



PREDICTION OF SEASONAL FLU VACCINATIONS



INTRODUCTION

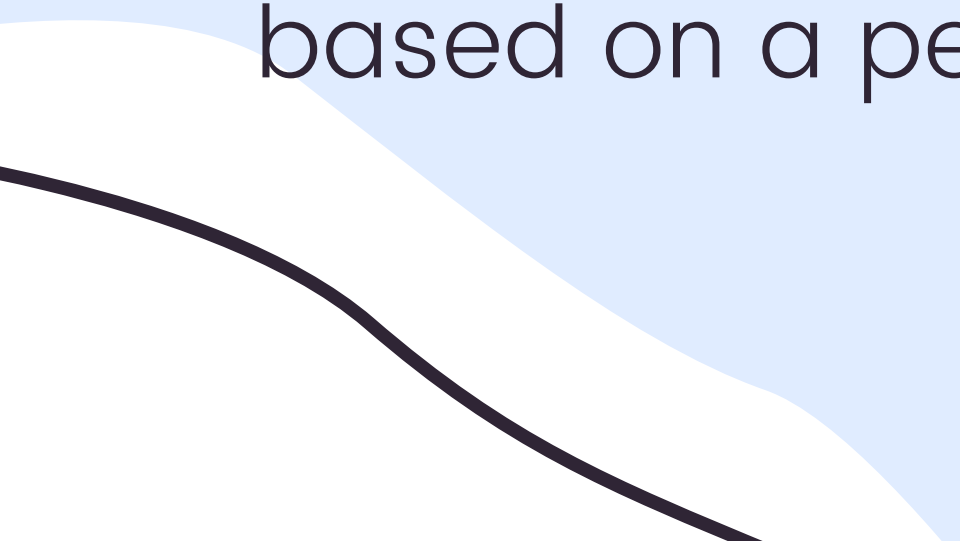
- Influenza is an illness that causes respiratory problems and can lead to hospitalisation or even death in some cases as a result of its complications.

PROBLEM STATEMENT

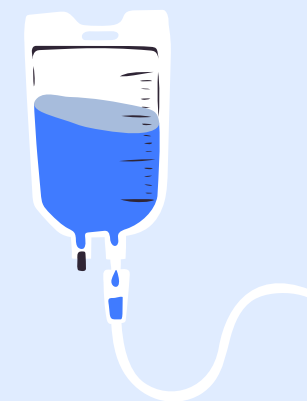
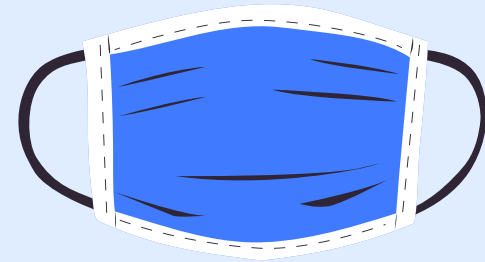
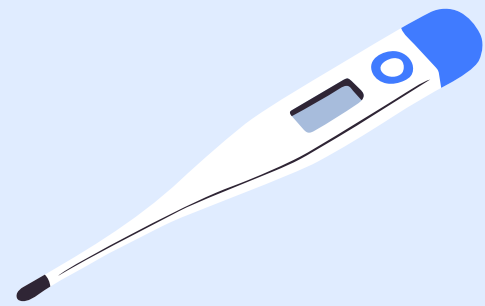
- Vaccine hesitancy is the unwillingness to receive vaccines due to fears of the vaccine's effects on one's body and is one of the biggest threats to global health.
- People's views on vaccination are influenced by the personal and social circumstances and they can change over time.

