Predicting H1N1 Vaccination Status:

A Machine Learning Approach

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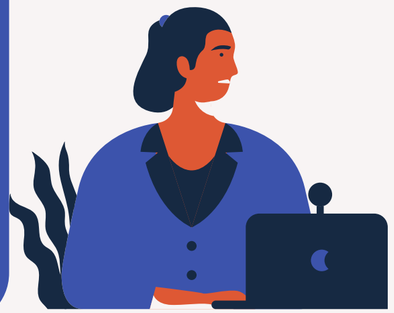
Outline

Public Health Perspective
Goals
Data
Methods
Results
Recommendations
Next Steps

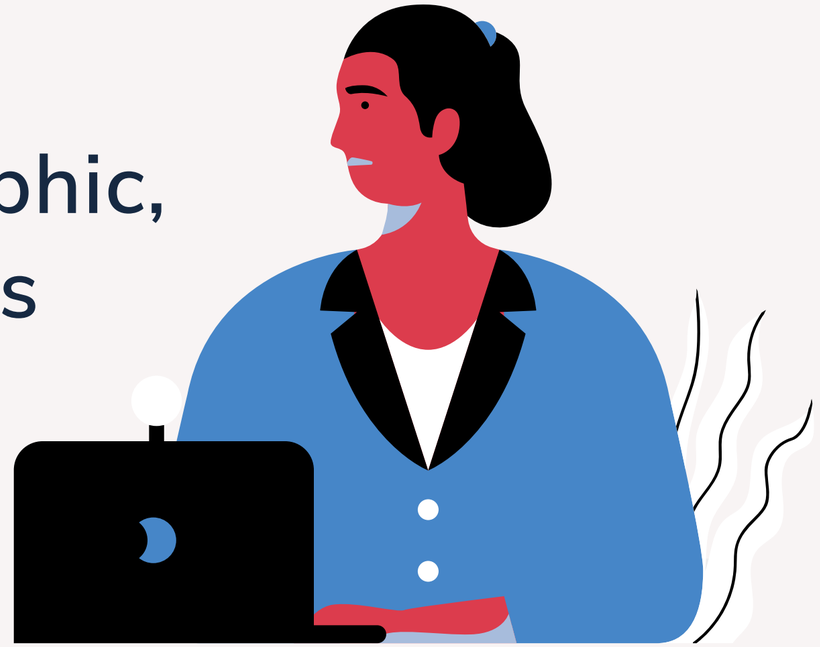
Public Health Perspective

- The personal factors that underlie vaccination behavior
- Understanding vaccination patterns from past pandemics can improve future vaccination
- Decrease outbreaks



GOALS

- Build an accurate H1N1 vaccination prediction model
- Find most important demographic, behavioral, and health features affecting vaccination status



The Data

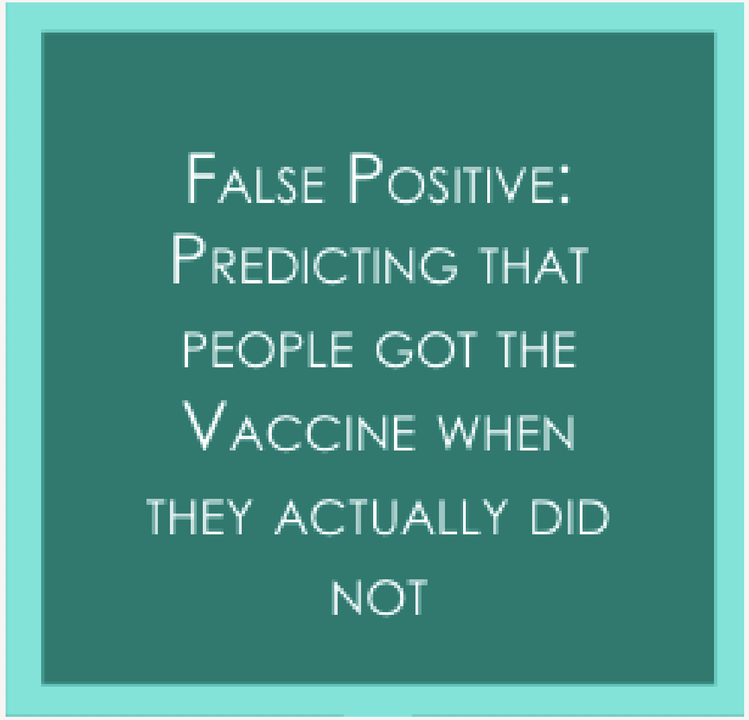
The National Flu Survey (NHFS, 2009)

