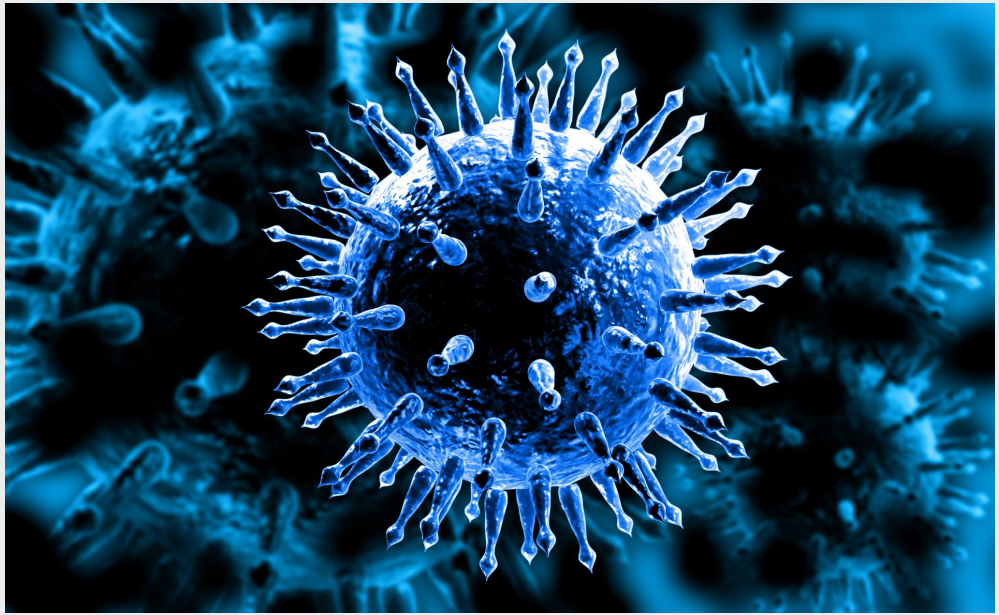
Vaccinations: How past trends can help us improve future rates

H1N1 RESEARCH GROUP



Stakeholder and Business Problem

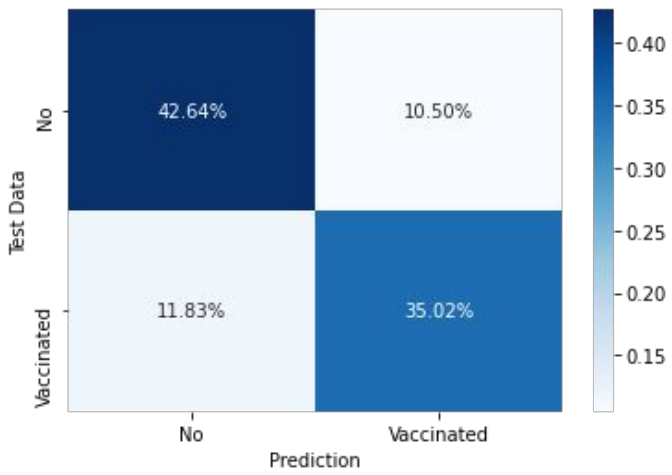
- Stakeholder: Public Health organizations (CDC)
- Problems to address:
  - Demographics least likely to get vaccinated for H1N1 and seasonal flu
  - Recommendations for future campaigns

Data and Methods

- Acquired from competition database - https://www.drivendata.org/competitions/66/flu-shot-learning/
- Features include:
  - Socio-economic information
  - Survey responses regarding behavior (e.g. mask wearing, avoiding crowds)
  - Whether or not the person got vaccinated

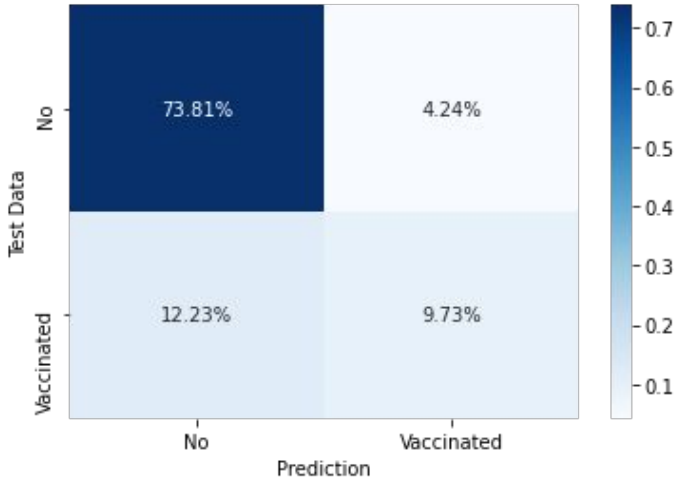
Model Performance:

Seasonal Flu Model



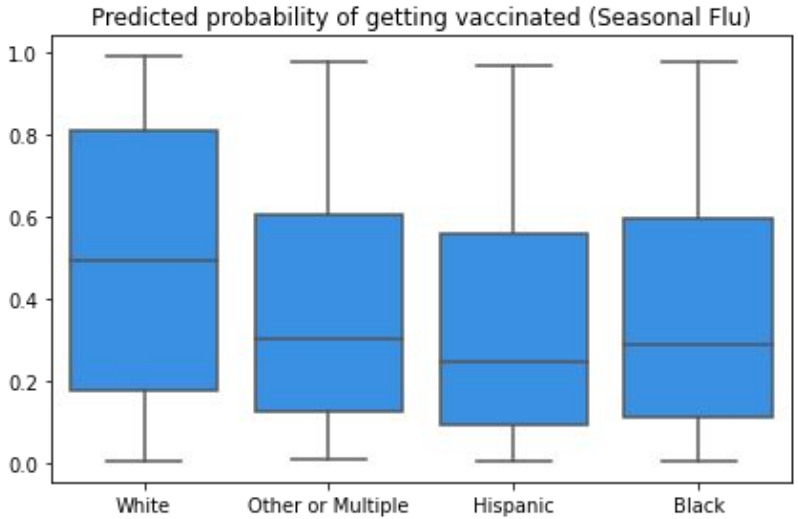
Precision: 0.77

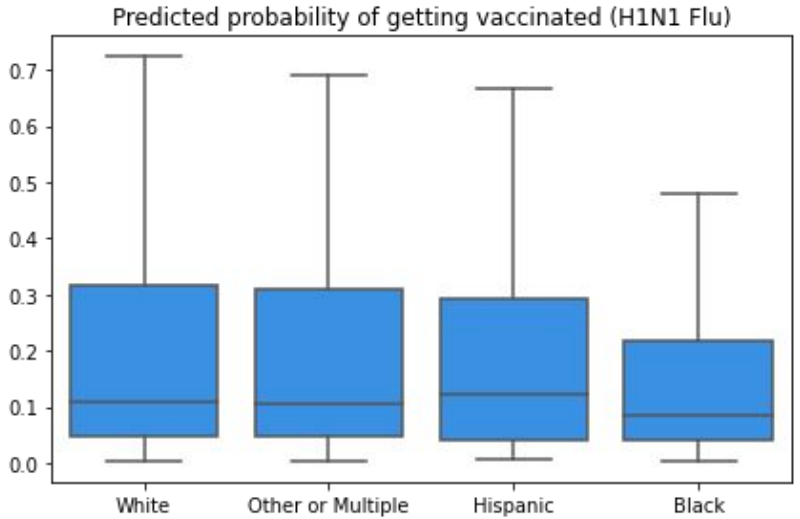
H1N1 Model



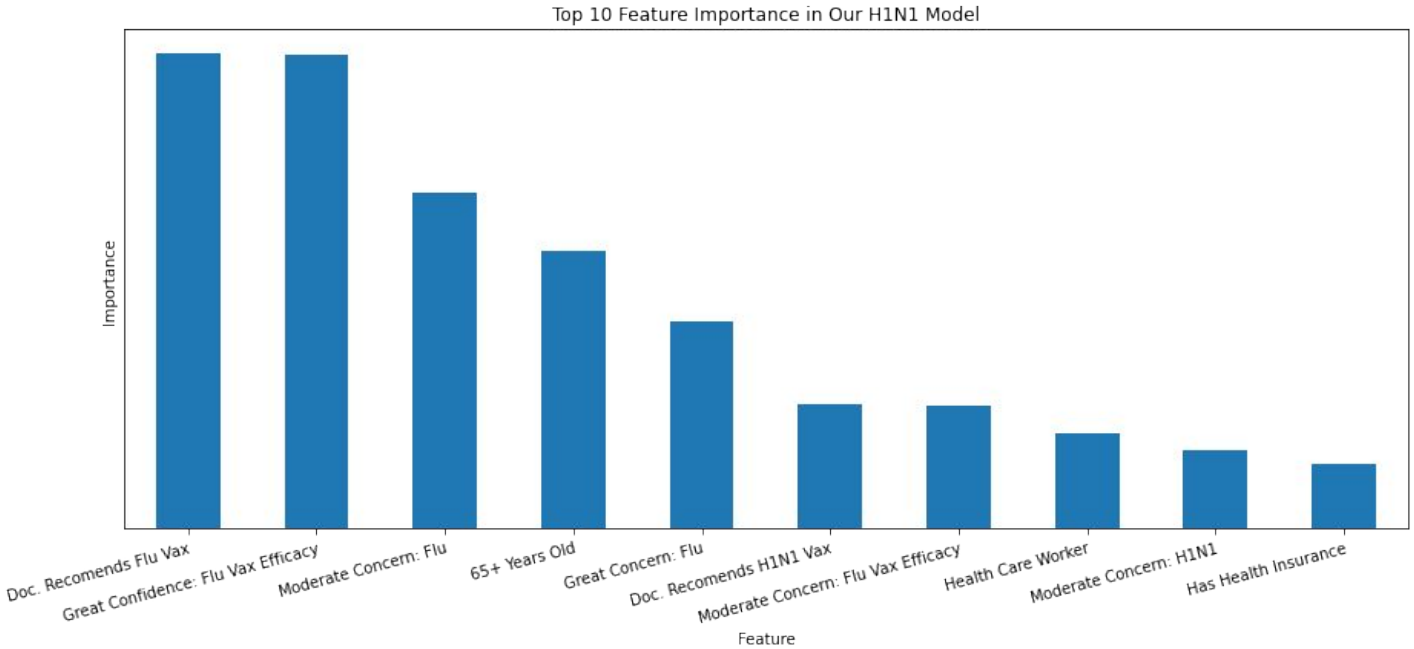
Precision: 0.69

Target Demographics for Vaccination Campaigns

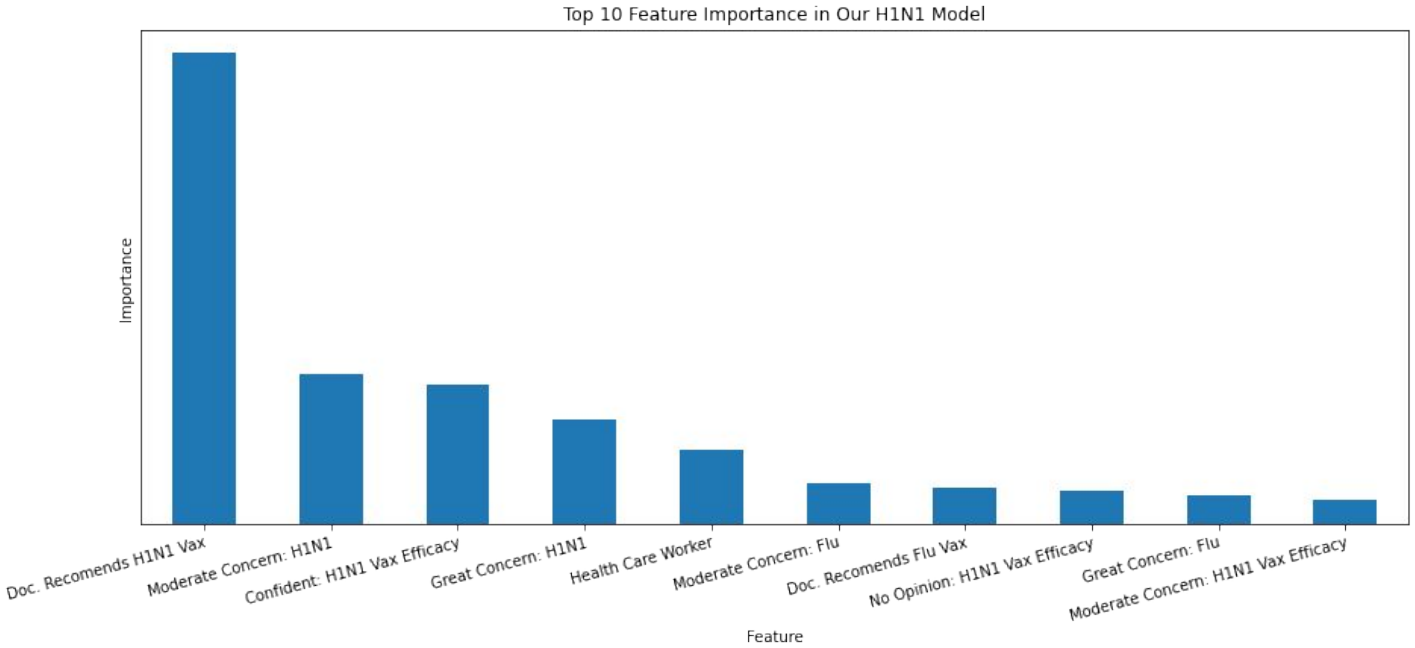




Feature Importance, Seasonal:



Feature Importance, H1N1:



Conclusions and Recommendations

- Gradient Boosting model is best for prediction
- Target demographics: Minority communities (Black, Hispanic, over 65yo)
- Best predictor: Primary Care provider recommendation
- Secondary predictors: Confidence (or lack thereof) in vaccine efficacy and concerns about illness

QUESTIONS?

- Adonis McQueen, Ph.D
  - GitHub
- Emiko Naomasa, Ph.D
  - GitHub
- Julian Ward , B.A.
  - GitHub