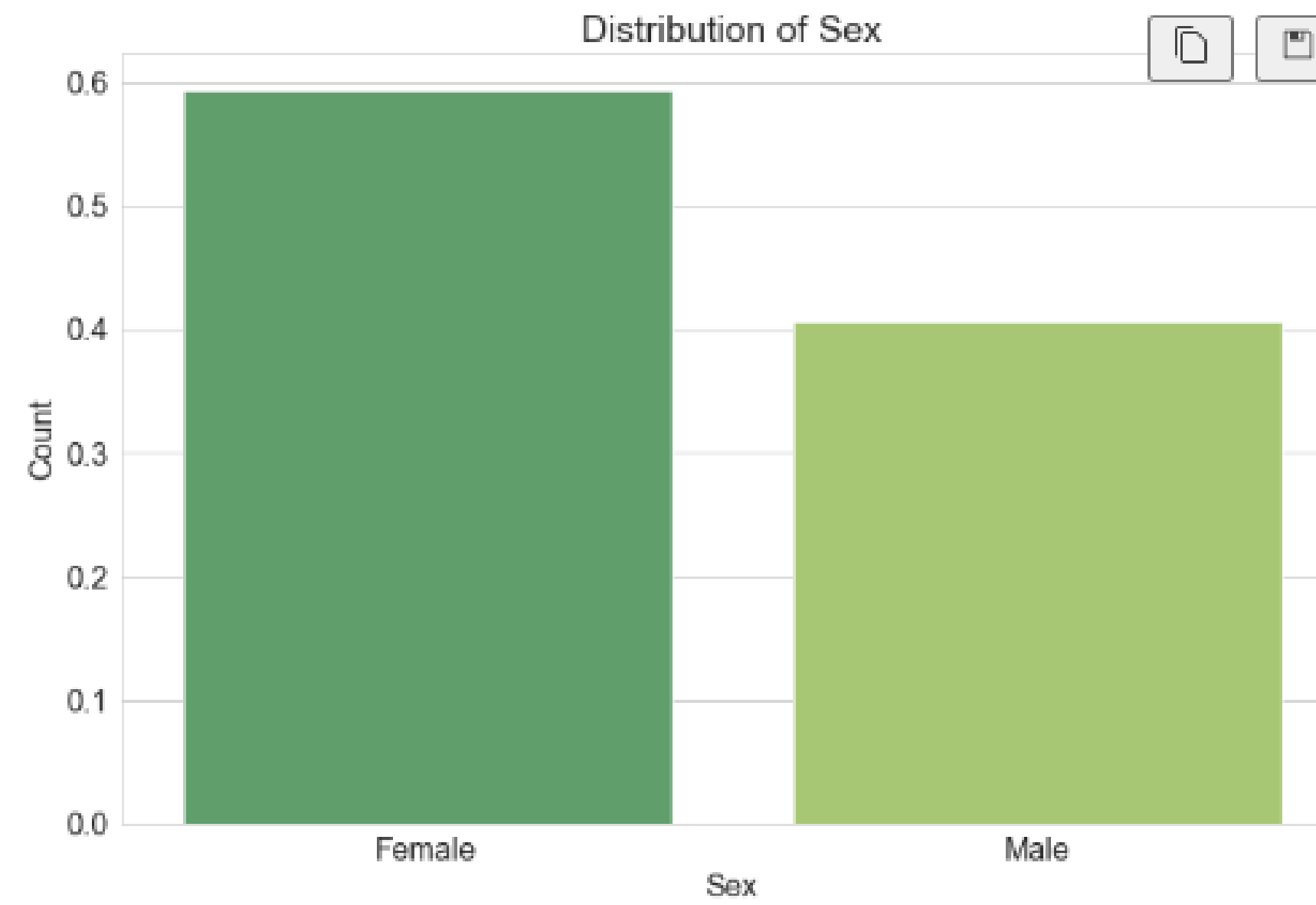
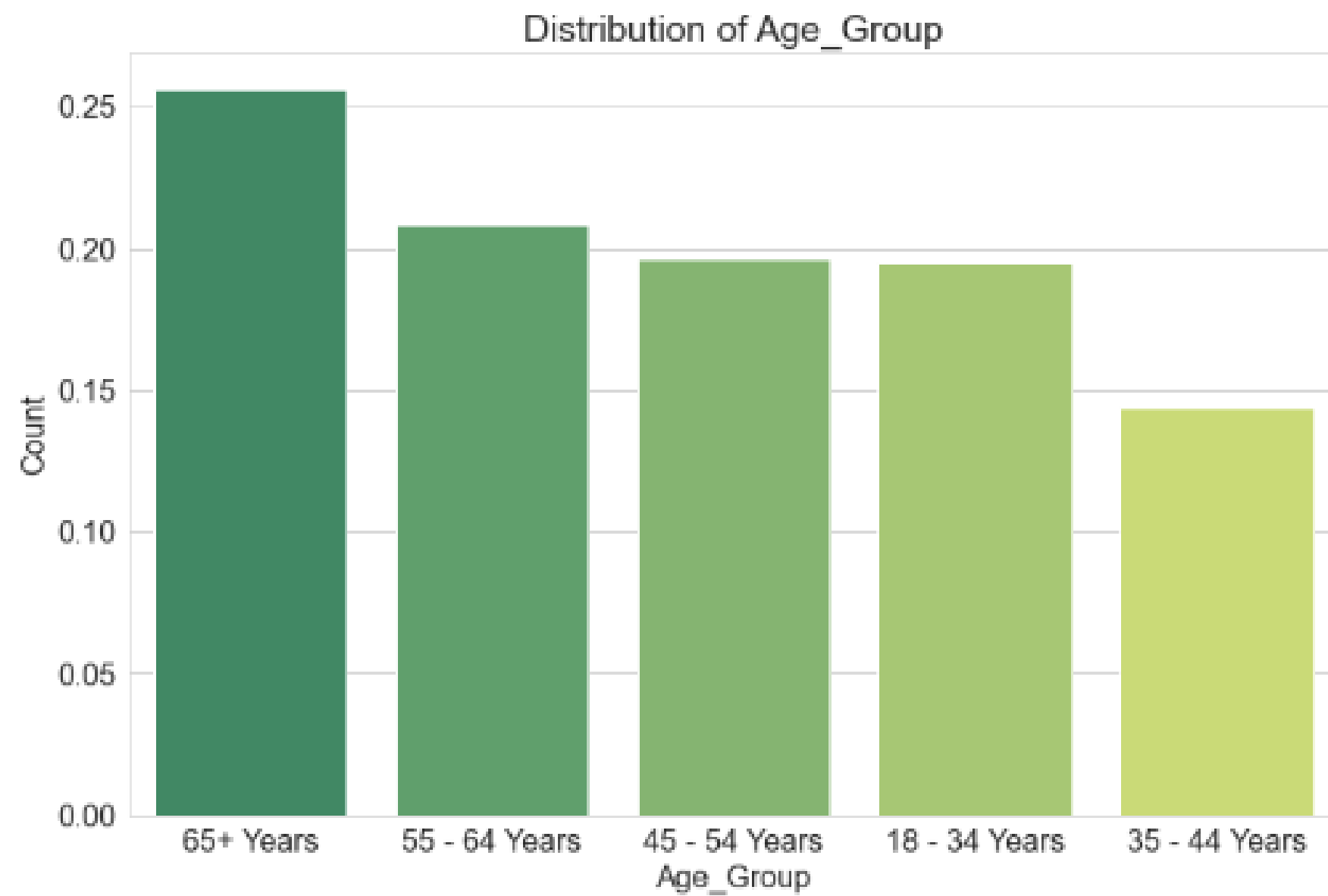
MAIN OBJECTIVE

To create a model that can predict seasonal flu vaccine uptake based on a person's background and behavioral patterns.

