Seasonal Variations in Mortality Rates Among Shelter Residents in Toronto: Is Winter the Deadliest Season?*

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September 24, 2024

This study explores Toronto winters' influence the morality rates among sheltered residents, utilizing data from 2007-2023. I explore on how cold weather impacts those in shelters by drawing upon previous research that highlights increased risks for homeless populations during colder months. I find that mortality rates in spring, summer, and fall are similar, while winter shows a slight increase compared to the other seasons. This finding suggests while homeless shelters do help to lower the risk of death in winter, further meaures should be taken to protect sheltered individuals against cold weather.

1 Introduction

Homelessness is a persistent issue in Canada, with Toronto fostering to the largest population of homeless individuals in the country (Blair 2024). On any given night, an estimated 10,000 people in Toronto are without a permanent home (Blair 2024), with many relying on Toronto shelters for safety and warmth. Despite the city of Toronto providing shelters for these homeless people, sheltered residents still face many health risks.

Previous research has shown that homeless populations are at an increased risk of mortality by cold temperatures, particularly during the winter months (Romaszko and Cymes 2017). This paper aims to explore seasonal variations in mortality rates among shelter residents in Toronto between 2007 and 2023. By comparing mortality rates across winter, spring, summer, and fall, I seek to determine whether winter poses a disproportionately high risk for sheltered individuals.

*Code and data are available at: https://github.com/kevicai/toronto-sheltered-residents-deaths-analysis

The remainder of this paper is structured as follows: Section 2 addresses the data used in the analysis, Section 3 presents the results, Section 4 disscusses my findings and limitations in the results.

2 Data

The dataset "Deaths of Shelter Residents" ("Deaths of Shelter Residents" 2024) obtained from the OpenDataToronto R package (Gelfand 2022), to invesigate the affect of winter on sheltered residents in Toronto. This dataset includes the number of deaths of sheltered residents for every month from January 2007 to August 2024.

Data was cleaned using the statistic programming software R (R Core Team 2024) and the R libaries `tidyverse` Wickham et al. (2019) and `janitor` (Firke 2023). A sample of the cleaned dataset is shown in Table Table 1.

Table 1: Sample of Cleaned Deaths of Shelter Residents Data

Year	Month	Deaths
2007	Fall	6
2007	Spring	6
2007	Summer	7
2007	Winter	5
2008	Fall	3
2008	Spring	1

3 Results

4 Discussion

References

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