My title*

My subtitle if needed

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First sentence. Second sentence. Third sentence. Fourth sentence.

1 Introduction

You can and should cross-reference sections and sub-sections. We use R Core Team (2023) and Wickham et al. (2019a).

The remainder of this paper is structured as follows. Section 2….

2 Data

2.1 Raw data

The data used in here is downloaded from opendattoronto (Gelfand 2022). Specifically, we used the Shelter System Flow Data released by Toronto government (City of Toronto 2024).The data loading, cleaning and analysis process is done by R (R Core Team 2023), togehter with packges include tidyverse (Wickham et al. 2019b)… This data measures number of people requiring for shelter inside city of Toronto from Jan-2018 till Jun-2024 by each month (actively_homeless). Also, this dataset provides division of age group, refugee status, gender, as well as chronic status to provide further detailed study into the change of composition of homeless people over time. While there are several other dataset including daily shelter occupacancy in opendatatoronto, they do not have the subdivision information such as age or refugee status as this one.

*Code and data are available at: LINK.

2.2 Cleaned Data

We dropeed the only missing row corresponding to july-2024. We selected our columns of interest, namely, gender: ('male', 'female', 'transgender_non_binary_or_two_spirit'), total number of homeless people every month ('actively_homeless'), as well as refugee and chronic status in polulation column. In addition, we grouped age group by whether they are suitable for work (age under 24 for early career stage, age25-44 for working age and age above 45 for pre-retirement and retirement age). Finally, we replace the month data by averaged quatered data for better analysis and visualization of a prelonged time period. The cleaned data could be seen in Table 1.

Table 1: cleaned dataset

Time (Quaters)	Subdivision	Total people	Female	Male	Other Gender	Early Career Stage	Working Age	Pre-retire and Retire
2018Q1	All Population	8232	3001	5148	83	2413	3029	2791
2018Q1	Chronic	2562	874	1660	29	579	717	1267
2018Q1	Refugees	2575	1261	1300	14	1248	1005	322
2018Q2	All Population	9457	3553	5809	95	2959	3557	2941
2018Q2	Chronic	2692	927	1730	35	629	767	1295

3 Results

3.1 Overall trend

First, we plot the bar graph of over all trend of homeless people over the pass of the time. In Figure 1, we observe an slightly increase of total number of homeless people from first quarter 2018 to second quarter of 2024. There is a decrease of homeless population in late 2020-early 2021, but increased quickly after that.

3.2 Gender trend

Next, we investigate the trend of gender proportion. We plot the proportion of male, female, and Ohter genders against time in Figure 2. Even thought there is some flatuations of the proportion of these three gender types, the overall trend is quite stable. The male proportion is around 60% while female proportion around 40% and others around 1%.