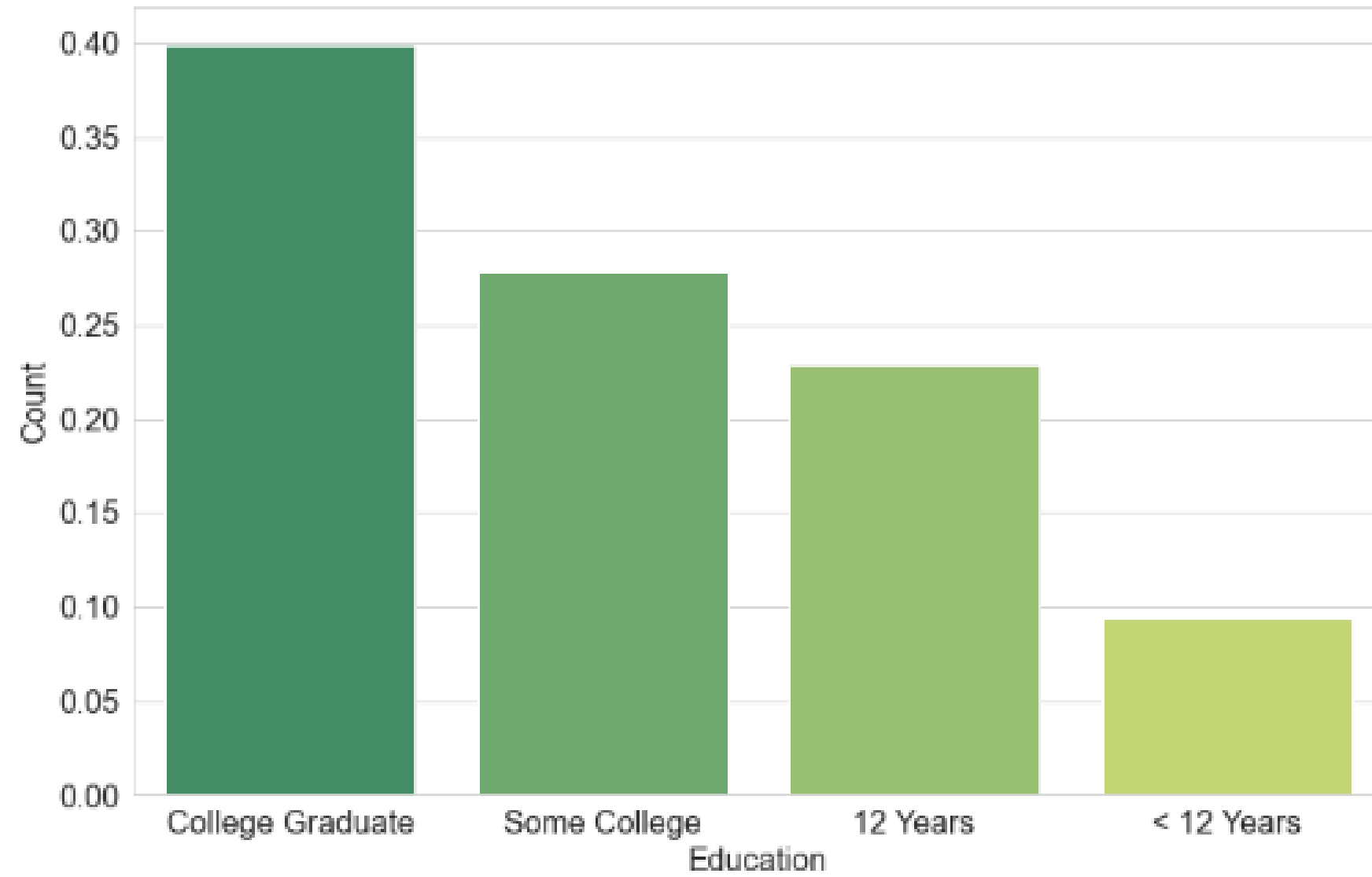
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EXPLORATORY DATA ANALYSIS

