Project Title: Predicting Healthcare Utilization Using Poisson Regression.

Introduction:

Healthcare utilization is an important indicator of public health and healthcare system efficiency. It can help policymakers and healthcare providers optimize resource allocation and improve healthcare accessibility. This project aims to develop predictive models to expect doctor visits and identify factors that influence the frequency of doctor visits.

Objectives:

- Build a GLM model to forecast doctor visits based on patient characteristics.
- Identify key factors influencing the frequency of doctor's visits.
- Evaluate model performance to improve the healthcare system and enhance patient satisfaction.

Methodology:

- **Data Collection**: Obtain data from the R package AER (Secondary data resource) of doctor visits, including patients' demographic and health information.
- **Data Preprocessing**: Clean and prepare data for analysis, handling missing values, and outliers. Explore the dataset to understand distributions and correlations related to retention.
- **Model Development:** Train GLM models, such as Poisson regression, using the preprocessed data to predict hospital visit probabilities**.**
- **Model Evaluation**: Evaluate the model's performance and analyze the impact of individual features on predicted hospital visit probabilities.

Expected Outcomes:

- A GLM model to predict hospital visits with patient characteristics.
- Identification of significant predictors and their impact on the healthcare system.
- Insight into whether private insurance increases healthcare usage.

Significance:

- Improve the healthcare system to proactively manage patients.
- Supports healthcare providers in anticipating patient demand based on socioeconomic and health-related factors.

Resources:

- Access to Doctor visits dataset (R package AER).
- Statistical software (e.g., R) for data analysis and model development and visualization software (e.g., MS Power BI) for data visualization.

Conclusion:

This project aims to leverage predictive analytics to forecast the frequency of doctor visits and provide actionable insights for health system. By analyzing the DoctorVisits dataset, we aim to uncover patterns in doctor visits based on socioeconomic and health-related factors. The findings will contribute to healthcare policy discussions and statistical modeling practices.