

Presentation
Group 14

PREDICTING H1N1 VACCINE UPTAKE:

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Overview

- This project seeks to leverage data from the National 2009 H1N1 Flu Survey to predict individuals' likelihood of receiving the H1N1 flu vaccine. By analyzing various factors including demographics, health behaviors, and opinions, the objective is to uncover patterns and insights that can inform targeted vaccination campaigns and increase overall vaccine uptake rates. By conducting a thorough examination of these variables, the project aims to identify potential patterns, correlations, and insights that can contribute to enhanced vaccine uptake and overall health improvements.



Business Understanding

The ministry of health wants to identify an individuals' likelihood of receiving the H1N1 flu vaccine, amidst the global challenge of COVID-19 vaccination. Through an analysis of demographic variables, health behaviors, and attitudes towards vaccination, the goal is to extract insights that can guide targeted public health initiatives. By addressing vaccine hesitancy and promoting vaccination uptake, the project aspires to contribute to the collective effort to mitigate the transmission of H1N1 virus and safeguard public health.



Business Objectives



The project seeks to build a predictive model to identify individuals prone to vaccine hesitancy, enabling targeted interventions to enhance vaccination uptake rates.

To pinpoint factors linked to higher vaccine uptake, informing the creation of tailored interventions and public health strategies to bolster vaccination rates.

Examine the influence of socio-economic factors, such as income and education, on vaccination decisions

Data Understanding

“training _ set _ features” is a clean dataset of 26,708 survey responses to the Centre for Disease Control’s website ; obtained from Kaggle.

The target variable “h1n1_vaccine” has 2 classes.

0 represents no vaccination, and 1 represents vaccination done.

This dataset has 36 feature variables and is not balanced.





Exploratory Data Analysis

Features that were most important in predicting whether someone was vaccinated or not included:
Opinion on H1N1 vaccine effectiveness

- Doctor's recommendation
- H1N1 concern
- Gender
- H1N1 Knowledge
- Perceived side effects from H1N1 vaccine
- Chronic medical condition
- Number of adults in a household



Modelling

We perform the preprocessing and transformations by fitting and transforming our functions on the training data, then simply transforming the test data in an attempt to prevent data leakage.

Logistic Regression - 0.7735

Decision Tree - 0.7814

KNN - 0.7811

Naive Bayes - 0.7528

Random Forest - 0.8288

XGBoost - 0.8405

XGBoost is therefore our best and final model with the best Accuracy of 0.8405, as compared to all other models

Recommendations

1. Dispel vaccine myths and promote preventative measures against the flu.
2. Identify high-risk groups particularly those with lower levels of education and individuals expressing low concern for H1N1, to implement targeted messaging to them.
3. Utilize a predictive model for efficient resource allocation in the vaccination campaign.
4. Implement policies that emphasize face masks, minimizing gatherings, and hand washing.
5. Collaboration with health experts to encourage medical checkups and doctor's recommendations.





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THANK YOU!