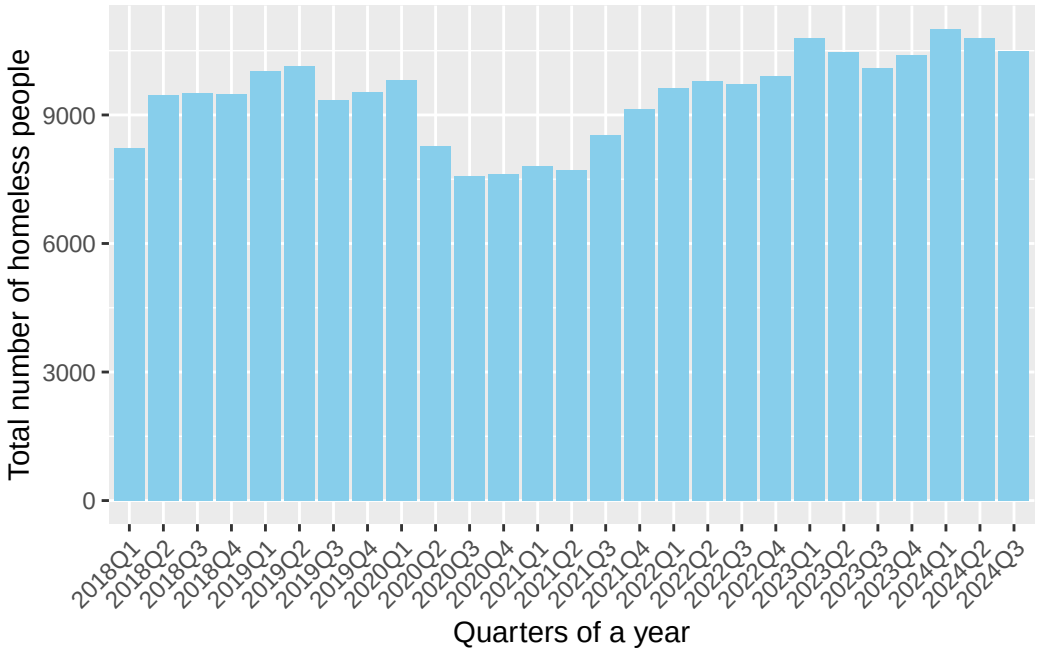

Figure 1: Homeless Population Over Quarters

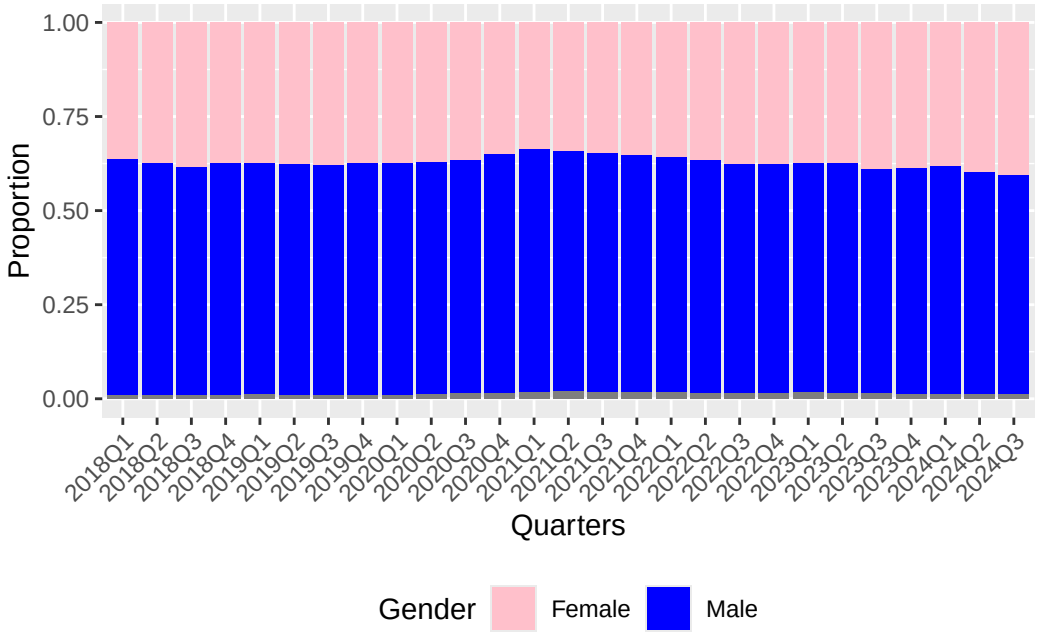

Figure 2: Proportion of Active Homeless Population by Gender Over Quarters

4 Discussion

4.1 First discussion point

If my paper were 10 pages, then should be be at least 2.5 pages. The discussion is a chance to show off what you know and what you learnt from all this.

4.2 Second discussion point

4.3 Third discussion point

4.4 Weaknesses and next steps

Weaknesses and next steps should also be included.

References

City of Toronto. 2024. "Shelter System Flow Data." https://www.toronto.ca/city-government/data-research-maps/research-reports/housing-and-homelessness-research-and-reports/shelter-system-flow-data/.

Gelfand, Sharla. 2022. *Opendatatoronto: Access the City of Toronto Open Data Portal*. https://CRAN.R-project.org/package=opendatatoronto.

R Core Team. 2023. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Wickham, Hadley, Mara Averick, Jennifer Bryan, Winston Chang, Lucy D'Agostino McGowan, Romain François, Garrett Grolemund, et al. 2019b. "Welcome to the tidyverse." *Journal of Open Source Software* 4 (43): 1686. https://doi.org/10.21105/joss.01686.

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