Brainstorm for poli-sci proj

Interests Points (“vote_Nonvote_Pres” & “Pre_election_inten_vote”)

- **Analyzing Non-voters vs Voters**:
  - Understand why 23.2% of survey respondents chose not to vote.
  - Investigate significant differences between the two groups

- **Predicting Election Outcomes with Universal Voting (include current Non-voters)**

- **Intent vs. Actual Voting Behavior Analysis**

1. Analyzing Non-voters vs Voters:

- **Supervised Learning**

  Build Classification Models, which have clear mechanism on **feature selection**

  Single Feature：(Bayesian) Logistic Regression + Sparsity constrain,

  Decision Trees / Random Forests，GBDT

  Feature Interactions: (Deep) Factor machine

- **Unsupervised Learning**

  (illustrate the **latent factor/structure of crucial features**)

  Clustering, Tensor Decomposition

2. Predicting Election Outcomes with Universal Voting (include current Non-voters)

a. Build a multi-class Classfication Models on current voters group

b. **Transfer** the model to uno-voters groups
- Use some crucial features learnt from the Problem 1
- Transfer Learning/ Domain Adoptation

3. Intent vs. Actual Voting Behavior Analysis

- **Supervised Learning**

  Build Classification Models, which have clear mechanism on **feature selection**

  Single Feature: (Bayesian) Logistic Regression + Sparsity constrain,

  Decision Trees / Random Forests, GBDT

  Feature Interactions: (Deep) Factor machine

- **Unsupervised Learning** (illustrate the **latent structure of crucial features**)

  Clustering, Tensor Decomposition

Do it again, but check learnt factors/features in different groups-

- **intent + non-vote**
- **intent + vote**
- **non-intent + vote**
- **non-intent + non-vote**

Bonus Points

- **Causal Inference Models**

- **Time-aware Analysis**

  (data across multiple election cycles, feature/factor/pattern could change over time)

- **Region-aware/Geo-encoding**