26,000 Respondents

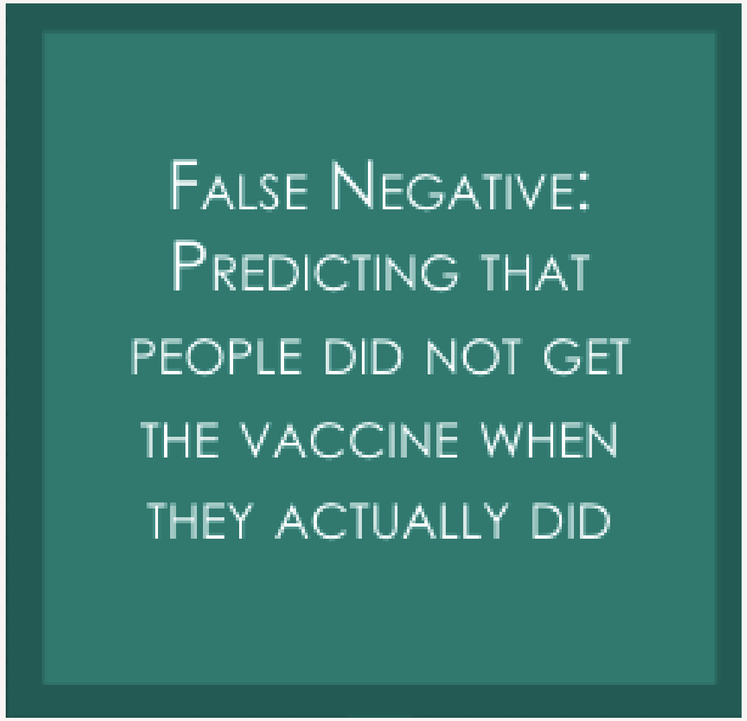
79% Did not Get the Vaccine

35 Unique Factors

Modeling Context



Big Problem

