# Healthcare Appointment No-Show Prediction

## Objective

To predict whether a patient will miss a scheduled appointment using machine learning, and to improve hospital scheduling efficiency with the help of data visualization.

## Technologies Used

Python (Pandas, Sklearn), Power BI, Jupyter Notebook, Excel

## Dataset Overview

- Source: Historical appointment records
- Total Records: 1113 appointments
- Target Variable: No-show status (Yes/No)
- Key Features: Age, Gender, SMS_received, WaitingDays, Scholarship, etc.

## Data Preprocessing

- Cleaned dataset and standardized column names
- Converted date fields and calculated 'WaitingDays'
- Removed negative values in data
- Encoded categorical variables for modeling

## Model Building

- Algorithm: Decision Tree Classifier
- Split: 80% Training, 20% Testing
- Features Used: Age, Gender, SMS_received, Scholarship, etc.
- Output: Accuracy and Classification Report
- (Note: Accuracy field in the report was left blank and should be filled after model training)

## Power BI Dashboard

- KPIs: Total Appointments, No-show Rate
- Visuals: No-show distribution by Gender, SMS Received, Weekday, Neighborhood
- Filters: Age, Gender, Appointment Day

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- File Output: No_Show_Dashboard.pbix

## Key Insights

- SMS reminders are effective in reducing no-shows
- Higher no-show rates seen in specific neighborhoods
- No-shows fluctuate across days of the week
- Age and gender have a minor influence

## Recommendations

- Send SMS reminders to all patients
- Reduce waiting time between booking and appointment
- Schedule more on days with lower no-show rates
- Identify and focus on high-risk groups, such as the elderly or patients with chronic conditions

## Deliverables

- Dataset (PROJECT.xlsx)
- Python Code (Python_notebook.ipynb)
- Power BI Dashboard (No_Show_Dashboard.pbix)
- Final Project Report

## Presented by

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