7 Dwarves: Logistic Regression Model to Predict Voter Choice for 2020 Election

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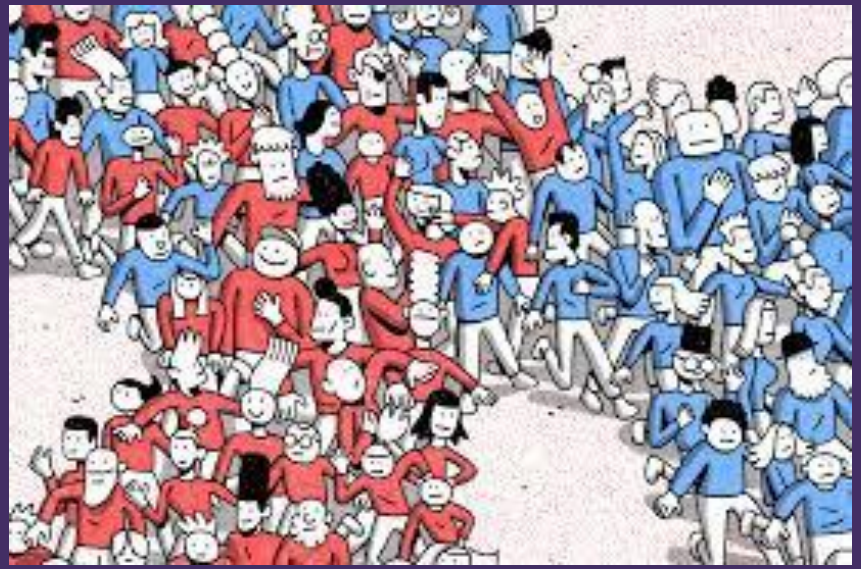
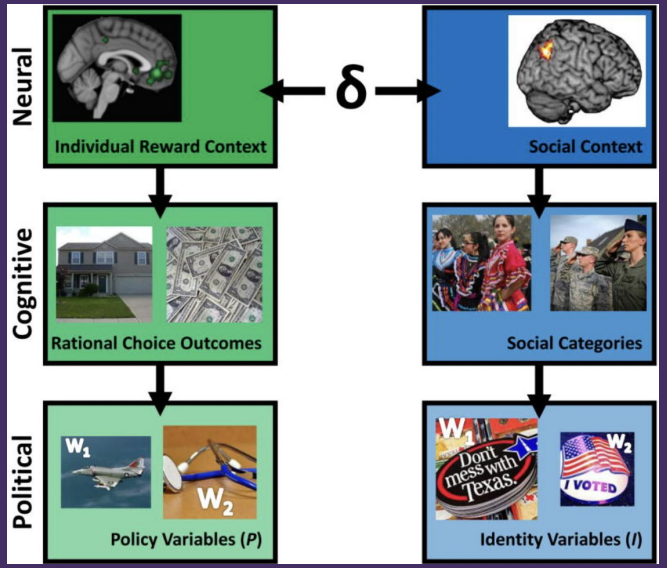
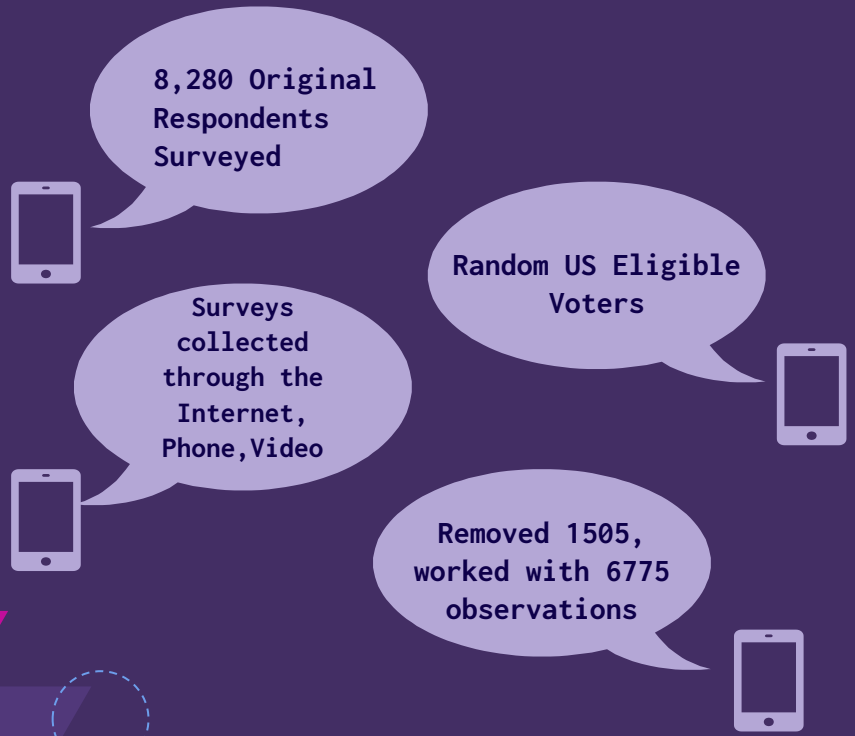
Topic and Motivation



