Vote Prediction and Representation Quality

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Context

The ideal of representative democracy relies on legislative bargaining and the quality of political representation.
In other words, legislative bargaining helps Members of Parliament (MPs) to reach appropriate and consensual decisions on policies (Vote prediction).
And, MPs decisions should meet citizens' preferences (Quality representation).
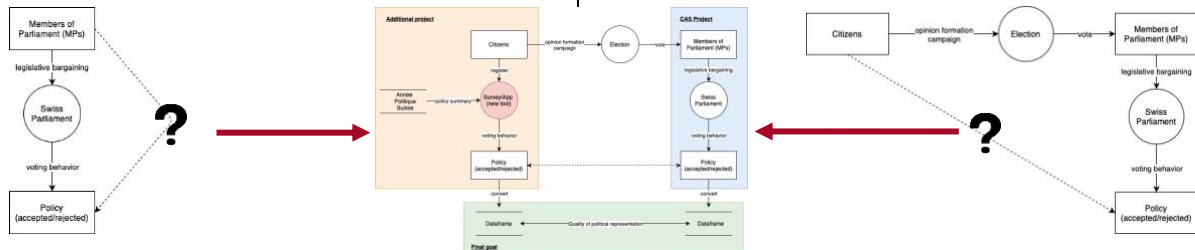
① Vote prediction

Is it possible to predict vote in the Swiss Parliament using machine learning?
→ Use machine learning to predict vote in the Swiss Parliament

② Representation quality

Is there a congruence between citizens' preferences and MPs decisions?
→ Measure the quality of political representation in the Swiss Parliament

Conceptual Design of the project

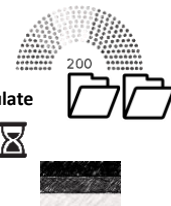## Dataset

Open Data Parliamentary Web Services

→ National council
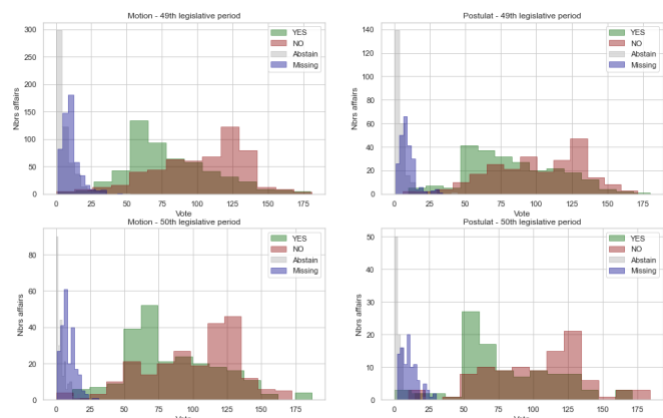→ Motion and Postulate
→ 2011 – 2018
→ German-speaking

Machine learning

sklearn
linear model

	MSE
train	25.7
test	27.1

Yes vote prediction

	MSE
train	25.4
test	27.8

No vote prediction

Descriptive statistics

Boxplot - Dependent variables

	Mean	Median	Standard deviation	Min	Max
Yes	81.40	74.00	32.12	0.00	187.00
No	100.89	107.00	33.00	0.00	184.00
Abstain	4.60	3.00	5.44	0.00	52.00
Missing	9.75	9.00	5.89	1.00	47.00

	Kurtosis	Skewness
Yes	0.07	0.54
No	-0.08	-0.53
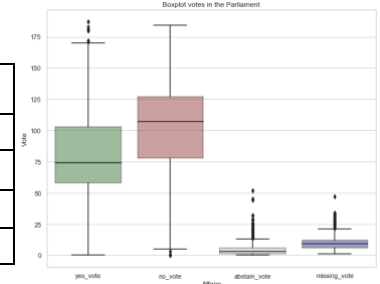
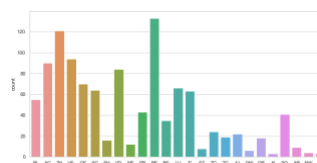### Histograms - Dependent variables
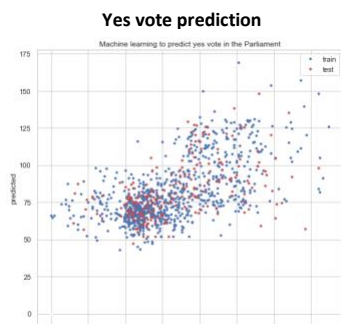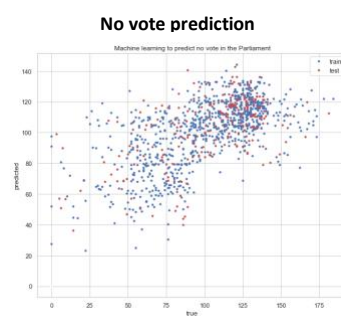
Conclusions

- Yes and No vote follow a normal distribution (slightly skewed)
- Swiss politics is mostly conservative (mean no vote > mean yes vote)
- MSE of my machine learning model is high (~25)
  → Enlarge my dataset with additional observations and additional variables (Federal council's opinion, Topics, Affair summary)
- Final goal is to predict Accepted/Rejected outcome
  → Given that in most cases the spread between yes and no vote is large (no close vote), then my model predict the right decision in 82.0% of times (RMSE=5, 905 vote with larger spread than 20 out of 1103)

Fun facts

Yes vote by author's sex
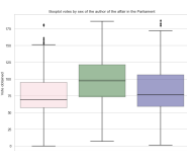
Affairs by canton

Missing votes by hours