Demographic Shifts in Toronto's Homeless Population: Evaluating and Reassessing City Solutions*

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Reducing the homeless population in the City of Toronto is an ongoing task, and every year the city government struggles to address the different needs of homeless populations. In our paper, we analyze the demographic change of the homeless population in the past six years with data from Toronto's shelter system. We show that the proportion of chronic, refugees, and working-age all rose in the past six years. These findings indicate the city's current solution which focuses on building houses is no longer effective. We further propose new policies like improving public health systems to beat the latest crisis.

Table of contents

*Code and data are available at: https://github.com/Junbo345/Homeless.

1 Introduction

Homelessness is defined as "the situation of an individual, family or community without stable, safe, permanent, appropriate housing, or the immediate prospect, means and ability of acquiring it" (Canadian Observatory on Homelessness 2012). According to Gaetz, Gulliver, and Richter (2014), approximately 23,500 Canadian people experience every type of homelessness every year. On SEP 12, 2024, there are still more than 9500 people staying in shelters in the city of Toronto (City of Toronto 2024b). To address this ongoing crisis, the Toronto city government launched the supportive housing development plan, which aims to build more affordable housing for homeless people (City of Toronto 2024a). A recent two-year plan starting in 2022 aims to build 4,000 more affordable homes as well as supportive housing by the end of 2024 (City of Toronto 2024a).

While the city of Toronto has concentrated its efforts on building more affordable housing, our analysis in this paper has found that the underlying demographics of homeless populations changed significantly. This would indicate that the traditional housing-centric plan would no longer solve the newly evolved homeless problem.

In this paper, we delve into the demographic shift of Toronto's homeless population in greater detail by studying the monthly data from Toronto's shelter system from 2018 Jan to 2024 Jun (City of Toronto 2024c). We start by outlining the data source, the way we accessed the data, as well as procedures we used to clean and prepare the data in analysis in **Data** section. Following this, in **Result** section, we draw the bar graph demonstrating the trend in demographic changes and present our key findings. Finally, in **Discussion** section, we analyze the implications of the trends we found and offer recommendations for policy changes that would address the needs of different demographic groups.

2 Data

2.1 Raw data

The data for this analysis was sourced from opendatatoronto (Gelfand 2022), specifically utilizing the Shelter System Flow Data released by the Toronto government (City of Toronto 2024c). The City of Toronto employs the Shelter Management Information System (SMIS) to track individuals accessing overnight homelessness services, including shelters, respites, and hotel/motel programs. This dataset captures the number of unique individuals who have used the shelter system at least once in the past three months and are still experiencing homelessness, meaning they have not been discharged to permanent housing.

Updated monthly, the dataset is published on the 15th of each month, with revisions made to the previous month's data to enhance discharge accuracy. However, it currently excludes individuals sleeping outdoors or those utilizing services not funded by the City, omitting an estimated 18% of the homeless population. The dataset provides detailed demographic information such as age group, refugee status, gender, and chronic status, enabling us to analyze changes in the homeless population's composition over time.

While other datasets, such as daily shelter occupancy, are available, they lack the demographic depth necessary for this study. Data loading, cleaning, and analysis were carried out in **R** (R Core Team 2023), with packages **tidyverse** (Wickham et al. 2019), **here** (Müller 2020), **styler** (Müller and Walthert 2024), and **knitr** (Xie 2014). This comprehensive approach ensures that our analysis accurately reflects the realities faced by individuals experiencing homelessness in Toronto.

The Variables that is of our interest are:

1. date(mmm-yy): The time period the data was published (month/year, eg. Jan-18 means January of year 2018).

2. population_group: Each row represent different population groups, here we focus on all population, chronic, and refugee.

3. actively_homeless: This is the total number of people who have used the shelter system at least one time in the past 3 months. We will use this as an estimate of the total number of homeless population.

4. ageunder16, **age16-24**, **age25-34**, **age35-44**, **age45-54**, **age55-64**, **age65over**: These are the number of homeless individuals categorized by their age.

2.2 Cleaned Data

We dropped the only missing row corresponding to July 2024. We then selected our columns of interest, namely, the total number of homeless people every month (**actively_homeless**), as well as **refugee** and **chronic status** in the column population. In addition, we categorized age groups based on their suitability for work: transforming ages under 24 for the **early career stage**, ages between 25 and 54 for **working age**, and ages above 55 for **pre-retirement and retirement age**. The classification of ages 25-54 as working age is aligned with the Canadian government's survey, which defines individuals aged 25-54 as core-aged workers (Canada 2024). Finally, we replaced the monthly data with averaged quarterly data for better analysis and visualization over a prolonged period. A sample of cleaned data can be seen in Table 1, and summary statistics in Table 2.