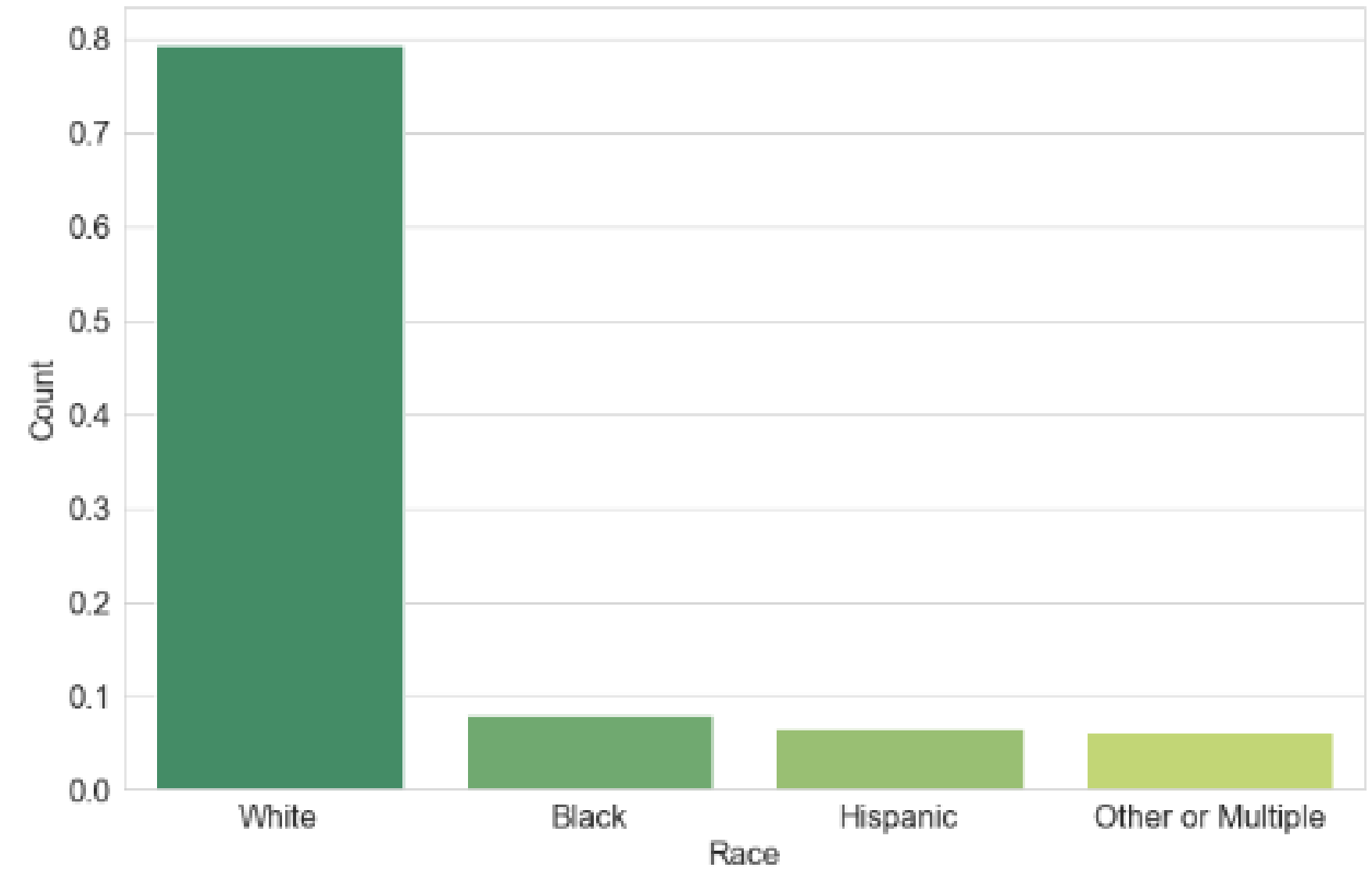


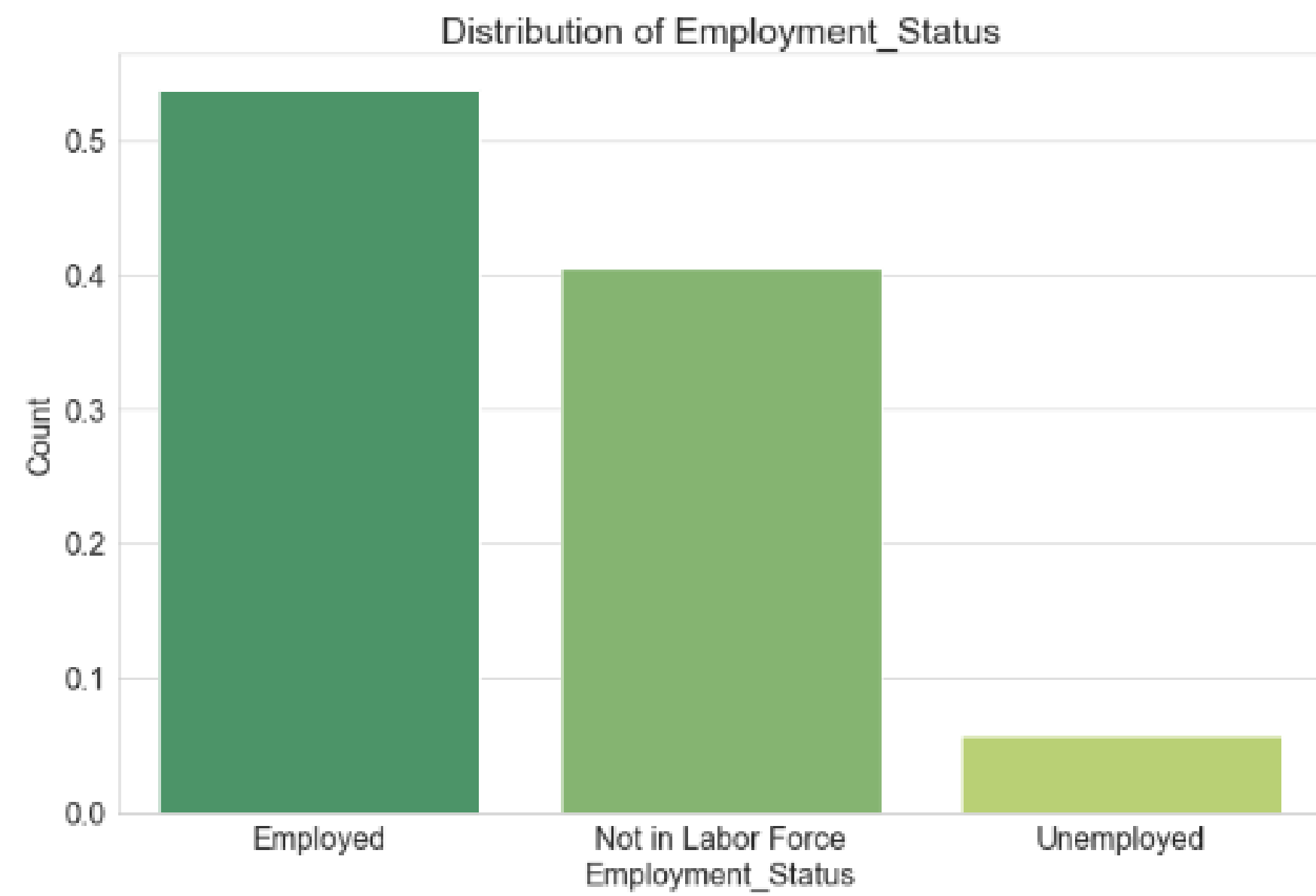