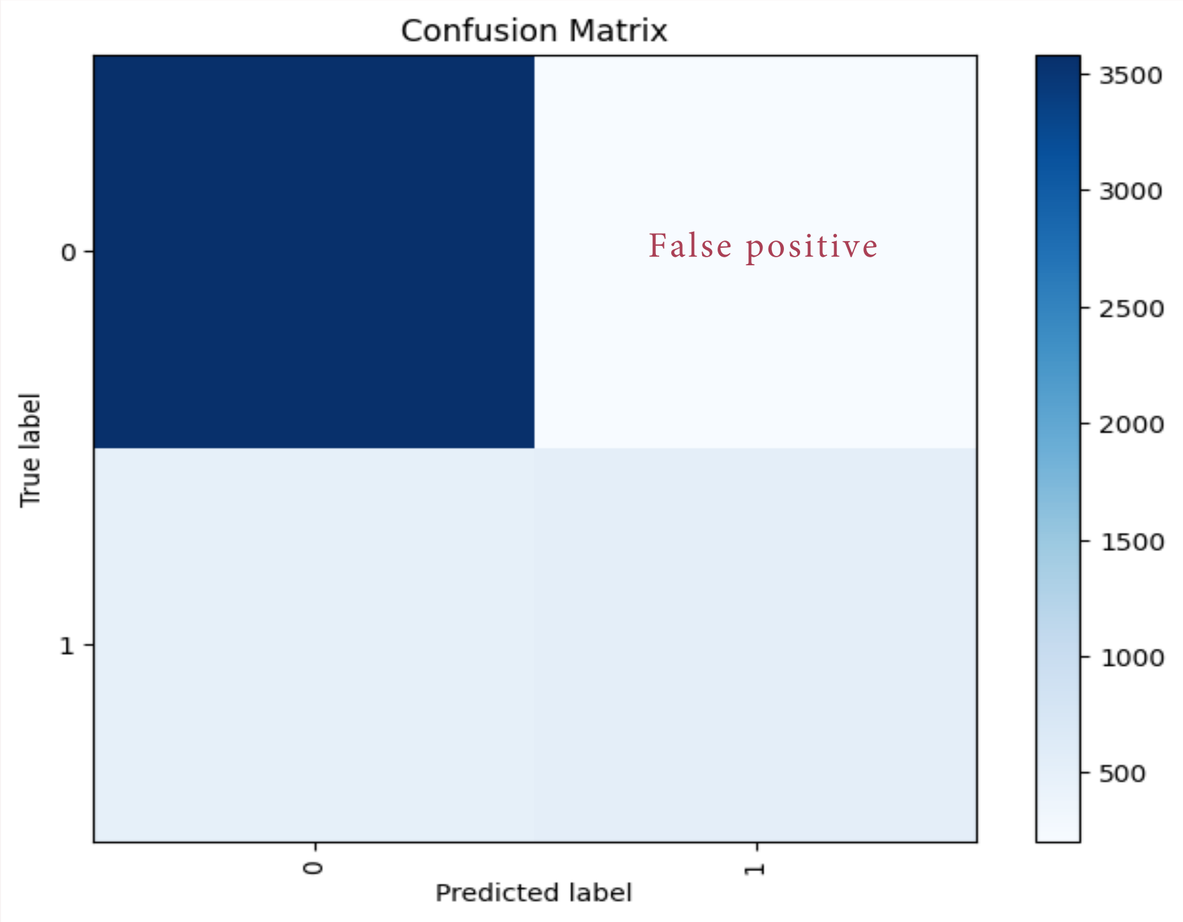


Not a Big Problem

Model & Results

Gradient Boosting Score

84% Accuracy



Top 4 Important Features