Table 1: cleaned dataset

Time (Quaters)	Subdivision	Total people	Early Career Stage	Working Age	Pre-retire and Retire
2018Q1	All Population	8232	2413	4421	1399
2018Q1	Chronic	2562	579	1234	749
2018Q1	Refugees	2575	1248	1238	89
2018Q2	All Population	9457	2959	5058	1440
2018Q2	Chronic	2692	629	1295	768

Table 2: summary statistics of cleaned data

Subdivision	Mean Total People	Mean Early Career Stage	Mean Working Age	Mean Pre-retire and Retire
All Population	9415.05	2373.26	5342.03	1699.77
Chronic	4130.86	850.64	2203.23	1076.99
Refugees	2983.29	1181.90	1666.22	135.18

2.3 Results

2.3.1 Overall trend

First, we plot a bar graph to show the trend of the size of the entire homeless population of homeless people over the past time. In Figure 1, we observe a slight increase in the total number of homeless people from the first quarter of 2018 to the second quarter of 2024, while in between there is a decrease of the homeless population in late 2020 to early 2021, followed by a rapid increase.

2.3.2 Chronic trend

Figure 2 shows the trend of the proportion of chronic population among all homeless people over the quarters of each year. Here, according to (Echenberg and Munn-Rivard 2020), chronic homelessness refers to "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 stays 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." We can see from the graph that the

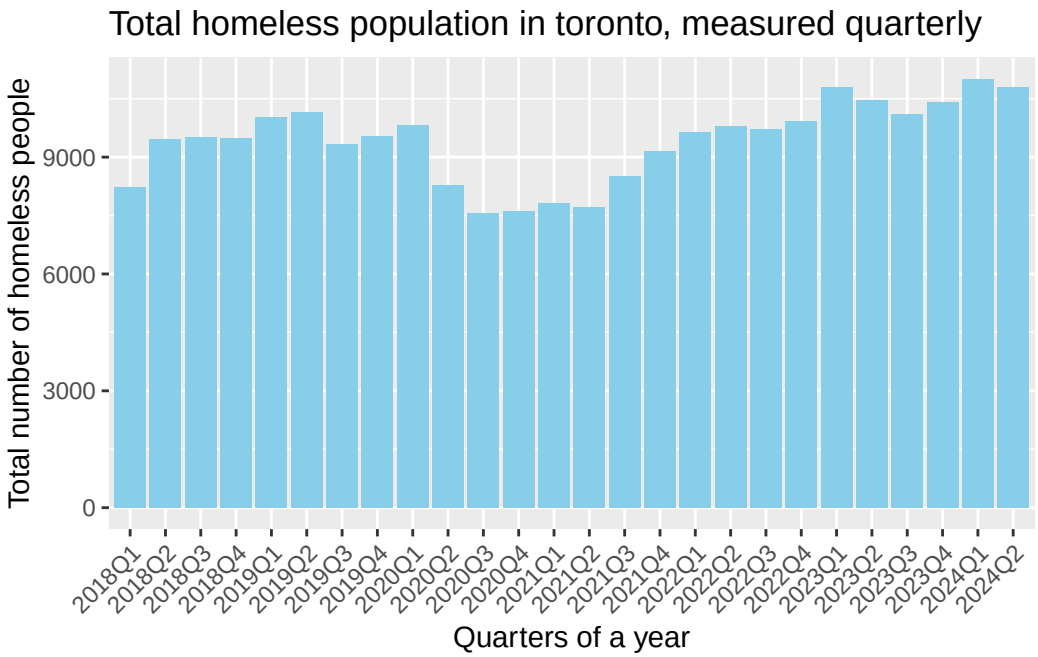

Figure 1

proportion of chronic homeless increased a lot, from less than 35% in the first quarter of 2018 to more than 65% in the second quarter of 2024.

2.3.3 Age trend

Figure 3 displays the trend of the proportion of different working age statuses among the actively homeless population over the quarters of each year. Here, the working age statuses are categorized into three groups: Early Career Stage, Working Age, and Pre-Retirement and Retirement Age. Even though the trend is not dramatic, We can see from the graph that the proportion of the Early Career Stage population as well as pre-retire and retired has decreased (from 29% and 17% separately in the first quarter of 2018 to 24.5% and 14.5% in the second quarter in 2024). On the other hand, the working age proportion increased to 61% in 2024Q2 from 54% in 2018Q1. This indicates the growing population who are in the working age cannot afford their housing.

