

Homelessness Trends and Housing Interventions: Analyzing Population-Specific Challenges from 2018 to 2024*

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This paper analyzes trends in homelessness and the effectiveness of housing interventions between 2018 and 2024, focusing on vulnerable population groups such as refugees, families, and individuals experiencing chronic homelessness. The findings show a fluctuating but generally increasing homelessness rate, with temporary declines during the COVID-19 pandemic due to emergency measures. However, chronic homelessness and refugee populations continue to rise, signaling gaps in existing housing programs. This research highlights the need for long-term, tailored interventions to address the root causes of homelessness and provide more equitable access to stable housing across different population groups.

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*A GitHub Repository containing all data, R code, and other files used in this investigation is located here:
<https://github.com/RIRI0527/Homelessness-Trends-and-Housing-Interventions-Analyzing.git>

1 Introduction

Homelessness remains a critical societal issue worldwide, impacting both urban and rural areas. The problem is particularly pressing in urban centers where housing affordability, economic instability, and social services are often strained. Homelessness affects vulnerable populations disproportionately, including families, refugees, Indigenous people, youth, and individuals facing chronic homelessness (Stergiopoulos and Herrmann 2003). These groups face unique challenges that can prevent them from securing stable housing, despite various efforts by governmental and non-governmental organizations (Mandell 2007).

This report focuses on the analysis of homelessness trends and housing movements in the period between 2018 and 2024. The objective is to assess the changes in the homeless population, evaluate the effectiveness of housing interventions, and identify which population groups are most affected by homelessness (Laws 1992). Understanding these trends is essential for policy-makers, social services, and community organizations in formulating targeted interventions to alleviate homelessness and improve housing stability (Hurtubise, Babin, and Grimard 2009).

By leveraging a comprehensive dataset on the actively homeless population and those moved to housing, this report aims to highlight the nuances within the homelessness crisis (Jadidzadeh and Kneebone 2018). The analysis is structured around key questions: How has the actively homeless population changed over time? What impact did the COVID-19 pandemic have on homelessness? Which population groups have benefited the most from housing initiatives, and which groups remain underserved? Addressing these questions provides a foundation for developing more effective policies and programs that can address the root causes of homelessness and ensure more equitable access to housing solutions (Hwang 2000).

The subsequent sections of this report will delve into detailed time series analysis of the homeless population, explore population-specific trends, and assess the outcomes of housing programs aimed at moving individuals from homelessness into stable housing situations.

2 Data

2.1 Overview

The dataset used in this analysis spans from 2018 to 2024 and includes monthly records of the actively homeless population, broken down by key population groups. These population groups include “Chronic,” “Refugees,” “Families,” “Indigenous,” “Youth,” “Single Adults,” and “Non-refugees.” Each of these groups faces unique challenges when it comes to accessing housing, and the dataset provides an opportunity to examine these challenges in depth. In

these paper we only focus on the analysis on the amount of the homeless moved to housing, so we select 4 columns that we needed. See Table 1 for an overview of the data. The `knitr` package (Xie 2023) was used to generate the table.

Table 1: Sample of Toronto Shelter System Flow

date	actively_homeless	population_group	moved_to_housing
2018-01-01	7958	All Population	508
2018-01-01	2532	Chronic	111
2018-01-01	2408	Refugees	328
2018-01-01	2277	Families	321
2018-01-01	924	Youth	44

The City of Toronto uses the Shelter Management Information System (SMIS) to collect data on individuals accessing homelessness services, such as emergency shelters, respites, and other overnight services. The Shelter System Flow data tracks the number of unique people entering and leaving the shelter system each month, focusing on those considered actively homeless (i.e., those who have used the shelter in the past three months and were not discharged to permanent housing). This data helps measure the city’s progress in reducing homelessness. The dataset will eventually expand to include individuals sleeping outdoors or using non-city-funded services, aiming to provide a more comprehensive view of homelessness in Toronto, currently underrepresented by about 18%(Gelfand 2022).

Key variables in the dataset include:

- All populations: Refers to total number of individuals represented in the report without any demographic breakdown.
- Chronic (refers to chronic homelessness): People who meet one of the two following criteria, as per the federal definition of chronic homelessness. The person has recorded a minimum of 180 overnight stay in the past year (365 days); or the person has recurrent overnight stays over the past three years with a cumulative duration of at least 546 nights.
- Families: Individuals who are recorded as staying in a family designated overnight service.
- Youth: Refers to unaccompanied youth and includes people who are between 16 and 24 years old by the last date of the reporting month and are not members of a family as defined above.
- Single Adult: Refers to individuals who are neither classified as youth nor are members of a family.
- Refugees: People who either identify as refugees upon intake to a shelter system or whose intake is completed into a program designated for refugees. Applies to all household members as answered by the household head.

