DATA ANALYTICS PROJECT

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Power BI Questions:

1. No-Show trend over time.
2. Impact of SMS reminders.
3. Top 10 neighbourhoods by No-Show rate.
4. Trend of Bookings by Weekday.
5. No-Show trend over different age groups.
6. No-Show distribution by gender.
7. Total number of No-Shows.
8. Total number of appointments
9. Show up rate.

SQL Questions:

1. Retrieve percentage of No-Shows.
2. Retrieve average age of patients.
3. Retrieve no-show rates by weekday.
4. Do SMS reminders reduce No-Shows.
5. Are older patients more likely to show up.
6. Retrieve top 10 Neighbourhoods by no-show rates.
7. View - SMS Reminder Impact on Appointment Attendance.

Data Columns

1. PatientId
2. AppointmentID
3. Gender
4. ScheduledDay
5. AppointmentDay
6. Age
7. Neighbourhood
8. Scholarship
9. Hypertension
10. Diabetes
11. Alcoholism
12. SMS_received
13. No_show

Power BI Answers

1. **No-Show trend over time:**
   The "Total Appointments & No Shows over Time" chart is a combination chart showing the volume of both total appointments and no-shows over a period, demonstrating their parallel trends.
2. **Impact of SMS reminders:**
   The "No-Show by SMS Reminder" column chart compares the no-show rates (27% with SMS vs. 19% without), indicating a higher rate for those who received reminders.
3. **Top 10 neighbourhoods by No-Show rate:**
   The "Top 10 Neighbourhoods by No-Show" table lists the neighbourhoods with the highest absolute number of no-shows.
4. **Trend of Bookings by Weekday:**
   The "Bookings by Weekday" bar chart shows the total count of bookings for each day of the week, with Tuesday having the highest volume.
5. **No-Show trend over different age groups:**
   The "No-Show by Age Group" column chart displays the no-show percentage for various age ranges, showing a decreasing trend with increasing age.
6. **No-Show distribution by gender:**
   The "No-Show by Gender" pie chart breaks down the no-show percentage by gender, with females at 20.31% and males at 19.98%.
7. **Total number of No-Shows:**
   A KPI card shows the total count of no-shows is 22,319.
8. **Total number of appointments:**
   A KPI card shows the total count of appointments is 110,527.
9. **Show up rate:**
   A KPI card displays the overall no-show rate of 20.19%, from which the show-up rate can be calculated.

SQL Answers

```
CREATE DATABASE IF NOT EXISTS hospital;

USE hospital;
```

1. **Retrieve percentage of No-Shows.**

```
SELECT count(*) AS Total,
        SUM( CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) AS No_shows,
   ROUND(SUM( CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) * 100.0 /
COUNT(*), 2) AS No_shows_Percentage
FROM appointments;
```

2. **Retrieve average age of patients.**

```
SELECT ROUND(AVG(Age), 2) AS Avg_AgeOfPatients FROM appointments;
```

3. **Retrieve no-show rates by weekday.**

```
SELECT DAYNAME(AppointmentDay) AS Week_day,
        COUNT(*) AS Total_Appointments,
   SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) AS No_shows,
   ROUND(SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) * 100.0 /
COUNT(*), 2) AS No_shows_Percentage
        FROM appointments
   GROUP BY Week_day
   ORDER BY FIELD(Week_day, 'Monday', 'Tuesday', 'Wednesday', 'Thursday', 'Friday',
'Saturday', 'Sunday');
```

4. **Do SMS reminders reduce No-Shows.**

```
SELECT SMS_received,
        COUNT(*) AS Total_Appointments,
   SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) AS No_shows,
   ROUND(SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) * 100.0 /
COUNT(*), 2) AS No_shows_Percentage
   FROM appointments
   GROUP BY SMS_received;.
```

5. **Are older patients more likely to show up.**

```
SELECT CASE
        WHEN Age < 20 THEN '0-19'
   WHEN Age BETWEEN 20 AND 39 THEN '20-39'
   WHEN Age BETWEEN 40 AND 59 THEN '40-59'
   WHEN Age BETWEEN 60 AND 79 THEN '60-79'
   ELSE '80+'
END AS Age_Group,
        COUNT(*) AS Total_Appointments,
   SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) AS No_shows,
   ROUND(SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) * 100.0 /
COUNT(*), 2) AS No_shows_Percentage
   FROM appointments
   WHERE Age >= 0
   GROUP BY Age_Group
   ORDER BY Age_Group;
```

6. **Retrieve top 10 Neighbourhoods by no-show rates.**

```
SELECT Neighbourhood,
        COUNT(*) AS Total_Appointments,
   SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) AS No_shows,
   ROUND(SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) * 100.0 /
COUNT(*), 2) AS No_shows_Percentage
   FROM appointments
   GROUP BY Neighbourhood
   ORDER BY No_shows DESC
   LIMIT 10;
```

7. **View - SMS Reminder Impact on Appointment Attendance.**

```
CREATE VIEW no_show_by_sms AS
        SELECT SMS_received,
        COUNT(*) AS Total_Appointments,
   SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) AS No_shows,
   ROUND(SUM(CASE WHEN No_show = 'Yes' THEN 1 ELSE 0 END) * 100.0 /
COUNT(*), 2) AS No_shows_Percentage
   FROM appointments
   GROUP BY SMS_received;

SELECT * FROM no_show_by_sms;
SELECT * FROM no_show_by_sms WHERE SMS_received = 1;
```

DASHBOARD IMAGE