2.3.4 Refugee trend

Figure 4 shows the trend of the proportion of refugees among the actively homeless population over the quarters of each year. We observe a significant decrease in the proportion of individuals

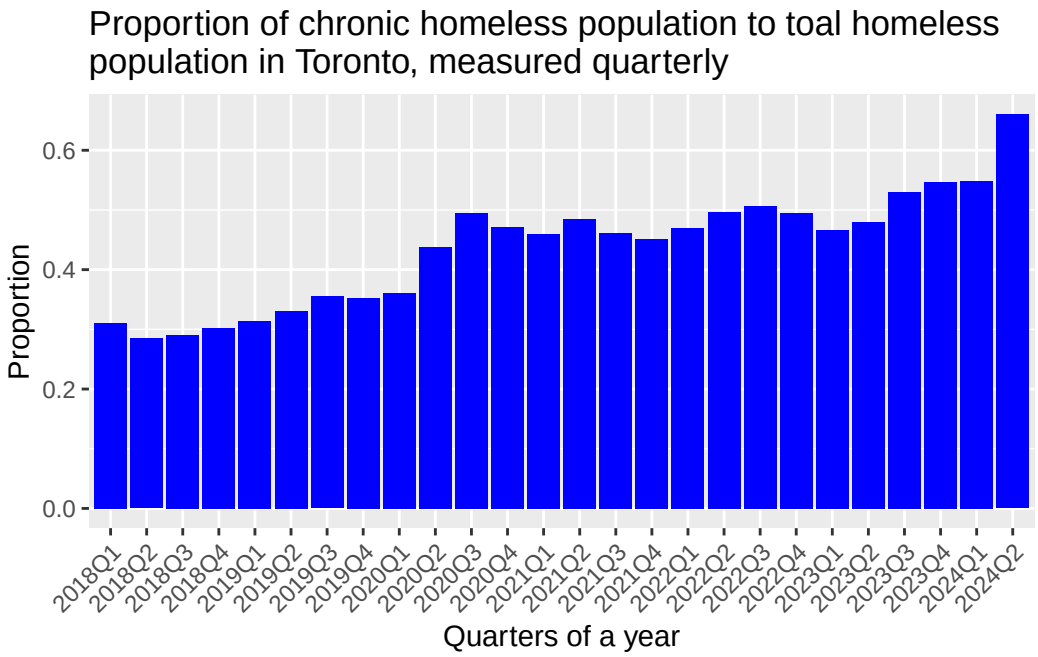

Figure 2

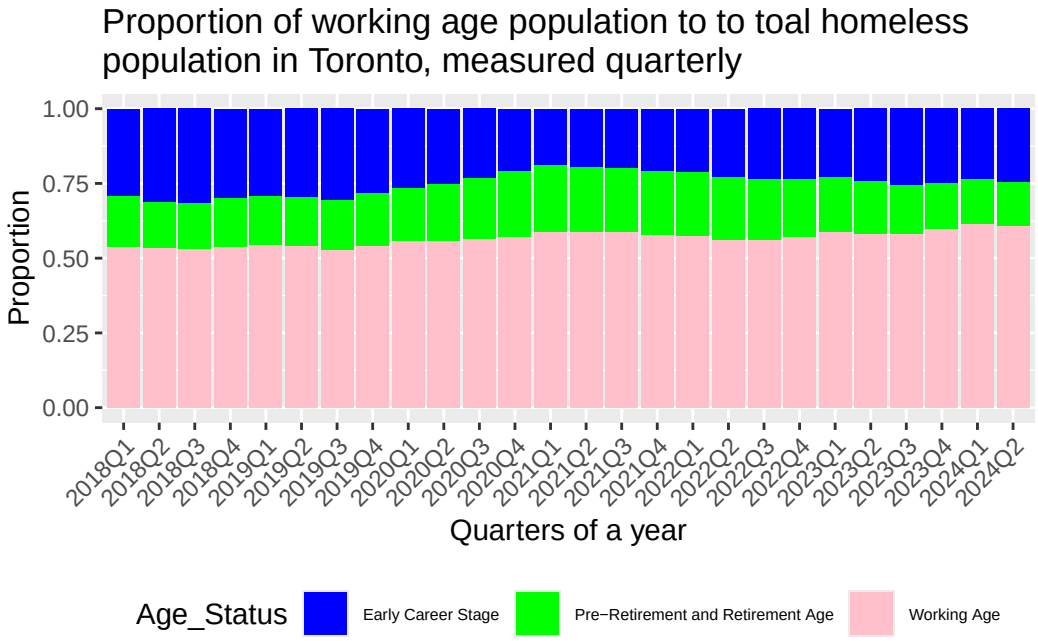

Figure 3

with refugee status from 35% in 2019 to less than 20% in 2021. However, starting in the year 2022, the proportion surged to nearly 60% in the second quarter of 2024.

