PREDICTING H1N1 AND SEASONAL VACCINE UPTAKE

INTRODUCTION

- Vaccine hesitancy is a major roadblock in public health, hindering immunization and raising the risk the risk of disease outbreaks. To combat this, It is vital to understand why people choose to get vaccinated or not.
- By ascertaining the demographics, opinions and health behaviors linked to vaccine uptake, public health organizations can gain valuable insights for future campaigns and this analysis aims to do that.

DATA OVERVIEW

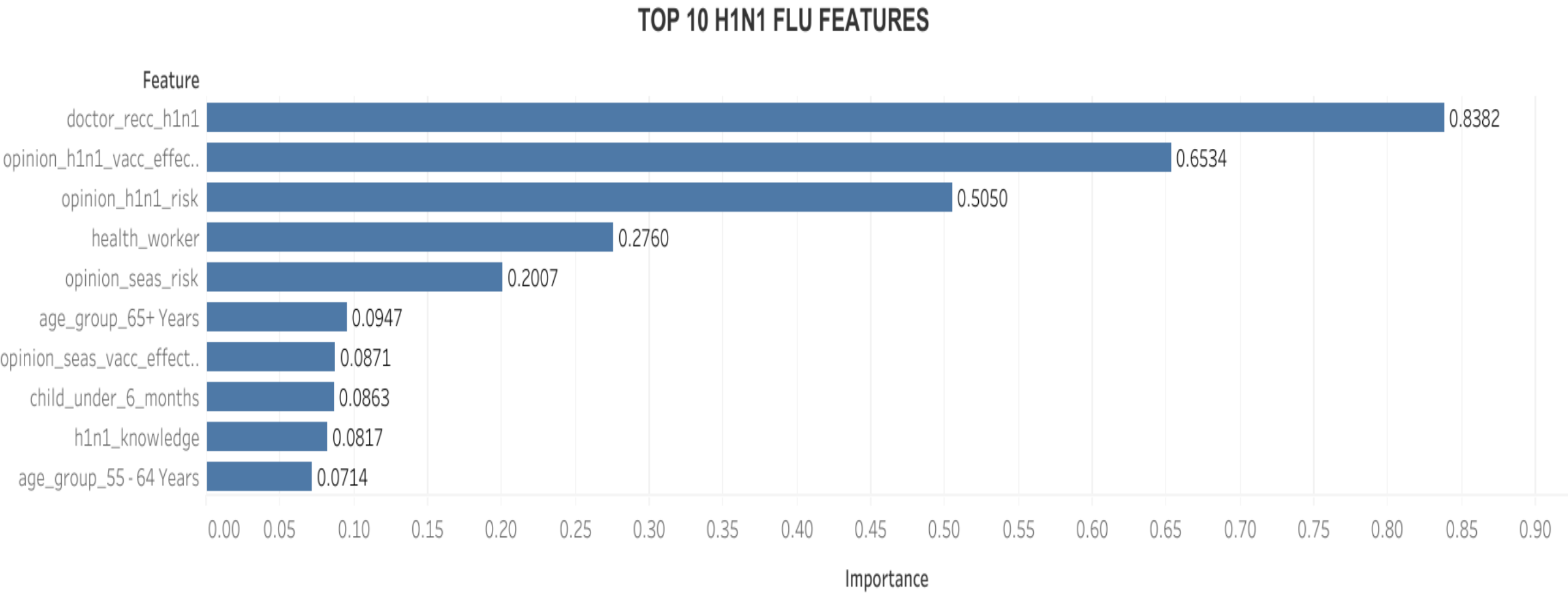
- The data originates from the National 2009 H1N1 Flu Survey conducted in the US following the H1N1 pandemic.

The key features analyzed:

- Health Worker status and Insurance
- Socioeconomic Factors and Demographics
- H1N1 concerns and vaccine opinion
- Health Insurance and Healthcare Worker status