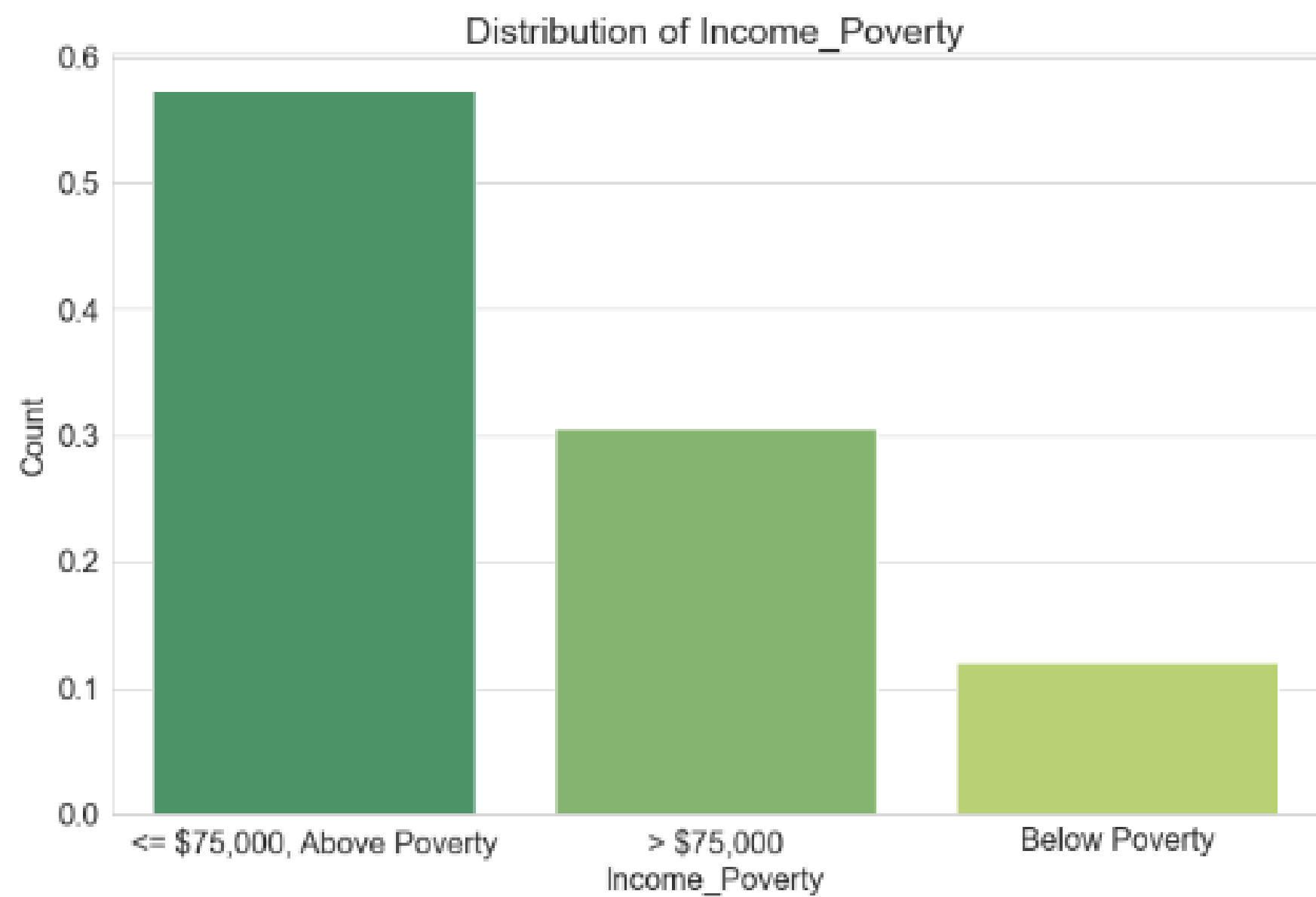