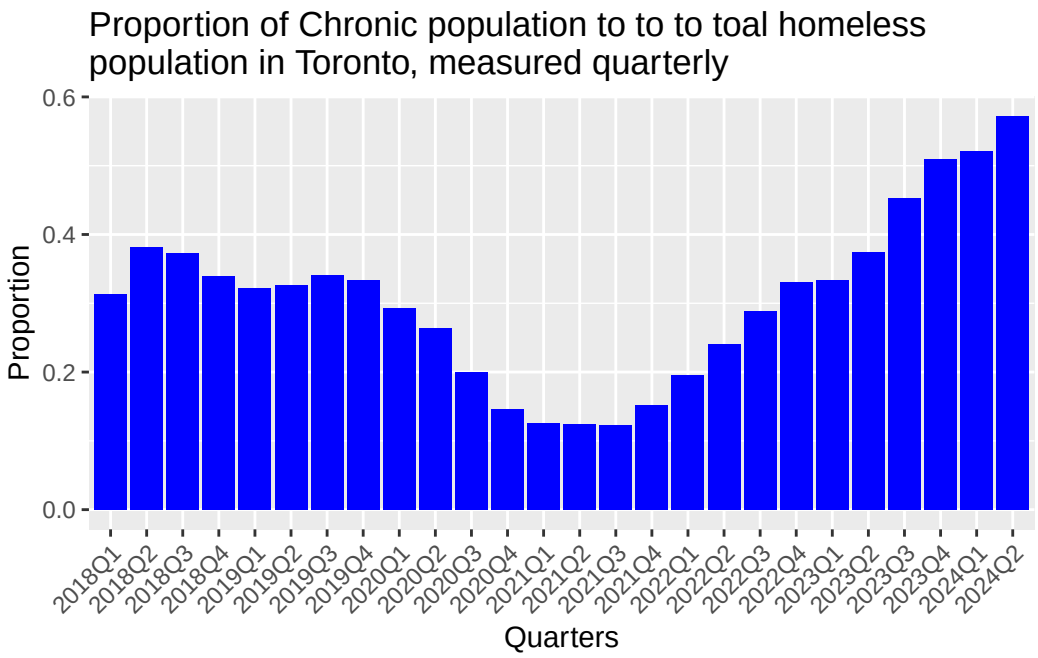

Figure 4

3 Discussion

Based on the analysis of the results section, we observe that, even though the overall homeless population has remained relatively stable over the past six years, its demographics have shifted. Specifically, the proportion of refugees, chronically homeless individuals as well as working-aged people among all homeless populations have increased. Starting at 2020, the City of Toronto has devoted its efforts to reducing the number of homeless people primarily through building more affordable houses (City of Toronto 2021). However, our study suggests that with these changes in demographics, the city government should expand its focus to address homelessness more effectively.

First, as the result section points out, the proportion of the chronically homeless population nearly doubled in the past six years. Despite its nature of long-lasting homeless status, studies have also shown that chronic homelessness is closely associated with chronic illness or other mental issues Echenberg and Munn-Rivard (2020). Research further indicates that the average income of people experiencing mental illness and different types of disorders is significantly lower than normal people's income Sareen et al. (2011). This makes it particularly difficult

for people who have already experienced health problems to escape homelessness. In addition, homelessness exacerbates health problems due to lack of adequate food, discrimination, barriers to health care, etc. (Sleet and Francescutti 2021). A combination of these would become a harmful cycle: illness leads to a decrease in income, which leads to becoming homeless, which would further worsen individual illness.

To break the harmful cycle, the city government should give more attention to public health care systems, especially for low-income and homeless populations. In fact, merely building houses only increased the proportion of chronically homeless populations (Office of the Auditor General of Canada 2022). The city should, instead, shift to building supportive housing, where health services as well as social support are integrated with affordable housing. Mobile outreach teams and community-based mental health clinics can also ensure that homeless individuals receive the care they need.

Second, due to increased global conflict in Eastern Europe and the Middle East, the number of refugees entering Toronto has increased (Balintec 2023).On the other hand, the city government has not been prepared to support such a huge increase of refugees as the portion of refugees homeless people roared from less than 20% in the first three quarters of 2021 to nearly 60% in the second quarter of 2024. We observed an emergency for the government to increase its speed in helping these newly entered refugees adapt to the new environment and give them a livable income job to support their housing.

Finally, we observe an increase in the proportion of people of working age. This indicates the need for the government to create more jobs for the low-income and homeless population, particularly for those with mental health issues or physical disabilities who rely on employment to sustain themselves.

3.1 Weaknesses and next steps

Even though our data is the most up-to-date and accurate data available for the homeless population on Opendatatoronto, it may still have a bias toward the estimation of the true homeless population in the city of Toronto. For example, people would not stay in the shelter every day and they would enter and exit the shelter frequently (City of Toronto 2024c). Accurately measuring the true population demographic is a very difficult topic even in Canada, but the shelter flow data would provide a proper estimate of our research interest (Dionne et al. 2023). To understand the problems better and develop more strategies, the next steps would be to research sampling methods that could reach out and survey the population that is difficult to contact such as the unsheltered homeless population. More incorporative sampling strategies would provide us better understanding of homeless demographics and develop further sophisticated plans to reduce homelessness.

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