

KPI Analysis of Lowell General Hospital

Overview

This project presents a comprehensive analysis of Lowell General Hospital's key performance indicators (KPIs) related to patient safety, satisfaction, and operational efficiency. The goal is to understand relationships between KPIs, benchmark performance against industry standards, and recommend actionable improvements.

Problem Statement

Lowell General Hospital is committed to prioritizing patient well-being. A structured KPI analysis is essential to:

- Identify trends
- Assess performance
- Develop data-driven recommendations to enhance customer satisfaction

Objective

- Assess KPI impact on customer experience
- Analyze correlations between KPIs
- Benchmark hospital performance against national standards
- Recommend improvements for operational efficiency and patient care

Dataset

- Source: Lowell General Hospital Dataset
- Size: 60 rows × 4 columns
- Timeframe: Jan 2020 – Dec 2024 (5 years)
- KPIs Analyzed:
 1. Average Licensed Bed Occupancy Rate (%)
 2. Unassisted Fall Rate per 1,000 Patient Days
 3. Staff Responsiveness Domain Top Box Score (%)

KPI Definitions

1. Average Licensed Bed Occupancy Rate
Percentage of available beds occupied over a given period.
2. Staff Responsiveness Top Box Score (HCAHPS Survey)
Based on patient feedback on:
 - Prompt help after pressing the call button
 - Timely assistance with bathroom needs/bedpan
3. Unassisted Patient Falls per 1,000 Patient Days (NDNQI)
Number of patient falls without staff assistance per 1,000 days of care.

Key Findings

Correlations

- Bed Occupancy ↔ Fall Rate: +0.70 (Strong positive)
- Bed Occupancy ↔ Staff Responsiveness: -0.37 (Moderate negative)
- Fall Rate ↔ Staff Responsiveness: -0.79 (Strong negative)

Interpretations

- High bed occupancy may strain staff, leading to higher fall rates and lower responsiveness.
- Better staff responsiveness strongly correlates with fewer patient falls.

Benchmark Comparison

KPI	LG Hospital	U.S. Benchmark	Inference
Bed Occupancy	96.22%	~66%	High demand but risk of operational strain
Fall Rate	2.61	2.3 – 13	Positive — low fall rate
Staff Responsiveness	63.09%	85% – 90%	Below standard — needs improvement

Recommendations

- Staffing Optimization: Increase staff during high occupancy periods.
- Training & Protocols: Enhance staff responsiveness through targeted training.
- Resource Allocation: Implement better patient monitoring systems during peak times.
- Continuous Monitoring: Regularly track KPI performance to maintain improvements.