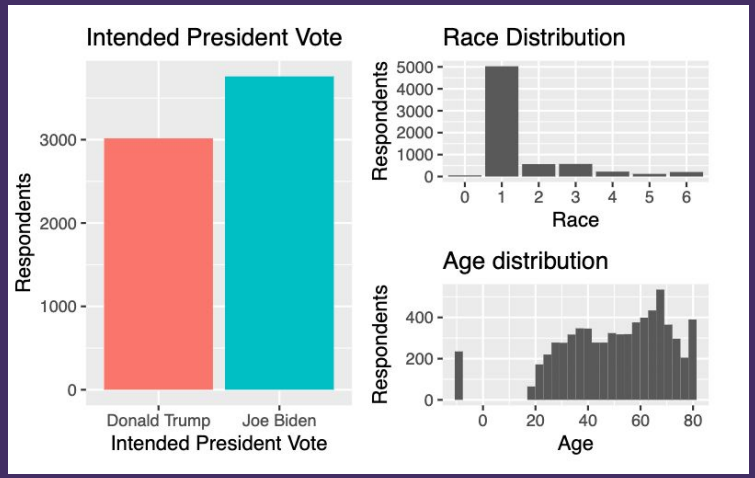


Introducing the Data



- **Source:** American National Election Studies, 2020 National Election
- **Response Variable:** "For whom does the respondent intend to vote for President?"
- We dropped all observations besides those with an answer of "Joe Biden" or "Donald Trump"
- **Predictor Variables:** Favor/Oppose Background Checks for Gun Purchases, Tightening Fed. Budget Spending on Border Security, Self-Identifies Race/Ethnicity, Rural/Urban Area Placement, Respondent Age, Political Alignment

Highlights from the EDA



Response variable:

- Roughly 50/50 intended vote for Trump or Biden, slightly more for Biden

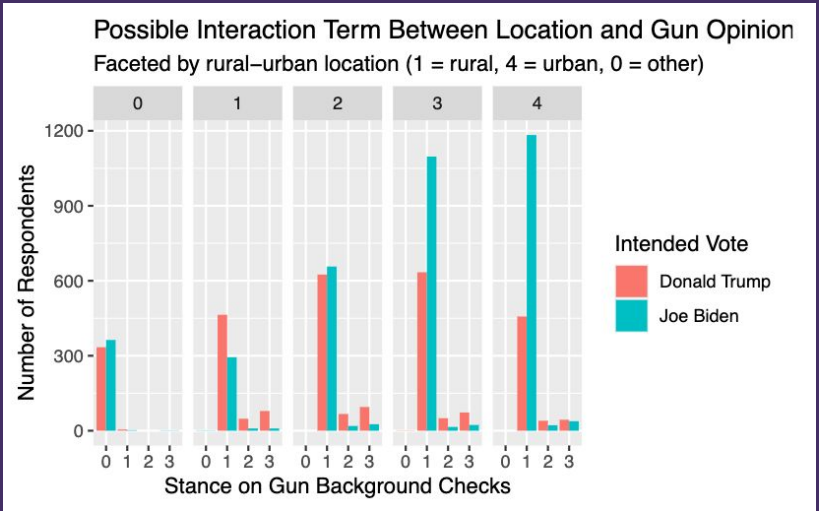
Predictor variables:

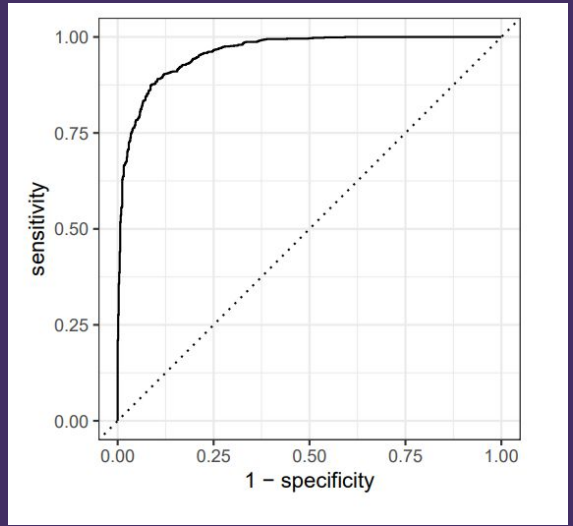
- Majority of respondents were White
- Approximately equal distribution for age, but slightly fewer younger respondents

Possible interaction terms

- Location and stance on gun background checks

Final Model: Interaction Terms + ROC Curve





- Interaction Terms We Considered: Age + Political Alignment, Rural-Urban Identity and Opinion on Gun Background Checks
- Used Speculation / Previous Knowledge about Politics to Infer that these variables could interact

- Area under the ROC Curve: .96 (Very good model fit!)
- Testing Data AUC > Training Data AUC therefore no overfit to the Training Data.
- AIC and BIC were minimized for this model in comparison to models with potential interaction terms.

Interesting findings from the model

- Categories with significant predictors levels: age, political aligment, abortion, federal budget spending on border security, race
- Coefficient of age when predicting which presidential candidate a respondent plans to vote for in the 2020 election

Conclusions + Future Work

CONCLUSIONS

- Both identity and policy opinions were found to be influential when predicting who a person would vote for
- Real-world applications

FUTURE WORK

- More Data
  - Undercoverage and response bias
- Other Elections
  - State and local elections
- Complex Analysis
  - More resources and time

References

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