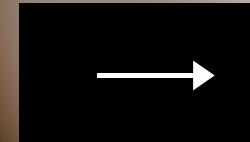


PREDICTING H1N1 VACCINATION STATUS

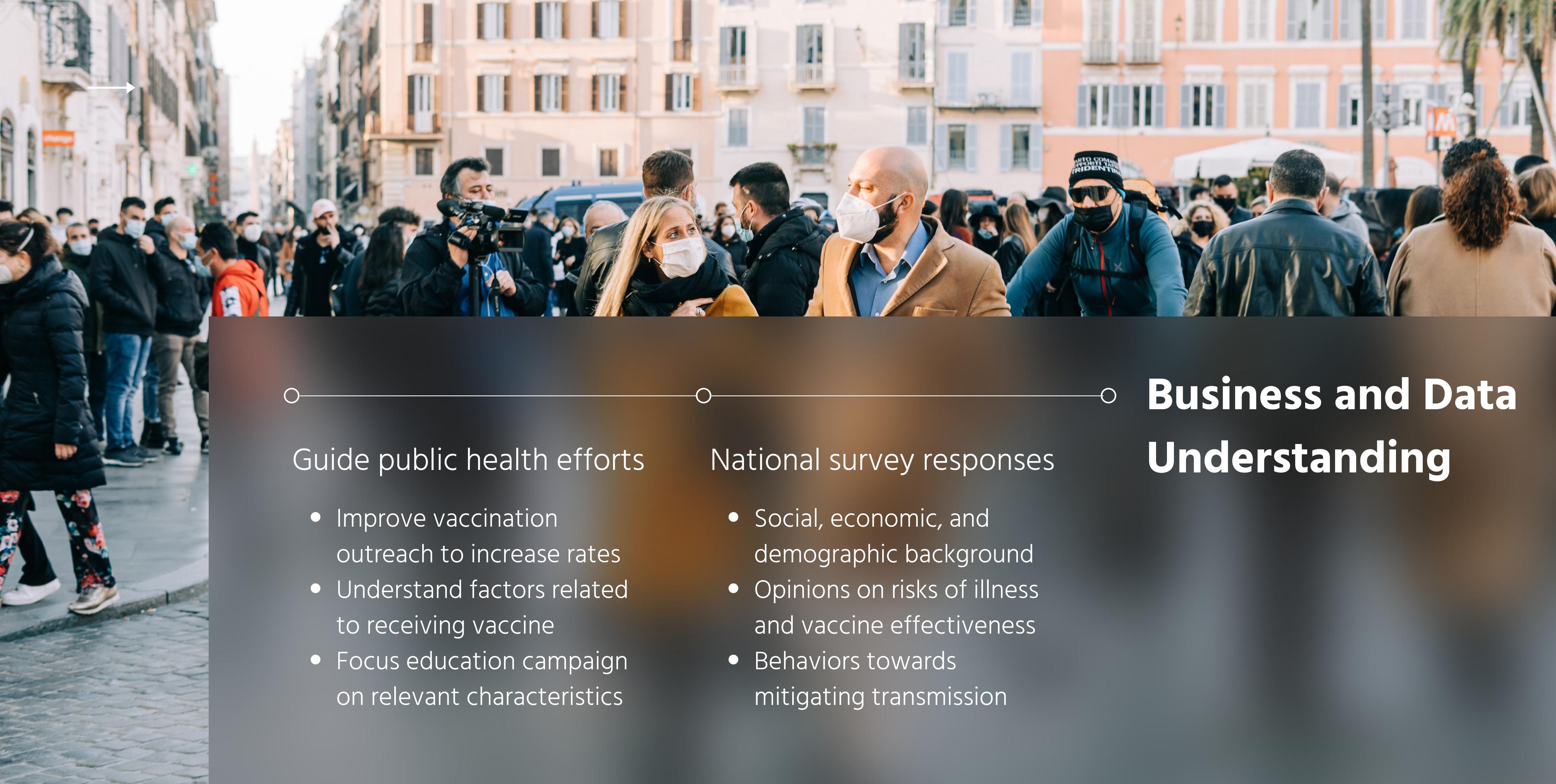


Understanding
features related to
vaccination patterns

Overview

- Understand vaccination patterns
- Predict vaccination status with 86% accuracy
- Identify important features related to status
- Recommend focusing on the top features:
 - Seasonal Flu vaccine
 - Doctor recommendation
 - Health insurance