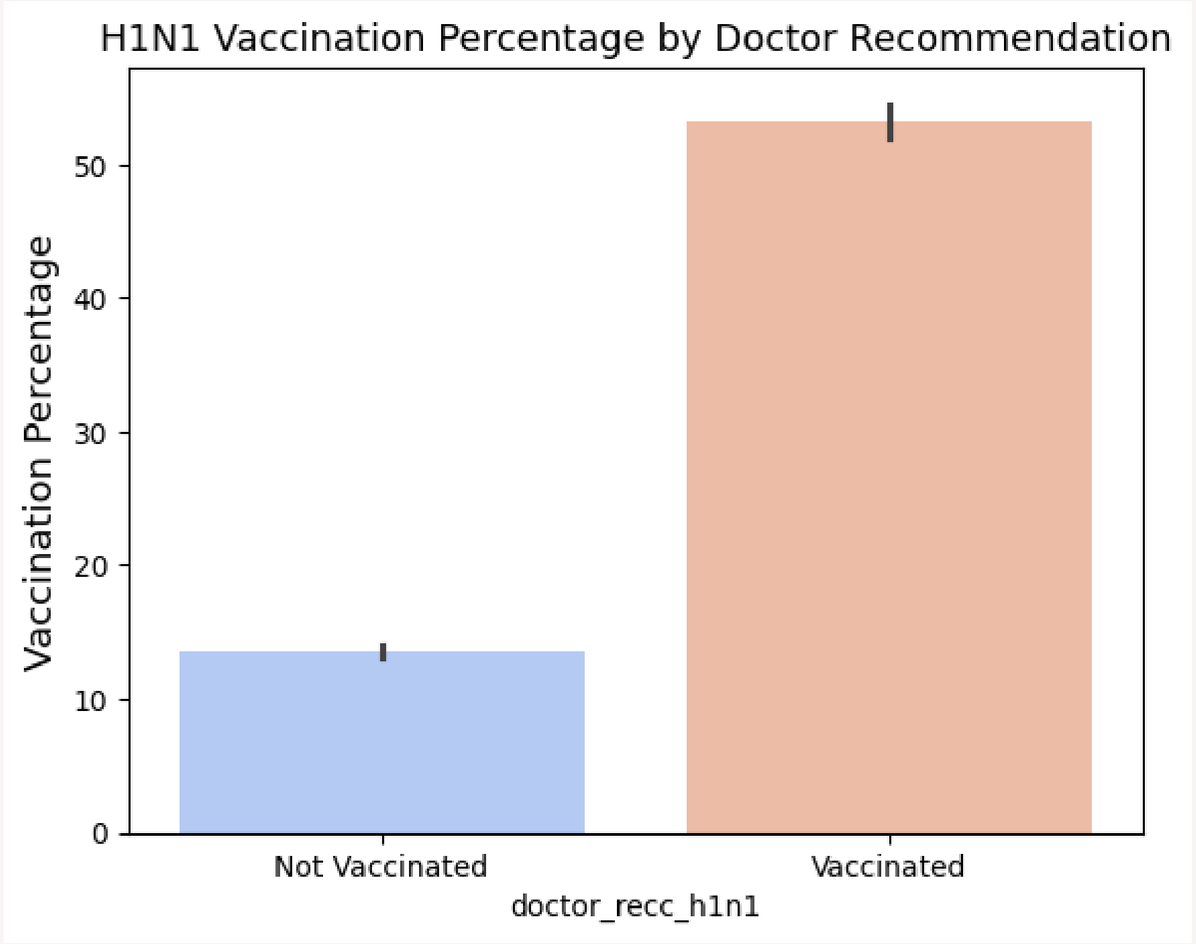
Doctor Recommendation of H1N1 Vaccine

Health Insurance

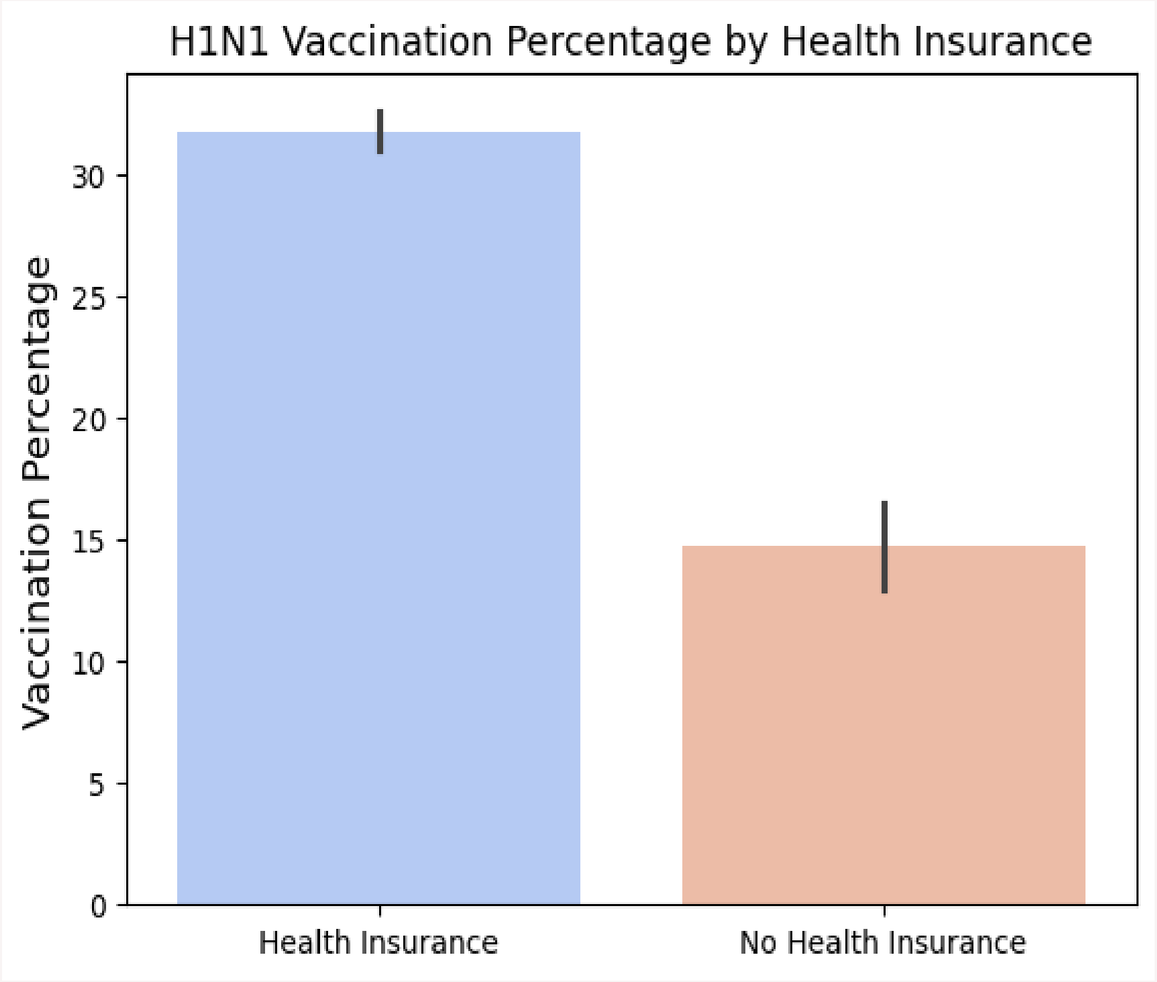