Distribution of Education

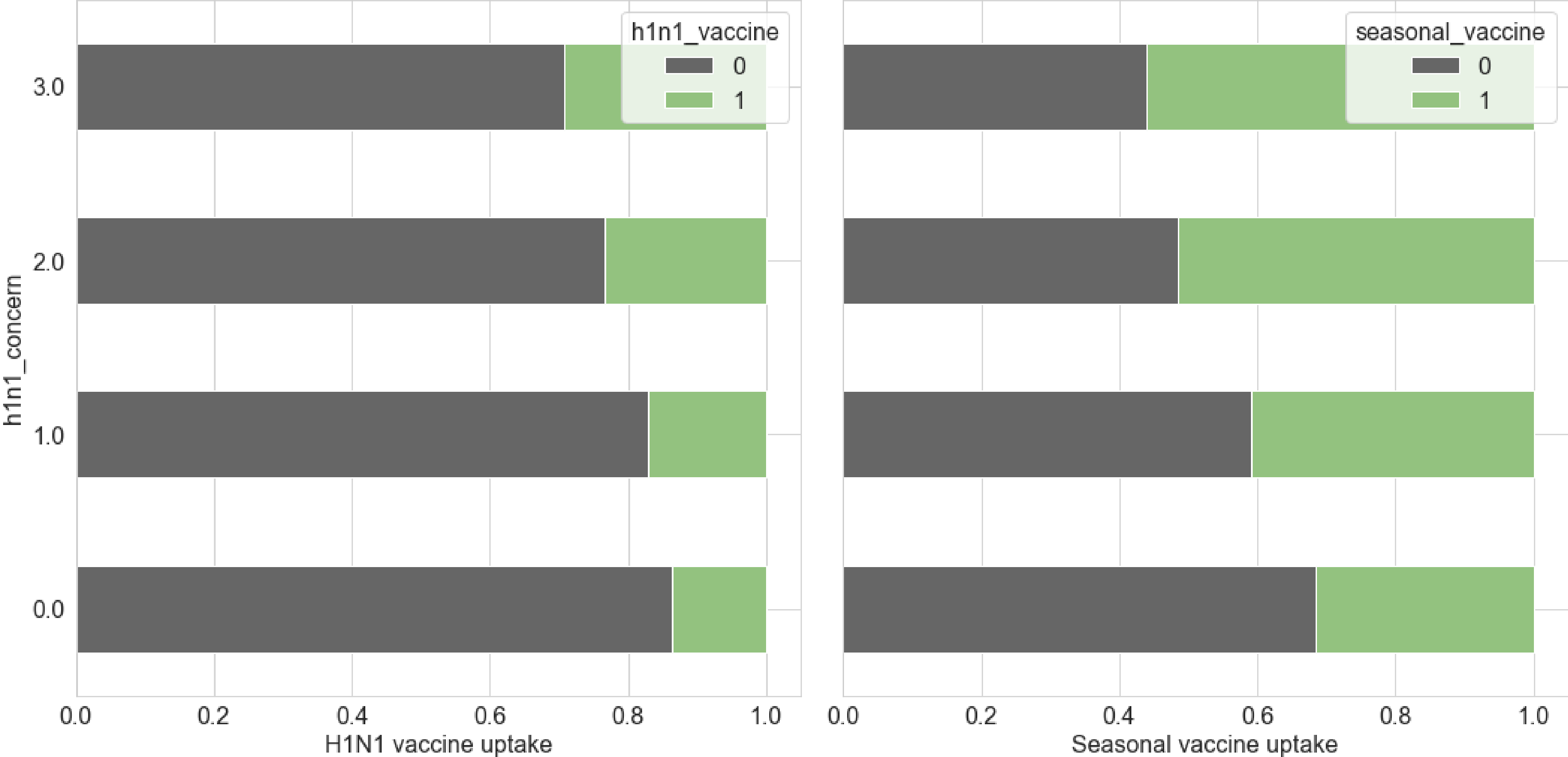


Distribution of Race

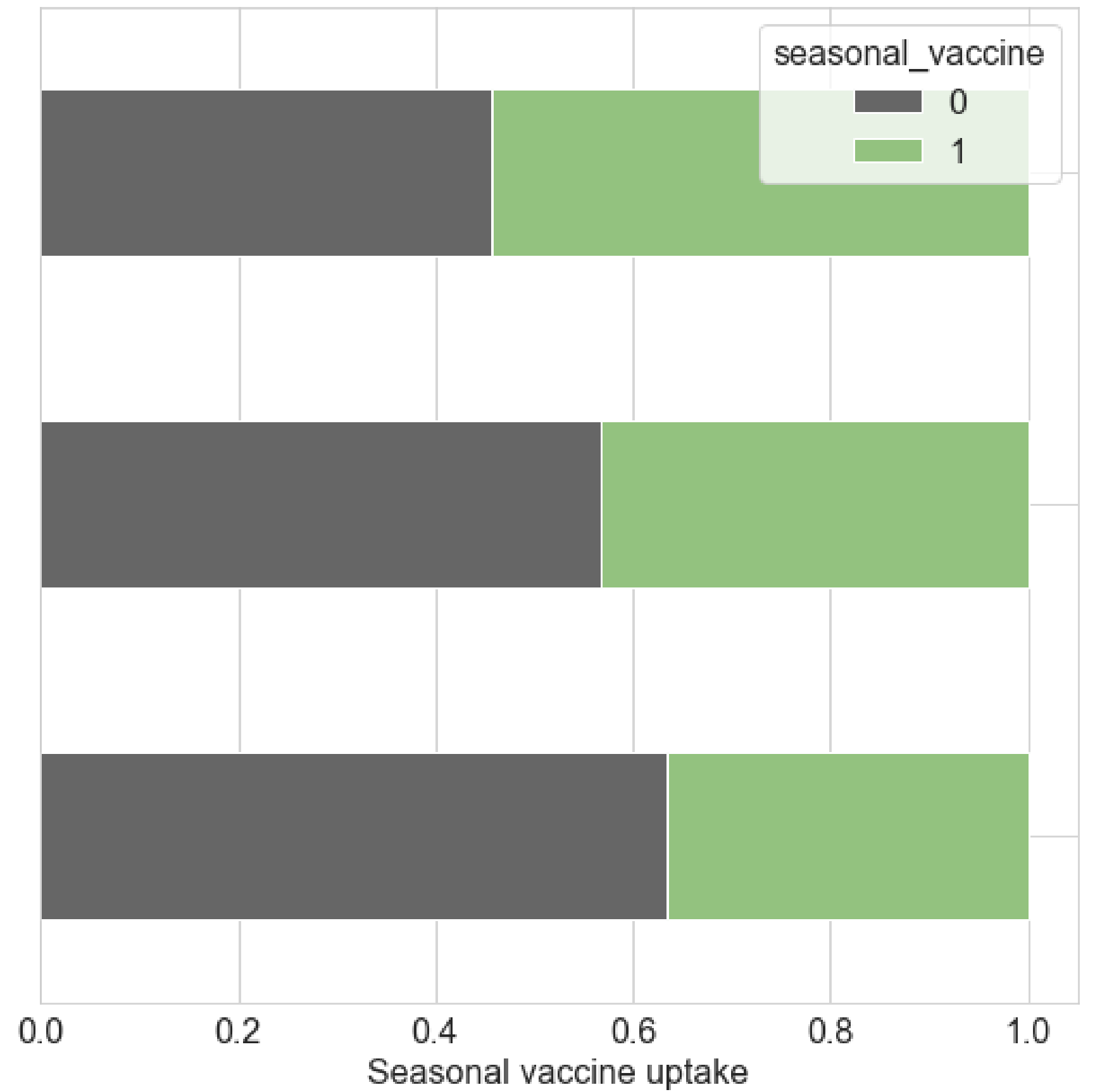
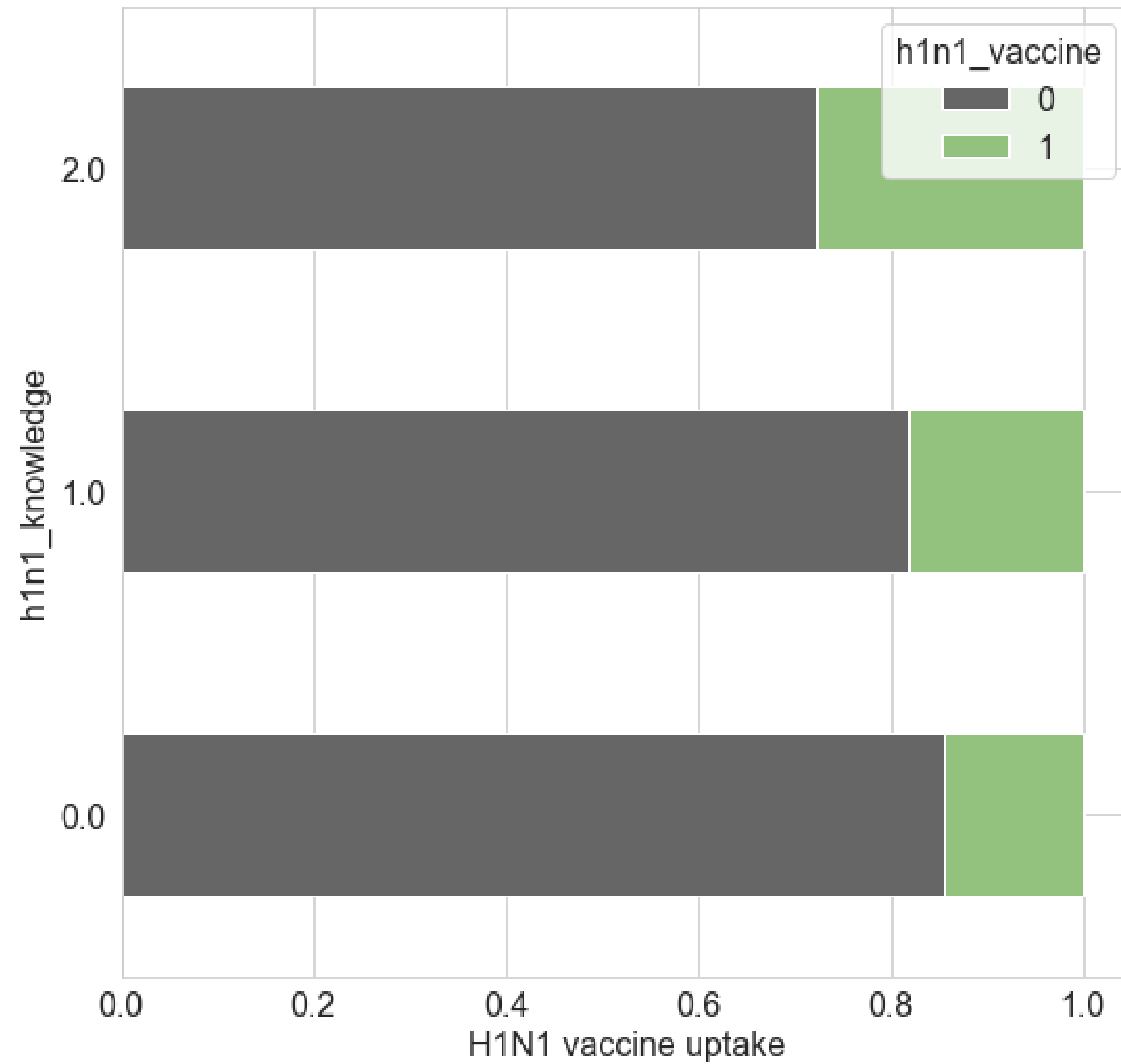