-

Guide public health efforts

- Improve vaccination outreach to increase rates
- Understand factors related to receiving vaccine
- Focus education campaign on relevant characteristics

-

National survey responses

- Social, economic, and demographic background
- Opinions on risks of illness and vaccine effectiveness
- Behaviors towards mitigating transmission

-

Business and Data Understanding

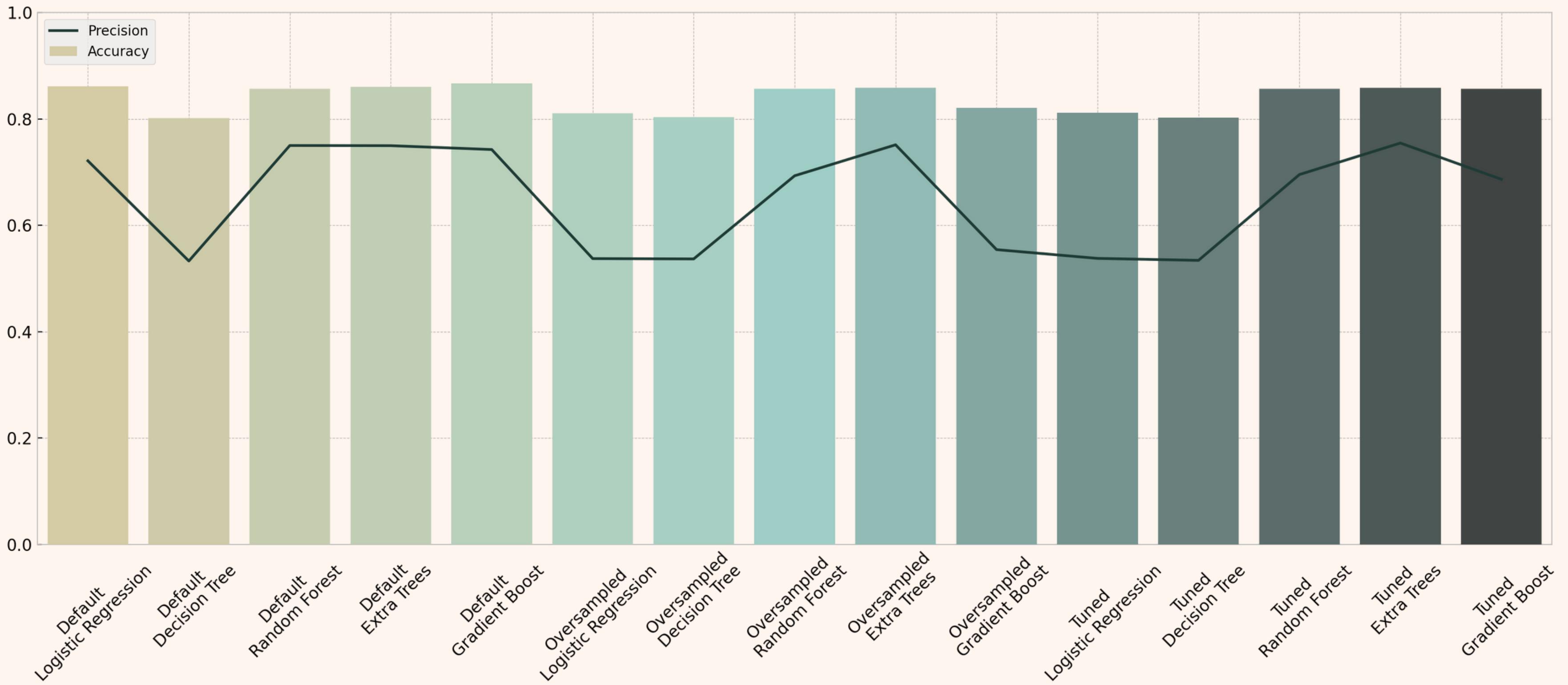
Precision

Out of all the people the model predicted to be vaccinated,
How many are actually vaccinated?

