Improving Emergency Shelter Utilization through Time Series Forecasting

Capstone Project | MNGT-257 | SAIT Instructor: Chantelle Lamotte

Project Description

A data-driven platform to help Calgary shelters predict demand, manage resources, and support vulnerable populations more effectively.

The Problem

- Emergency shelters in Calgary face unpredictable demand
- Overcrowding in winter; underutilization in summer
- Existing tools (like ShelterLink) only show current availability—no forecasting

Our Solution

A 3-part platform to support shelter decision-making: (QR CODE)

- Power BI Dashboard – Live + historical occupancy trends
- Forecasting Web App – Predicts demand up to 2 years ahead
- Action Plan Toolkit – Triggers strategies based on forecast thresholds

Power BI Dashboard

Forecasting Web App

Action Plan Toolkit

Why It Works

- Built using 10+ years of Alberta shelter data (2013–2024)
- Validated with support from YW Calgary (Mentor: Randy Thornhill)
- Uses ARIMA forecasting – proven effective in social service planning
- Designed with user input for ease of use and seamless adoption

Key Features

- Forecasts occupancy risk by shelter (low/moderate/high/over)
- Triggers pre-defined action plans at 90%+ capacity
- Supports real-time diversion, staffing, and resource prep
- Scalable, cost-effective, and nonprofit-friendly

Team Members

Deanna Rose Quiambao – Lead Researcher

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Contact Us

Want to partner, learn more, or provide feedback?

Let's build smarter, more responsive shelters, starting today.

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