Healthcare No-Show Dashboard Project Report

1. Introduction

Missed medical appointments, or "no-shows," pose a major challenge to healthcare systems, leading to wasted resources and decreased care quality. This project aims to analyze patterns of no-shows using historical appointment data and present the insights in a user-friendly Power BI dashboard.

2. Abstract

The goal of this project is to identify key trends and factors that influence patient no-shows. By examining variables like age, gender, day of the week, SMS reminders, and medical conditions, the project builds visual insights that support healthcare administrators in optimizing appointment scheduling and patient communication.

3. Tools Used

- Power BI: For dashboard creation, data visualization, and interactive analysis.

- DAX (Data Analysis Expressions): Used for custom metrics and KPIs in Power BI.

- Python (pandas, numpy, scikit-learn): Used for data cleaning, transformation, and training a Decision Tree model to predict no-shows.

4. Steps Involved in Building the Project

1. Data Acquisition & Cleaning

   - Loaded the dataset `healthcare_noshows_cleaned.xlsx`.

   - Used Python (pandas, numpy) for removing irrelevant columns and handling missing or inconsistent data.

2. Data Exploration

   - Explored trends based on SMS reminders, age groups, weekdays, gender, and medical conditions.

3. KPI and Metric Calculation

  - Built DAX measures including:

   - Total Appointments

   - Total No Shows

   - No Show Rate (%)

   - Average Wait Time (Date.diff)

   - Average Patient Age

4. Dashboard Design

  - Created a clean layout with cards, slicers, and charts.

  - Visuals included: bar charts, clustered bars, line charts, pie/donut charts.

  - Used a custom dark theme with color palette and shadows for modern aesthetic.

  - Set up multiple pages for clear navigation.

5. Customization and Modeling

   - Designed custom theme with specific canvas background, card backgrounds, shadow styles, and legend text color.

   - Trained a Decision Tree model using scikit-learn to predict patient no-show likelihood based on features like age, SMS received, and medical conditions.

5. Conclusion

The dashboard successfully highlights key insights behind patient no-shows. It demonstrates how factors like SMS reminders and appointment weekday impact attendance. This interactive report allows healthcare providers to make data-driven scheduling and communication decisions, potentially reducing missed

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appointments. The Decision Tree model offers predictive capabilities to further aid in proactive management.

Files Attached

- "healthcare_noshows.csv" - Dataset used

- "healthcare_noshows_cleaned.xlsx" - Cleaned appointment dataset

- "Created and Tested model.ipynb" - Train decision tree model to predict no-shows

- "Project 11.png" - Power BI insight dashboard