- Non-Refugees: People who are not categorized as refugee per the definition above.
- Indigenous: An individual is classified as Indigenous if the person has self-identified as First Nations (status, non-status, treaty, non-treaty), Metis or Inuit in at least one of the intake(s) completed in SMIS (Shelter Management Information System)(Support Services 2024).

Additionally, the dataset includes information on the effectiveness of housing interventions through the “Moved to Housing” variable, which tracks the number of homeless individuals successfully placed into stable housing(Vakili-Zad 2004). This variable is crucial for understanding which population groups are being effectively served by housing programs and which may require additional resources or targeted interventions to ensure their transition out of homelessness.

Overall, the dataset provides a comprehensive view of homelessness trends over six years, with a focus on both the overall population and specific subgroups(Dutton and Jadidzadeh 2019). The combination of these variables allows for a multi-dimensional analysis, enabling us to not only identify trends but also to understand the factors driving these trends. This detailed approach is critical for informing future policy decisions and improving the design of homelessness interventions.

In the following sections, we will explore the results of this analysis through visual representations of homelessness trends and housing movements, focusing on both the overall population and specific vulnerable groups. The insights derived from this analysis will form the basis of recommendations for future homelessness reduction strategies.

Using the R programming language (R Core Team 2022), `tidyverse` (H. Wickham et al. 2019) packages and the `lubridate` (Spinu 2023) package were used to simulate the dataset and generate tests for it. Use the `conflicted` (Arnold 2019) package to force all conflicts to become errors. The `opendatatoronto` (Gelfand 2022) and the `tidyverse` (H. Wickham et al. 2019) packages were then applied in order to download the raw Toronto Shelter System Flow dataset. The `tidyverse` package (H. Wickham et al. 2019) and the `dplyr` package (F. Wickham H. 2023) were used to clean the raw dataset The `tidyverse` (H. Wickham et al. 2019) packages were used to test the cleaned dataset.

2.2 Results

After loading the dataset using the R programming language (R Core Team 2022), the `tidyverse` package(H. Wickham et al. 2019) and the `here` package (Müller 2020), the package(F. Wickham H. 2023) was used to generate graphs. In doing so, R code was adapted from Alexander (2023).

Figure 1 presents a fluctuating but generally increasing trend in the actively homeless population from 2017 to 2024, with numbers ranging between 8,000 and over 11,000. There is notable volatility, particularly between 2019 and 2020, when the population experienced a sharp drop in mid-2020, falling below 8,000. This decline is likely due to pandemic-related interventions

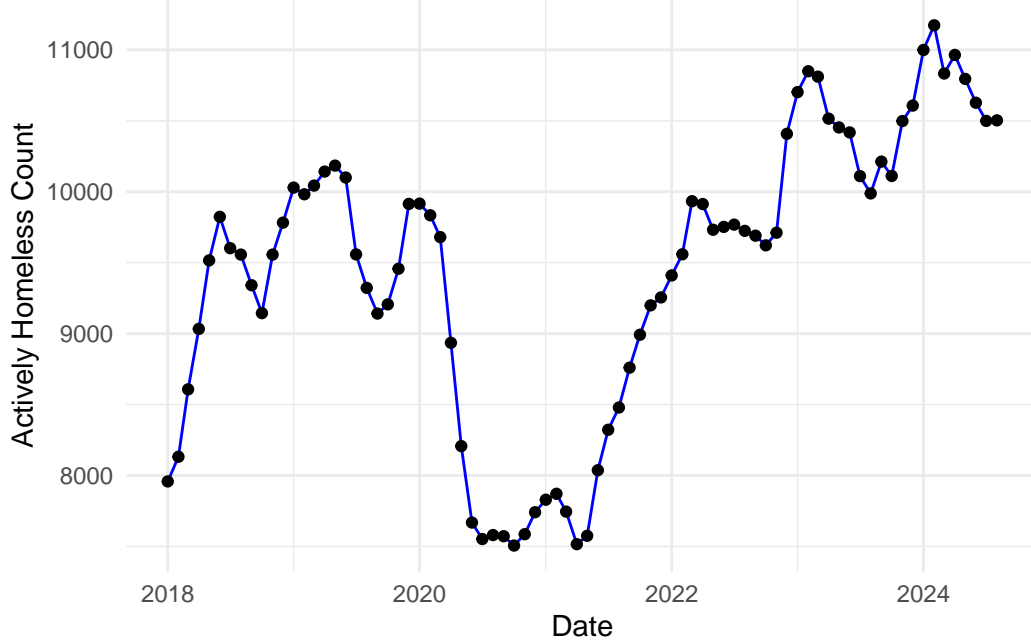


Figure 1: Time Series Trend of Actively Homeless

such as eviction moratoriums and emergency housing measures (Leung et al. 2008). However, these temporary solutions were followed by a rapid increase, with the homeless population rising steadily after late 2020. By mid-2023, the number surpassed 11,000 individuals.

