

In-Depth Analysis of Toronto Shelters' Service User Patterns

(2021)

Yifei Chu

1010006832

University of Toronto

INF 2178

Faculty of Information

Introduction:

In this detailed exploration, we look into Toronto's shelter data for 2021, focusing on how shelters accommodate the homeless population in terms of service user count and capacity types. The aim is to derive insights that could inform better management and policy-making for these shelters.

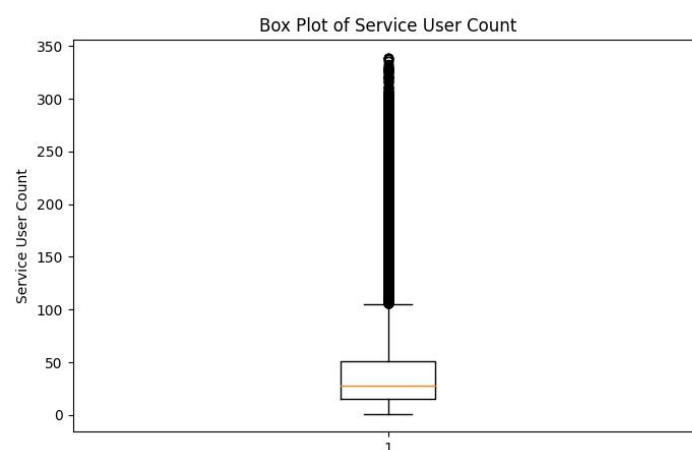
Data Preparation:

Starting with the dataset 'INF2178_A1_data.xlsx', I addressed the challenge of missing data by filling numerical gaps with mean values and categorical ones with mode values. This method ensured a robust dataset, preserving as much information as possible for an accurate analysis.

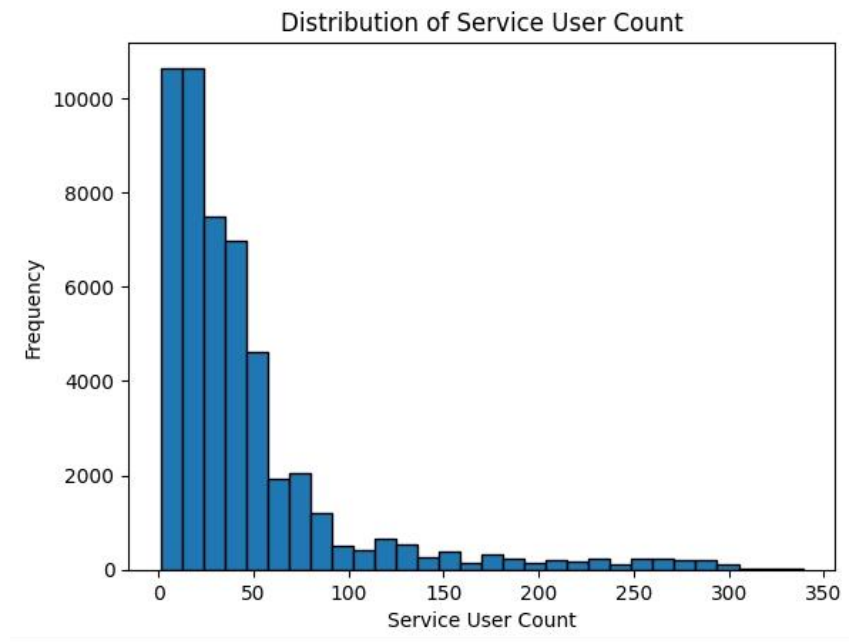
Exploratory Data Analysis (EDA):

- Box Plot of Service User Count:

A box plot for service user counts highlighted the presence of outliers, showing that some shelters had exceptionally high numbers of users, far above the average.



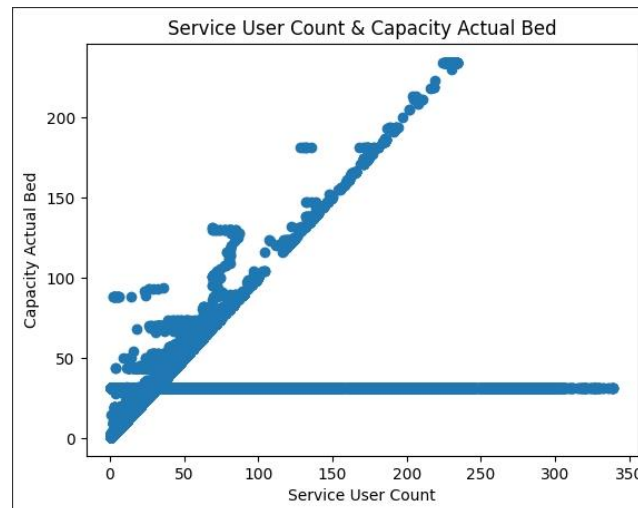
- Analyzing Service User Count Distribution:



Detailed Analysis:

The histogram revealed a skewed distribution, with a large number of shelters having a lower service user count, while fewer shelters had a very high count. This pattern might indicate a disparity in shelter utilization, with certain shelters being consistently over-occupied, possibly due to location, facilities, or specific programs targeting certain demographics.

- Exploring the Relationship between User Count and Capacity:



Detailed Analysis:

The scatter plot showed a general positive trend, indicating that shelters with higher bed capacities tended to accommodate more service users. However, there were outliers, with some shelters having high capacities but lower user counts and vice versa. This could suggest variations in shelter efficiency, differing local needs, or perhaps discrepancies in resource allocation or accessibility.

Quantitative Analysis:

The t-test results comparing room-based and bed-based shelters provided a statistical backing to the observed trends.

- Results: T-statistic of 78.5 and a P-value of 0.
- In-Depth Interpretation: The high T-statistic was a clear indicator of a significant difference in how room-based and bed-based shelters operate in terms of service user count. The negligible P-value reinforced this, negating the likelihood of this being a chance occurrence. This suggests a systemic difference in the operational models of these two

types of shelters, warranting further investigation into their management and resource allocation strategies.

Extended Discussion:

The EDA painted a picture of a shelter system with varied demands and responses. The service user count distribution raised questions about equitable access and resource distribution among shelters. The capacity versus user count analysis hinted at operational efficiencies and potential areas for improvement in how shelters are managed. Combined with the quantitative analysis, the findings point towards the need for tailored strategies in managing different types of shelters, ensuring that each can effectively serve its intended population.

Conclusion:

This thorough analysis of Toronto's 2021 shelter data uncovers significant insights into service user patterns and shelter capacities. It highlights the need for a nuanced approach in shelter management and policy-making, considering the distinct operational modes and challenges of room-based versus bed-based shelters. These findings serve as a critical input for future studies and policy development aimed at optimizing shelter services for the homeless population in Toronto.