Opinion on H1N1 Vaccine Effectiveness

Opinion on H1N1 Risk

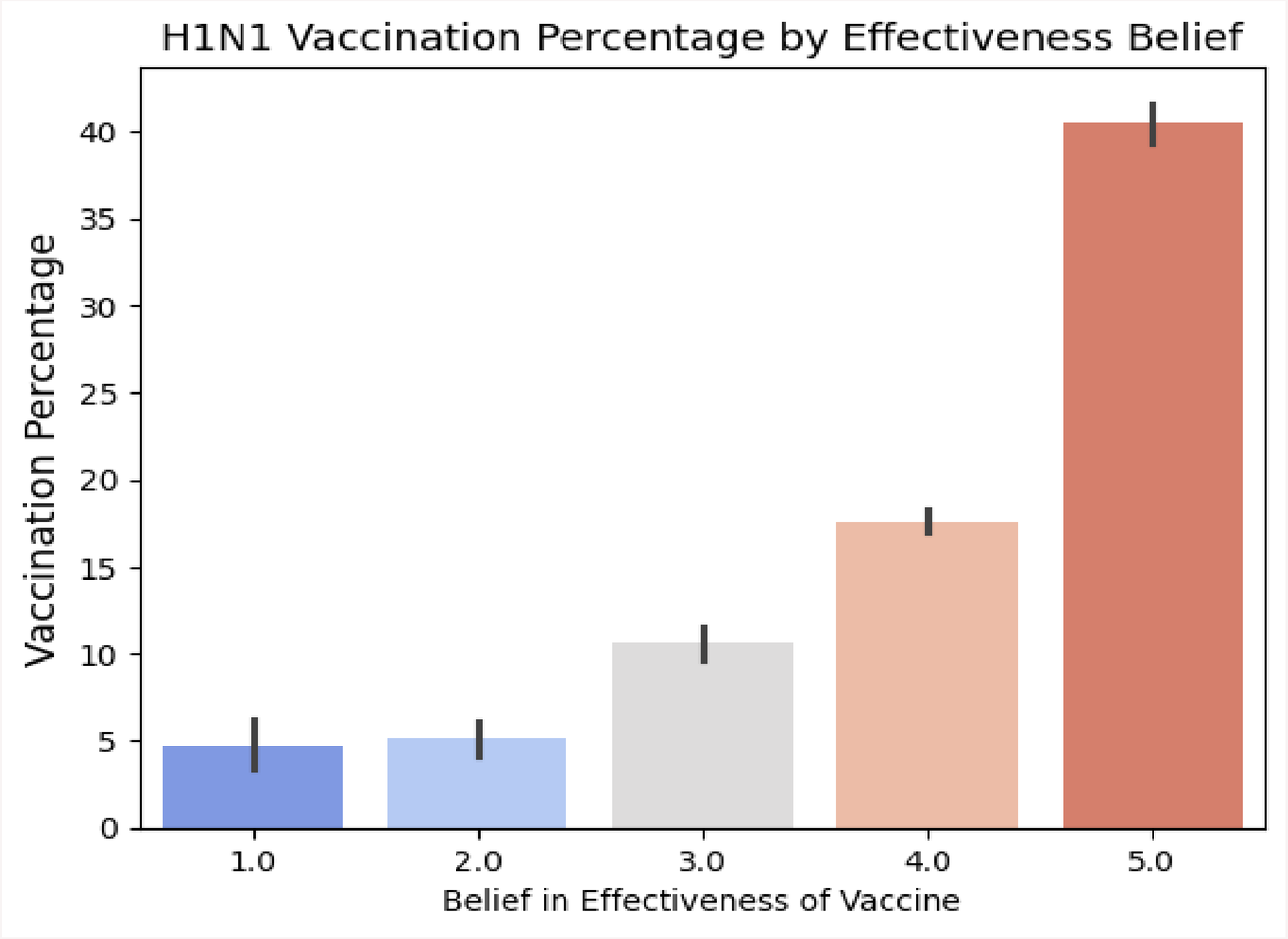
Data Visualizations: Doctor Recommendation