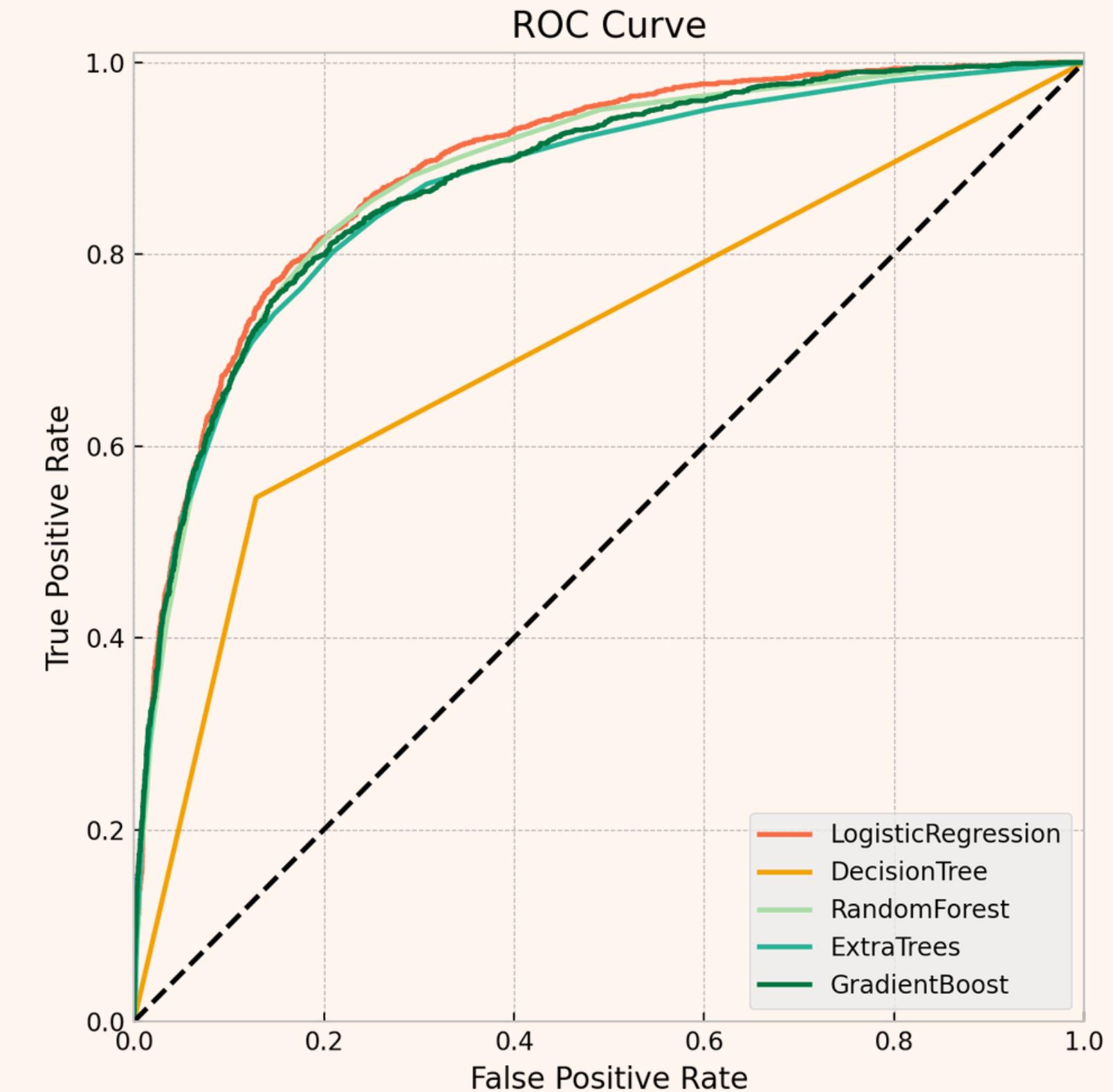