From late 2022 into 2024, the homeless count plateaued between 10,500 and 11,000, suggesting some stabilization but at a higher level than pre-pandemic figures. This persistent elevation indicates ongoing difficulties in reducing homelessness, highlighting the long-term effects of economic instability and housing shortages. The volatility and overall upward trend suggest that homelessness is influenced by a combination of socio-economic factors, such as rising housing costs and limited access to affordable housing. Despite some stabilization, the elevated baseline points to the need for long-term policy solutions that address the root causes of homelessness, including economic disparities and inadequate housing policies.

The Figure 2 illustrates the distribution of individuals moved to housing across various population groups. Each box represents the interquartile range (IQR), with the line inside the box denoting the median value. The Refugees group exhibits the widest spread, indicating a high level of variability in housing counts, with a median around 400 and several outliers. Families also have a broad range, with a median close to 300, suggesting that a significant number of families have been moved to housing, though there is notable variability in the data.

Chronic and Single Adult groups show a more compact distribution, with their medians near 200 and 100, respectively. Non-refugees have the smallest spread, indicating low variability with a median just above 100. The Indigenous and Youth groups show the lowest counts, with

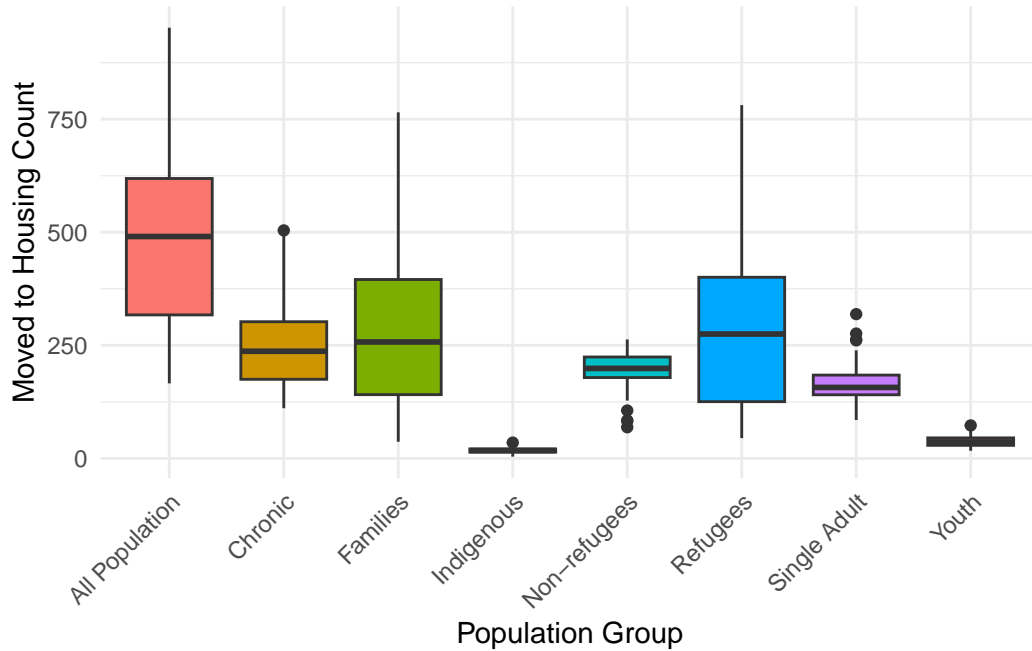


Figure 2: Boxplot of Moved to Housing by Population Group

medians near or below 100 and several outliers, indicating smaller but consistent efforts to move these populations to housing.

Overall, the boxplot highlights considerable variation in housing efforts among different population groups, with Refugees and Families seeing the largest efforts, while Youth and Indigenous groups exhibit smaller, more consistent housing outcomes.

