

Data Description and Swiss National Council

The Swiss National Council has 200 seats, divided between each canton proportionally to their population. The data we used *record the votes from each deputy on the objects (bills/laws) discussed during every sessions* (which take place 4 times a year, during 3 weeks each).

	Name	ParlGroupName	BillTitle	Subject	Decision	VoteEnd
0	Adèle Thorens Goumaz	Groupe écologiste	Loi fédérale concernant la redevance pour l'ut...	Art. 6, Abs. 1, Bst. a	No	2013-03-04
1	Ada Marra	Groupe socialiste	Loi fédérale concernant la redevance pour l'ut...	Art. 6, Abs. 1, Bst. a	No	2013-03-04
2	Tiana Angelina Moser	Groupe vert'libéral	Loi fédérale concernant la redevance pour l'ut...	Art. 6, Abs. 1, Bst. a	No	2013-03-04
3	Natalie Rickli	Groupe des Paysans, Artisans et Bourgeois	Loi fédérale concernant la redevance pour l'ut...	Art. 6, Abs. 1, Bst. a	Yes	2013-03-04
4	Barbara Schmid-Federer	Groupe conservateur-catholique	Loi fédérale concernant la redevance pour l'ut...	Art. 6, Abs. 1, Bst. a	Abstention	2013-03-04

Figure 2: Sample from the available data

Clustering by Deputy

Aims of the visualization 1

- Overview of each deputy's voting position compared to both its party and the rest of the Council.
- Qualitatively assess something which is difficult to measure: the voting similarity between two persons.

To obtain the resulting network, a few steps have to be taken:

1. Embed each votes of the deputies as a vector, containing entries only for the votes he actually made.
2. Compute the distance between two persons depending on whether they voted similarly or not about the subjects they both voted on.
3. Compute the distance matrix containing all the pairwise distances between each deputies.
4. Generate the network based on the pairwise distances, by considering, for each deputy, the 3 closest nodes.

Overall result: Tends to cluster the deputies by parties, with a few exceptions.

Focus on a single Deputy

This page details of the votes of a deputy throughout his time at the national council, and the visualizations are shown on the right.

Aims of the visualizations 4 and 5

1. *Histogram:*
   - Observe the presence of the deputy at the votes easily.
   - See how the number of objects voted changes from session to session.
2. *Table:*
   - Observe how the deputy votes against his party and the rest of the chamber quickly.
   - Access easily an extensive record of votes of the deputy.

Clustering by Bill/Law

The visualization 3 presents the different laws clustered by their topic, which was retrieved using Natural Language Processing tools. It enables us to *observe the topics which are the most often discussed* at the parliament.
Note that this clustering is not perfectly reliable and some subjects might actually belong to different clusters. This is because we applied a hard clustering for making the visualization more accessible.

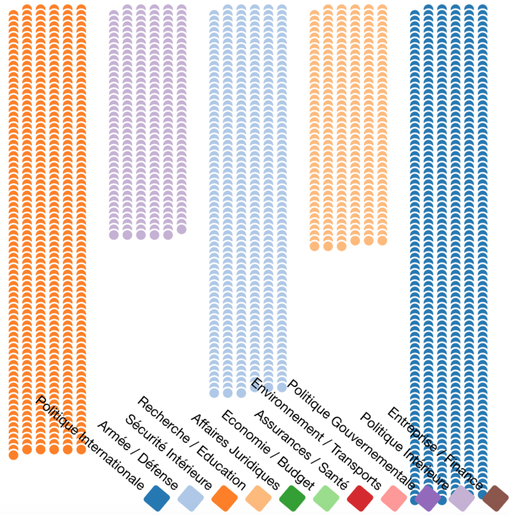

Figure 3: Clustering of the available items by topic.

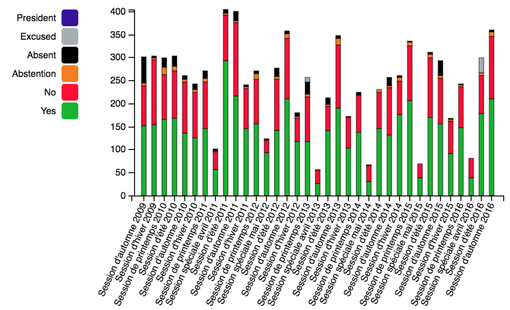

Figure 4: Histogram of the votes of a deputy aggregated at the level of each session

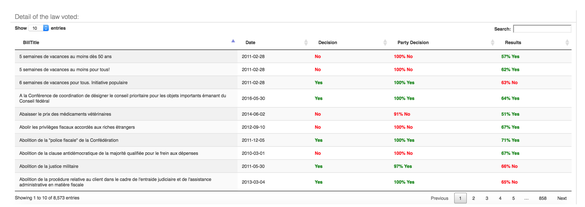

Figure 5: Interactive table recording all the votes of a deputy.

Focus on a single Bill/Law

This page records how a single object was voted at all its stages at the Parliament. It allows to quickly look at the tendencies in the result and is shown below.

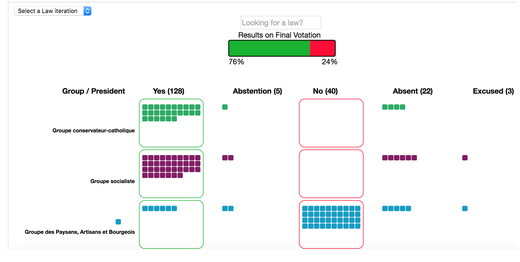

Figure 6: Votes from the different parliamentary groups ($\neq$ parties) on a given object.

Aim of the visualization 6

- Go through and visualize quickly the different stages that an object undergoes when it comes into the National Council.
- Quickly see how a parliamentary group votes on a given law.