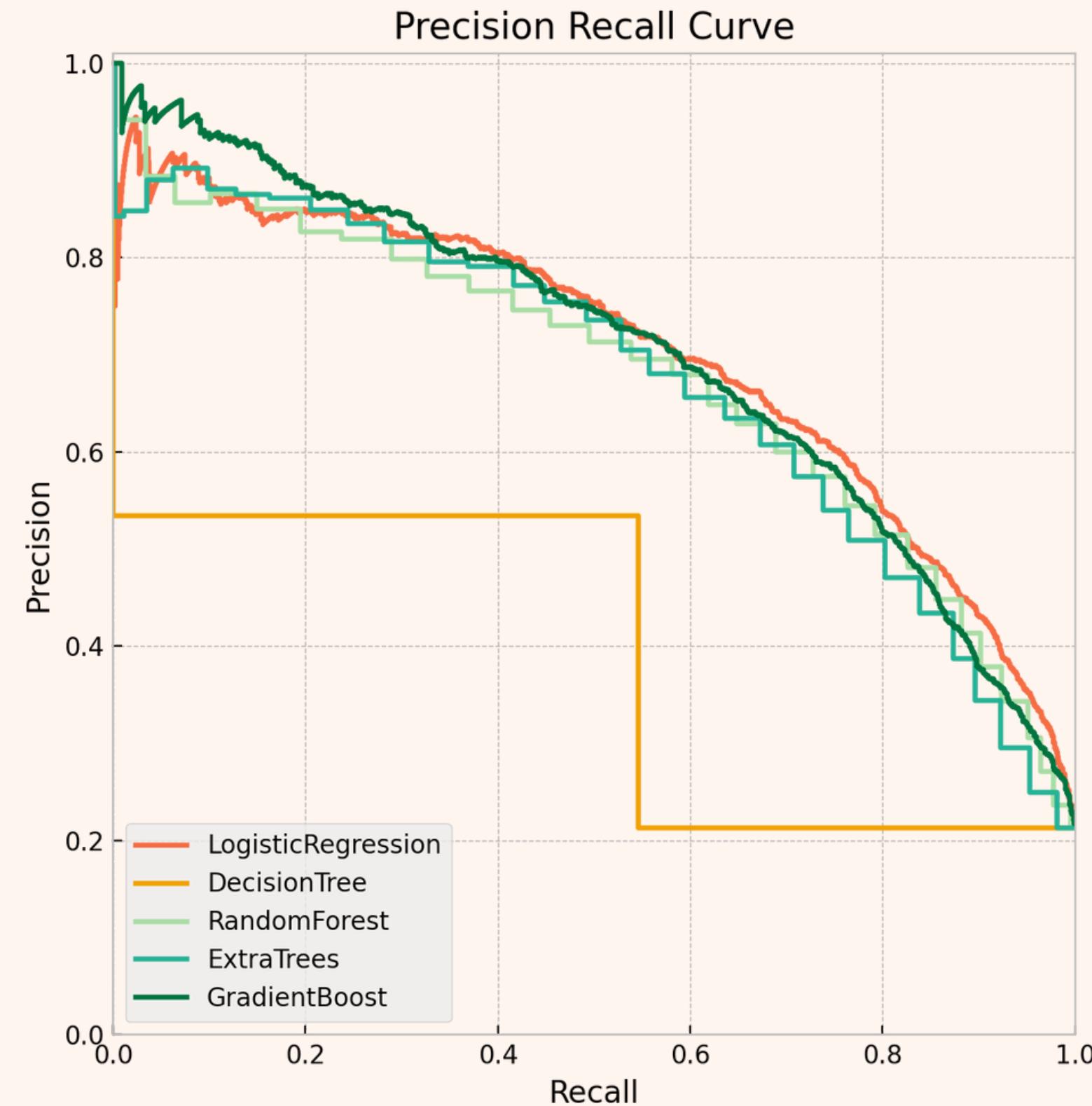
Recall