Figure 3 displays the actively homeless trends by population group from 2018 to 2024. For the All Population, homelessness fluctuates, showing a sharp decline around 2020, likely due to pandemic interventions, followed by a significant rebound and stabilization near 11,000 in 2024. The Chronic population shows a persistent increase, doubling from 4,000 to over 8,000 by 2024, indicating that this group faces growing challenges. Families and Indigenous populations initially experience declines, but homelessness rebounds for families while Indigenous numbers show a decline after peaking in 2022. Non-refugees see a gradual decrease in recent years, while the Refugees group experiences a significant rise in homelessness, peaking at over 6,000 in 2024. Single Adults show steady growth in homelessness, increasing to over 7,000, and Youth exhibit fluctuations, with a sharp recovery post-2020. Overall, the graph highlights that while some groups have seen improvements, others, particularly chronic and refugee populations, continue to face rising homelessness.

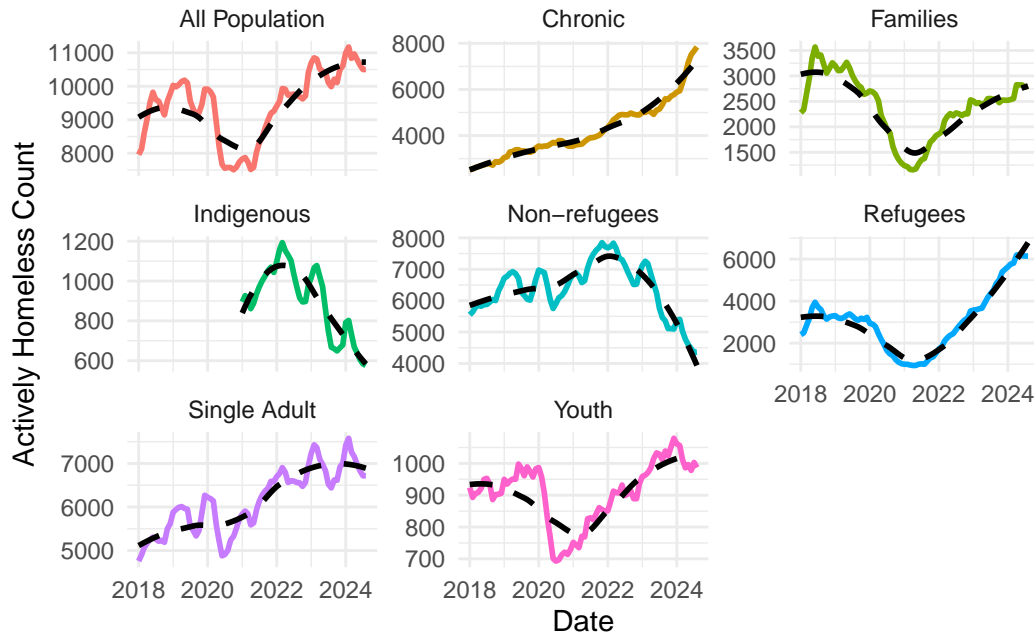


Figure 3: Actively Homeless Trends by Population Group

3 Discussion

The analysis of homelessness trends from 2018 to 2024 reveals important insights into the impact of external events and the effectiveness of housing interventions. The sharp decline in homelessness during 2020 (Figure 1) corresponds to emergency measures taken during the COVID-19 pandemic, such as eviction moratoriums and temporary housing solutions. However, this was followed by a rapid increase in homelessness after the pandemic, indicating that these interventions, while effective short-term, failed to address long-term structural issues like housing affordability and systemic inequality.

The data shows considerable disparities across different population groups (Figure 2). Chronic homelessness has seen a steady rise, suggesting current interventions are insufficient. This group requires long-term support such as permanent supportive housing. Refugees also experienced significant increases in homelessness post-pandemic, likely due to barriers in accessing housing and employment, highlighting the need for tailored support programs. Indigenous and youth populations show lower rates of being moved to housing, signaling the need for culturally appropriate services and youth-targeted interventions.

Housing interventions, while beneficial for some groups like families and refugees, are not uniformly effective. The Indigenous and chronic populations remain underserved. Expanding supportive housing and ensuring culturally appropriate and youth-specific programs are crucial to addressing these gaps. The overall increase in homelessness, especially for vulnerable groups,

underscores the need for sustained, long-term policy efforts focused on affordable housing and equitable access to services.

A Appendix

A.1 Dataset and Graph Sketches

Sketches depicting both the desired dataset and the graphs generated in this analysis are available in the GitHub Repository.

A.2 Data Cleaning

The data cleaning process involved filtering out some of the columns from the raw dataset and renaming some of the data entries for clarity and simplicity.

A.3 Attribution Statement

“Contains information licensed under the Open Government Licence – Toronto” (City of Toronto, n.d.).

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