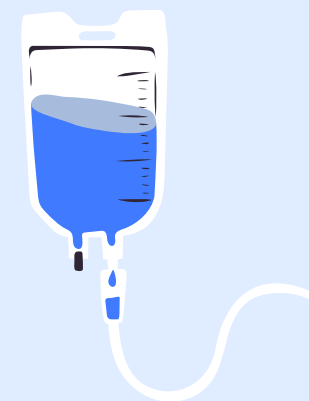
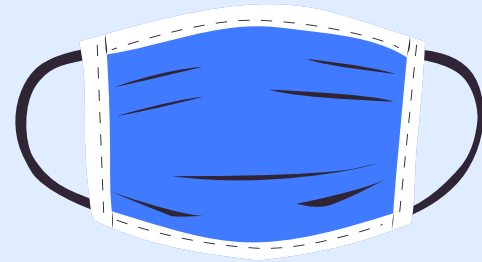
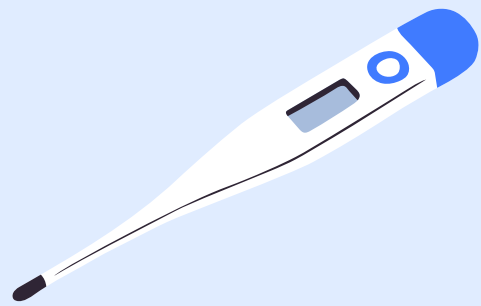
H1N1 concern vs Vaccine Uptake