Out of all the vaccinated people,
How many of them did the model correctly predict?

Model Performance

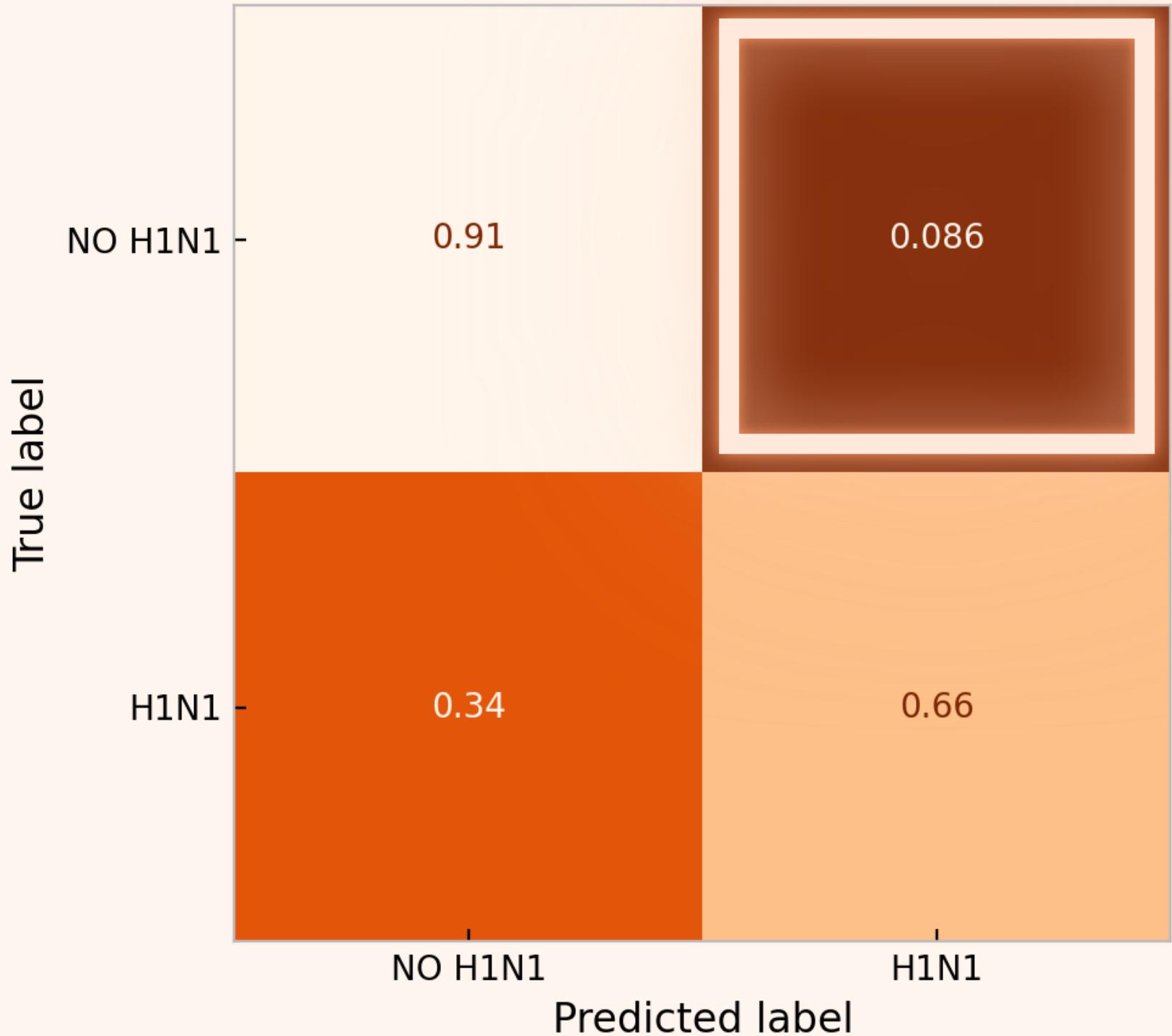


Classification Metrics

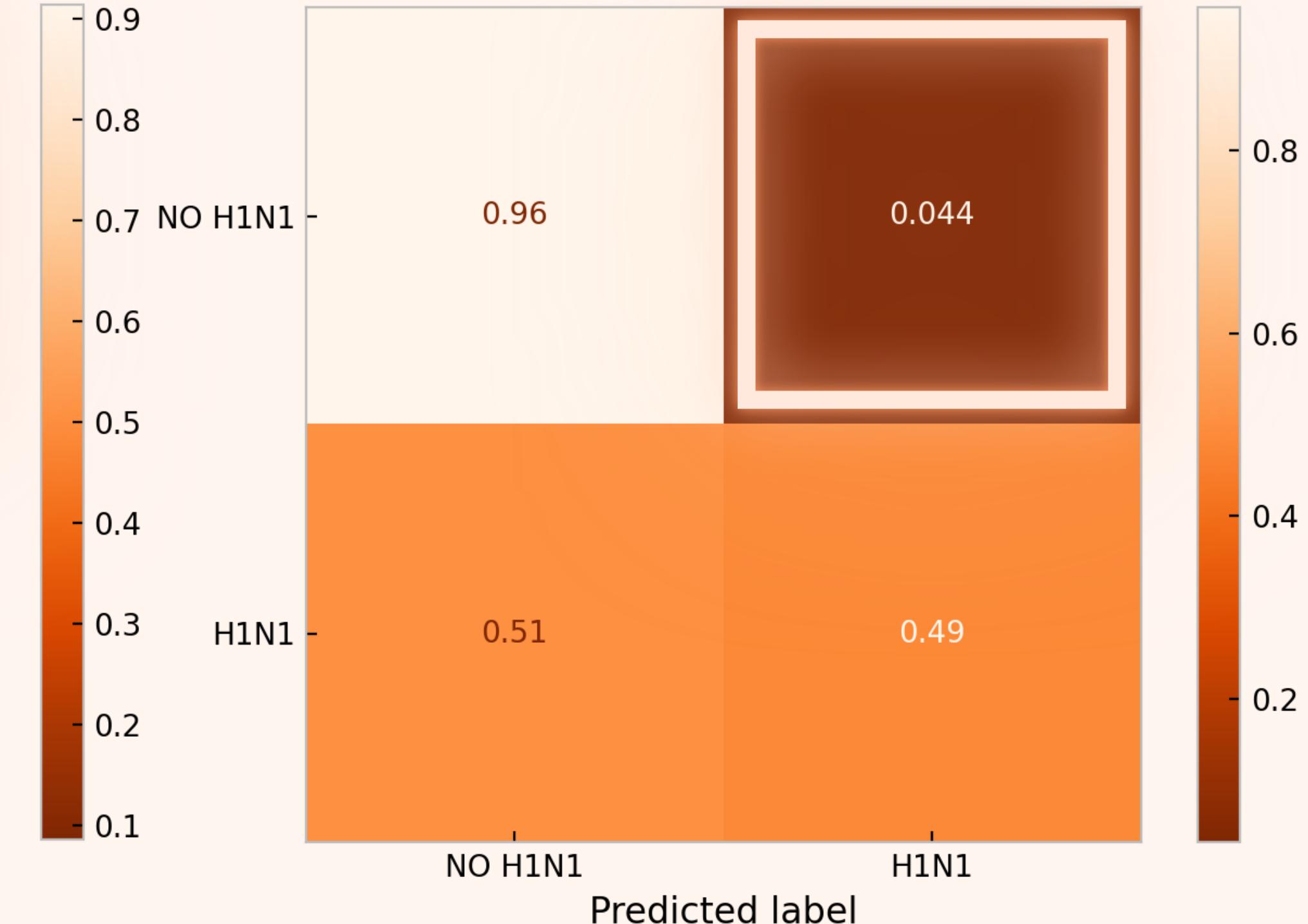


Confusion Matrix

Baseline Model



Final Model



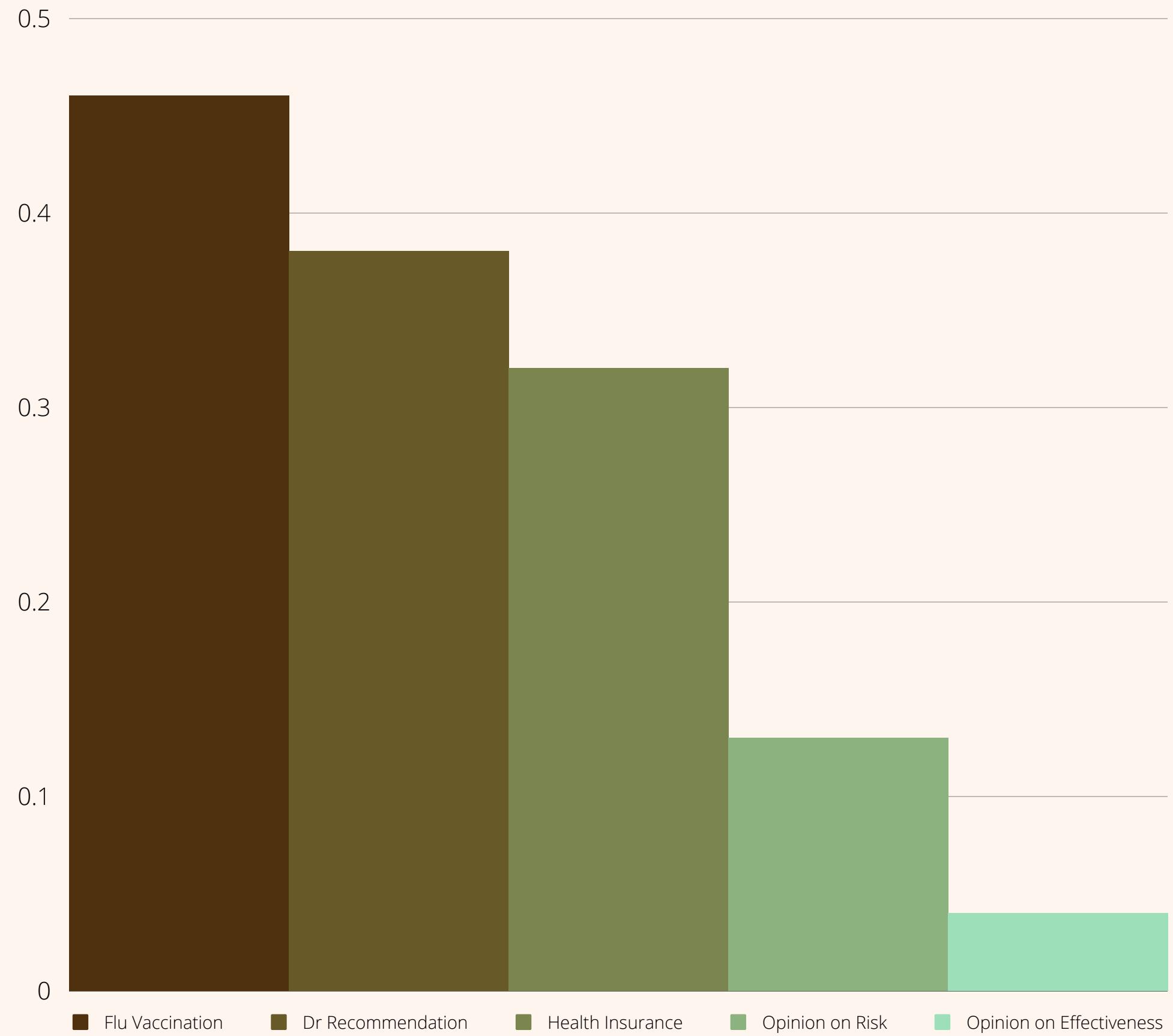
Final Model

Permutation Importances

— *how important a feature is for the particular model*

VACCINATION STATUS CLASSIFICATION

TOP FEATURE IMPORTANCES





Results

- Extra Trees Classifier model
- Accuracy of 86% and Precision of 75%
- Reduced false positive rate to 0.044
- Top features to guide public health efforts
- Deployed model as an online survey



Recommendations

01 Individuals who receive seasonal flu vaccine

- Provide information and reminder to get the H1N1 vaccine too

02 Coordinate with primary health care providers

- Educate patients about H1N1 and recommend to get the vaccine

03 Focus vaccination outreach messages on no-cost

- Emphasize that vaccines are free and available for the uninsured



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