Healthcare Appointment No-Show Analysis Report

1. Introduction

Missed medical appointments, also known as no-shows, create serious challenges for healthcare systems. They waste valuable time slots, reduce efficiency, and increase operational costs. This project focuses on analyzing patient appointment behavior using historical data to identify patterns behind no-shows.

2. Dataset Description

The dataset contains medical appointment records with information about patients, appointment dates, reminders, and attendance status.

Key Columns:
- ScheduledDay: Date when appointment was scheduled
- AppointmentDay: Actual appointment date
- Age: Patient age
- Gender: Male/Female
- SMS_received: Whether SMS reminder was sent (0/1)
- No-show: Whether patient missed appointment
- WaitingDays: Gap between scheduling and appointment

3. Data Cleaning & Processing

The dataset was cleaned using Python (Pandas). Invalid ages, duplicate records, and incorrect date formats were handled. Additional features such as weekday, waiting days, and show/no-show rates were derived.

4. KPIs & Measures

- Total Appointments
- Total No-Shows
- Show Rate (%)
- No-Show Rate (%)

5. Dashboard Analysis

The Power BI dashboard provides interactive insights using slicers and buttons. Key visualizations include:
- No-Shows by Weekday
- Impact of SMS reminders
- Waiting Days vs No-Shows trend

6. Insights

• Appointments scheduled earlier in the week show higher attendance.
• SMS reminders significantly reduce no-show rates.
• Longer waiting days increase the probability of no-shows.

7. Conclusion

This analysis helps healthcare organizations understand patient behavior and optimize appointment scheduling. Implementing reminder systems and reducing waiting times can significantly improve attendance.

8. Future Scope

Future improvements may include machine learning models to predict no-shows, real-time alerts, and integration with hospital management systems.

9. Tool Used

Python, Power BI