H1N1 Knowledge vs Vaccine Uptake



MODELLING






MODELLING

- Logistic Regression
- Random Forest Classifier
- XGBoost Classifier
- Gradient Boosting Classifier

LOGISTIC REGRESSION

- This was the baseline model.
 - It first had an accuracy of 78.22%
 - After feature selection, the accuracy improved to 78.45%
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RANDOM FOREST

- The first model had an accuracy of 77.14%
- The model was then tuned and the accuracy improved to 77.56%

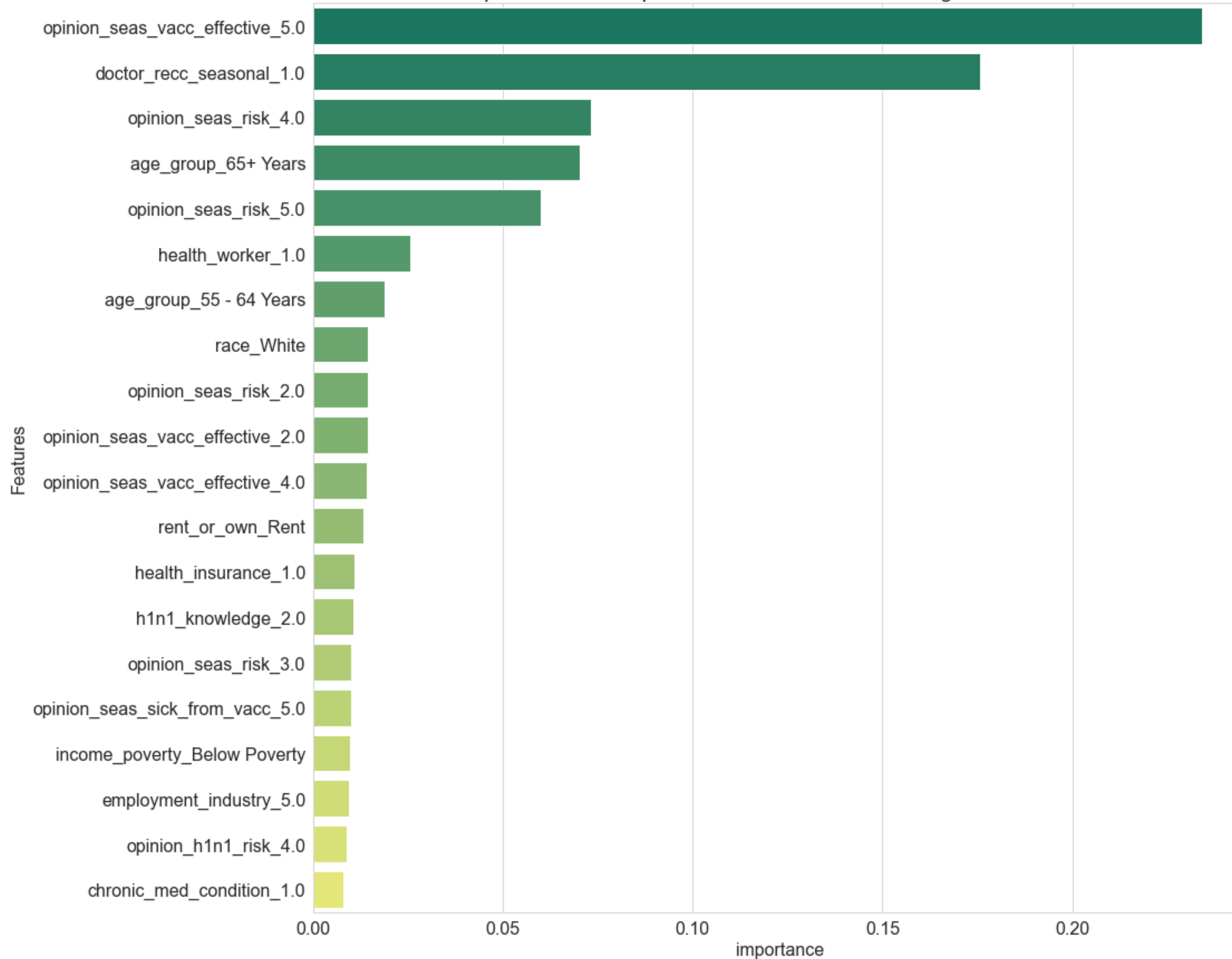
XGBOOST CLASSIFIER

- The default model had an accuracy of 77.49%
- After tweaking the model, it returned an accuracy of 78.62%

GRADIENT BOOSTING CLASSIFIER

- The default model had an accuracy of 78.12%
 - The accuracy improved to 78.99% after once it was tuned.
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Graph of Feature Importance from Gradient Boosting Classifier Model




EVALUATION

- The Gradient Boosting Classifier model was chosen as the final model as it had an accuracy of 78.99%

EVALUATION

Most important predictors were determined to be:

- The respondent's opinion on the effectiveness of the vaccine.
 - Doctor's recommendation to take the vaccine.
 - The respondent's opinion on the risks involved with not being vaccinated.
 - People older than 65 and the general older population.
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RECOMMENDATIONS

- Public awareness campaigns should be made regarding the effectiveness of the seasonal flu vaccine as well as the risks associated with the flu.
- It would help to emphasise the safety of the vaccines for use by the public.
- Older people are more likely to take the seasonal flu vaccine. The younger population could, therefore, be targeted for such campaigns.



THANK YOU!

QUESTIONS?