

Understanding Vaccine uptake through behaviour and demographic analysis

Table of contents



+ 01

Overview

+ **02**Problem
Statement

Q3DataUnderstanding

+ 04

Data Preparation

• 05

Modelling

+ 06

Conclusion

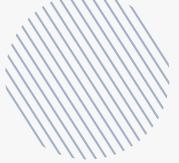


Overview

- ➤ Predict whether individuals received H1N1 and seasonal flu vaccines based on their backgrounds, opinions, and behaviors.
- > Identify factors influencing vaccination decisions
- Develop predictive models to inform public health strategies









Problem Statement

- ➤ Predict the likelihood of receiving H1N1 and seasonal flu vaccines.
- Analyze the relationship between individual characteristics and vaccination patterns

Understanding these factors can guide initiatives to improve vaccine uptake in future campaigns







Data Understanding





Data Features and Analysis

Phone survey conducted in the United states. It has social, economic and demographic backgrounds, opinions on illness risks and vaccine effectiveness







Data Preparation





On Data cleaning filled numeric data with median and categorical columns with mode. Also dropped columns with 50+ missing values and applied one-hot encoding to categorical features for modelling







Modelling





- ➤ Logistic Regression
- ➤ Decision Tree



Evaluation metrics

- Area under the curve(AUC):81 % average
- Mean squared error(MSE)-Training and test data was close enough showing no sign of overfitting or underfitting





Results

Using Grid search CV, Logistic regression proved to be the best model with the following parameters:

C=**100**Class_weight= **Balanced**Solver = '**liblinear**'





- Logistic Regression effectively predicts vaccination likelihood.
- Behavioral and demographic insights can drive tailored public health strategies.

Future Work:

- Explore additional models for improved performance.
 - Validate findings with more extensive datasets.



Thanks

Email: gracemwendemicheni@gmail.com **Github:** https://github.com/GraceMwende

Linkedin: https://www.linkedin.com/in/gracemwende/

medium: https://medium.com/@gracemwendemicheni







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