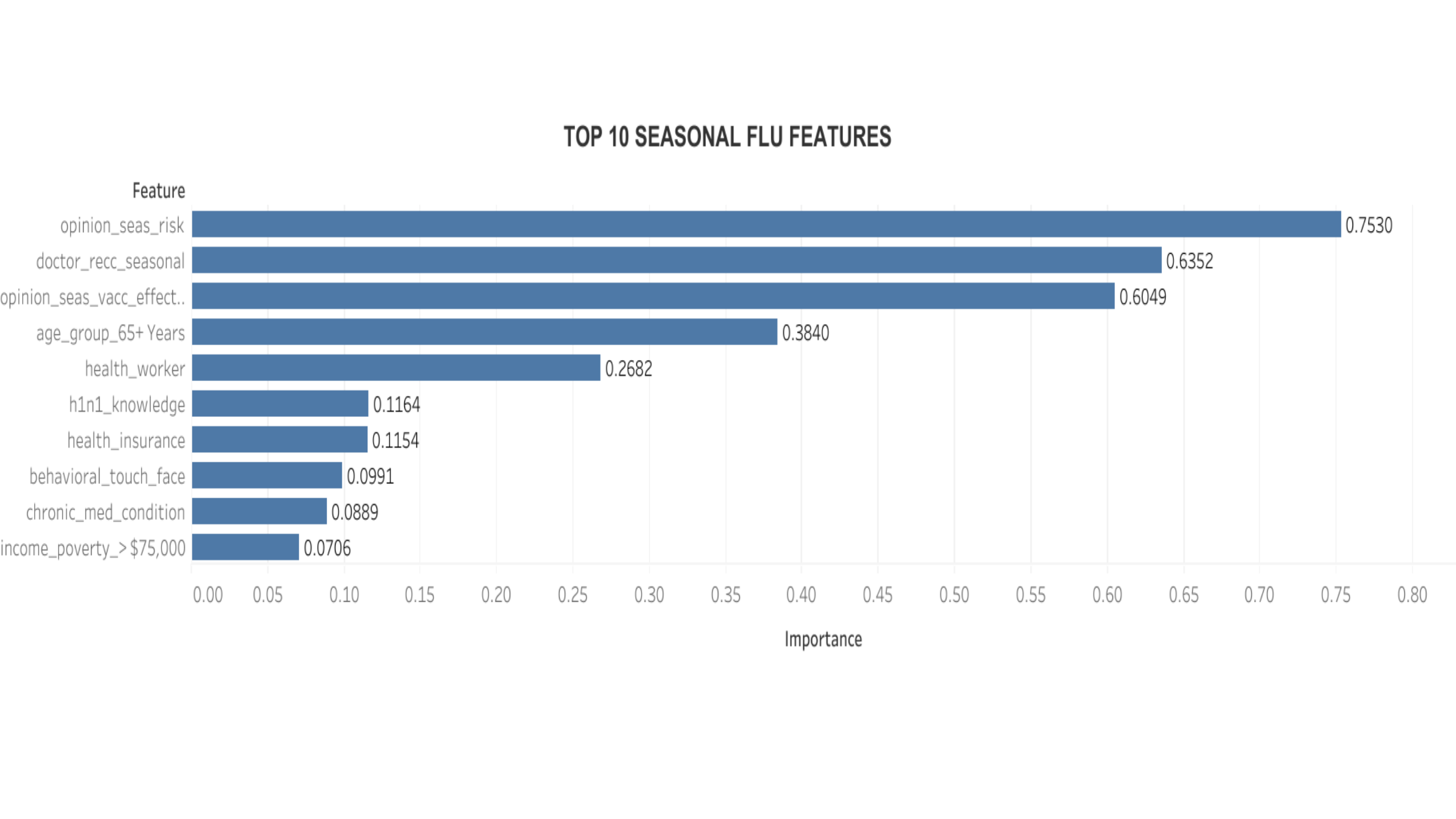
PERFORMANCE METRICS OF OUR MODELS

- The H1N1 model had an overall accuracy of 82% and its ability to distinguish between cases that individuals that took the vaccine and those who did not was 84% accurate.
- The seasonal flu model had an overall accuracy of 78% and its overall ability to distinguish between cases that individuals that took the vaccine and those who did not was 86% accurate.


TOP 10 H1N1 FLU FEATURES
Feature
doctor_recc_h1n1
opinion_h1n1_vacc_effec..
opinion_h1n1_risk
health_worker
opinion_seas_risk
age_group_65+ Years
opinion_seas_vacc_effect..
child_under_6_months
h1n1_knowledge
age_group_55 - 64 Years
0.8382
0.6534
0.5050
0.2760
0.2007
0.0947
0.0871
0.0863
0.0817
0.0714
0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90
Importance

KEY FACTORS INFLUENCING H1N1 FLU VACCINE UPTAKE

- Doctor recommendation to the H1N1 vaccine
- Belief in the vaccine's effectiveness
- Perceived risk of getting the H1N1 flu
- Health workers
- Individuals in the age group of 65 and olde
- Perceived risk of getting the seasonal flu and belief in the seasonal vaccine effectiveness


TOP 10 SEASONAL FLU FEATURES
Feature
opinion_seas_risk
doctor_recc_seasonal
opinion_seas_vacc_effect..
age_group_65+ Years
health_worker
h1n1_knowledge
health_insurance
behavioral_touch_face
chronic_med_condition
income_poverty_> $75,000
0.7530
0.6352
0.6049
0.3840
0.2682
0.1164
0.1154
0.0991
0.0889
0.0706
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75
0.80
Importance

KEY FACTORS INFLUENCING SEASONAL FLU VACCINE UPTAKE

- Perceived risk of getting seasonal flu
- Doctor recommendation to get seasonal flu vaccine
- Belief in vaccine effectiveness
- Individuals in the 65 and older age group
- Individuals with higher knowledge about H1N1 flu were more inclined to take the seasonal vaccine
- Health worker and individual with health insurance

RECOMMENDATIONS

- Public health campaigns should actively engage healthcare workers to recommend flu vaccines as doctor recommendation was as strong predictor for both vaccines.
- Clear communication of the effectiveness and risk of the vaccines while also addressing misinformation
- Improve accessibility of getting the vaccines for everyone regardless of their health insurance status
- Campaigns targeted towards the younger population to encourage taking the vaccines

LIMITATIONS

- The data was biased, a significant percentage of the respondents were above 65 years, white, college graduates, employed people or people earning 75000 annually.
- This does not reflect the real world hence making the models biased which might not be good for general situations.
- H1N1 survey was quite imbalanced as majority of the respondents had not taken the vaccine.

CONCLUSION

- The analysis revealed that demographic, socioeconomic factors and behavioral features have relatively lower influence on respondents decision to uptake the vaccines or not and health-related factors and opinions highly influenced vaccine uptake decision.