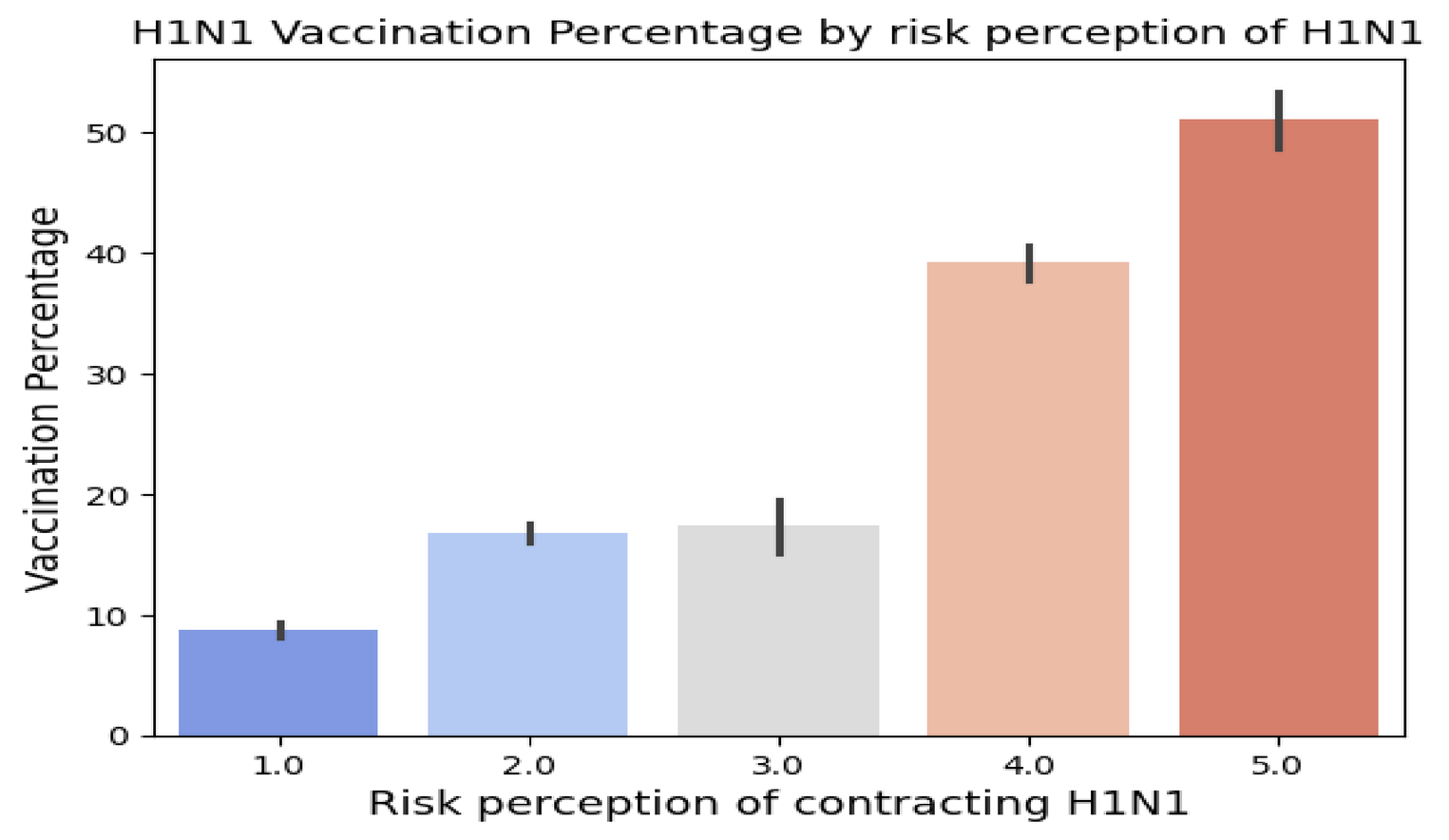
Data Visualizations: Health Insurance

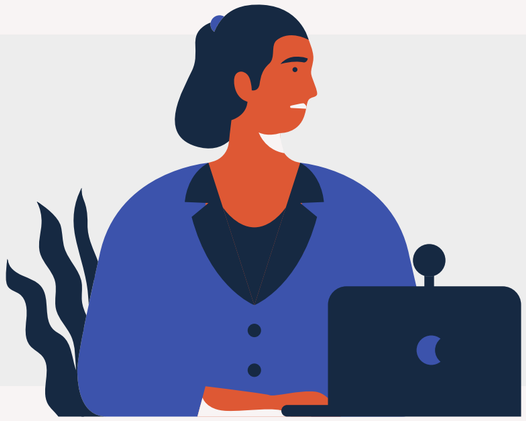


Data Visualizations: Belief in H1N1 Vaccine Effectiveness



Data Visualizations: H1N1 Risk Perception





Recommendations

Doctor Recommendations

Health Insurance

Educational Outreach

Next Steps

What to do

Recent Survey Data

Pre/After Covid-19 Difference

More Feature Engineering

Improve Accuracy

Seasonal Vaccine Prediction

Enhance and Generalize Model

Thank you!

Appendix

Comparison of Multiple Model Results