Project 4: Hospital Emergency Room Operations Analysis

1. Project Objective The goal of this project was to analyze patient flow, wait times, and demographic data within a hospital Emergency Room (ER). The objective was to build an interactive dashboard to monitor critical healthcare KPIs—such as patient satisfaction, admission rates, and department referrals—to identify operational bottlenecks and improve patient care.

2. Technical Skills Demonstrated

- **Healthcare Analytics:** Modeled complex operational data to track patient attendance status and wait times.
- **Interactive Navigation:** Implemented Month and Year (2023/2024) slicers to allow hospital administrators to track seasonal trends and historical performance.
- **Diverse Visualization Techniques:** Utilized a mix of Donut/Pie charts for binary metrics (Gender, Attend Status), Column charts for age distributions, and Bar charts with data bars to visualize admission volumes and referral sources.

3. Key Operational Insights

- **Wait Times & Satisfaction:** The ER is facing significant operational delays. With **60%** of patients experiencing delayed attendance, the average wait time sits at roughly 35 minutes. This is directly impacting patient experience, reflected in a low average satisfaction score of **4.91 out of 10**.
- **Admission Flow:** The ER acts as a heavy processing center, with a near-even split between patients who are ultimately admitted (51%) and those who are not (49%).
- **Patient Demographics:** The patient base is evenly split by gender (51% Male, 49% Female) and shows a relatively consistent spread across all age groups, with a slight peak in young adults aged 20–39.
- **Referral Pathways:** The vast majority of patients arrive as walk-ins with no prior referral (273 patients). Of those with referrals, General Practice is the leading source (98 patients), while specialized departments like Renal and Cardiology see the lowest direct ER intake.

4. Strategic Recommendations

- **Triage Optimization:** Given the high volume of non-admitted patients (49%) and walk-ins (273), the hospital should implement a "fast-track" triage system for non-

critical cases to alleviate ER congestion and reduce the 35-minute average wait time.

- **Delay Root-Cause Analysis:** Conduct an immediate workflow audit to understand why 60% of patients are delayed. Improving staffing during peak hours or streamlining the intake paperwork could significantly boost the 4.91 satisfaction score.