

The effect of financial aid on housing affordability in Canada*

Yang Zhou

January 25, 2024

With recent inflation, low-income households are struggling to pay the rent in Toronto. The data includes various households and compares three situations. We found that financial aid, or subsidies, is essential for low-income households to achieve positive cashflow for them.

1 Introduction

During the pandemic, in an effort to stimulate the economy, the government significantly lowered the interest rates and gave many benefits to the society. However, it causes the current inflation.

High interest rates have increased the loan pressure on landlords, which in turn affects their tenants.

This paper briefly examines the impact of rent on low-income groups and whether financial aid can release their pressure.

The rest of the paper will have a Data section, comparing three situations and what it tells us. Then an appendix section and a reference section.

2 Data

The data are obtained from Open Data Toronto (Gelfand 2022), with title as “cost of living in Toronto for low-income households”. There are a total of 9 different households, and 3 situations: with subsidies, without subsidies and market rent, without subsidies and average rent.

*Code and data are available at: <https://github.com/yangzhoucoco/term-paper-1>

The data includes lots of breakdown of their income, like employment income, Canada Child Benefit, GST/HST credit, Ontario Trillium Benefit, etc. However in our interest, we only care about the total income. As for expenses, these include rent, food, childcare, and transportation. We will keep only the “rent” here. More details can be found in the “README” file accompanying the raw data.

Here we will have a visualization of the data. The code is written in R (R Core Team 2022), and the main package used is tidy verse (Wickham et al. 2019).

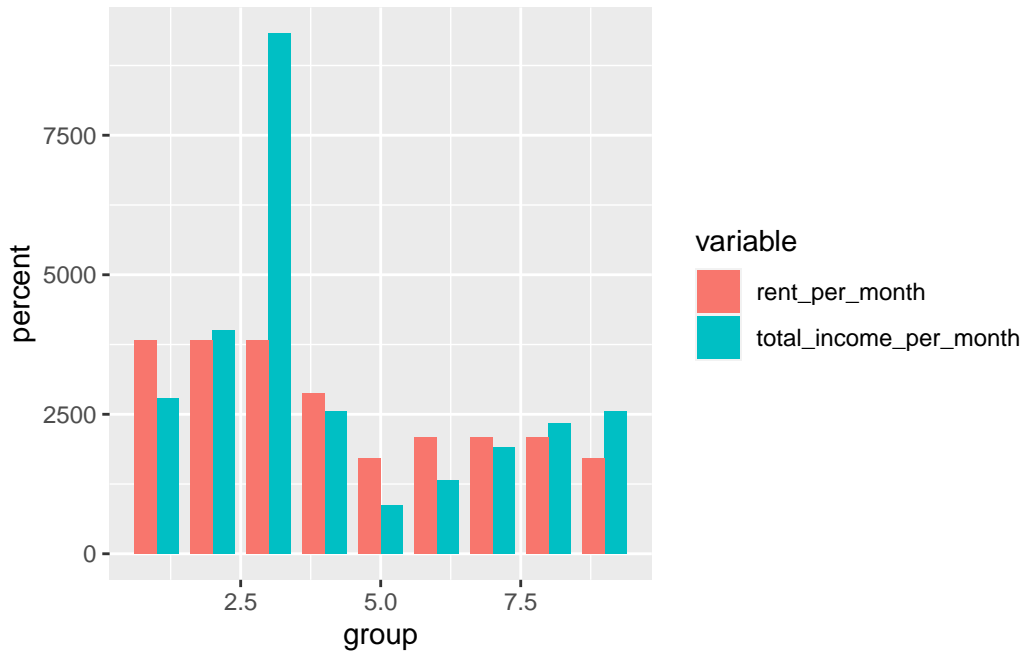


Figure 1: Histogram for ‘without subsidies, market rent’

We can see that in Figure 1 the red bars are almost as tall as the blue bars. This indicates that after paying rent, households are left with no remaining funds and subsequently go into debt. We can perform a percentage calculation to confirm this observation. The package we’re using to generate tables is knitR (Xie 2023).

Table 1: Ratio of rent to income, in percentage (market)

total_income_per_month	rent_per_month	percentage
2791	3818	136.8 %
4004	3818	95.35 %
9323	3818	40.95 %
2556	2885	112.87 %
875	1707	195.09 %

Table 1: Ratio of rent to income, in percentage (market)

total_income_per_month	rent_per_month	percentage
1325	2082	157.13 %
1900	2082	109.58 %
2339	2082	89.01 %
2558	1707	66.73 %

In Table 1, we see lots of the percentage are above 100%, that mean their income is lower than the rental cost. We can have another look if we change the rent costs from market price to average price.

Table 2: Ratio of rent to income, in percentage (average)

total_income_per_month	rent_per_month	percentage
2764	1961	70.95 %
3977	1961	49.31 %
9323	1961	21.03 %
2532	1703	67.26 %
865	1225	141.62 %
1313	1446	110.13 %
1889	1446	76.55 %
2326	1446	62.17 %
2548	1225	48.08 %

In Table 2, there are not many percentages over 100%. However, generally, we want rent to be less than 30% of total income to allocate a budget for food, transportation, savings, or even some investing. Out of the nine households listed here, only one has rent costs lower than 30%. Now, let's check if they receive subsidies.

Table 3: Ratio of rent to income, in percentage (subsidies)

total_income_per_month	rent_per_month	percentage
2730	254	9.3 %
3952	735	18.6 %
9323	1961	21.03 %
2503	226	9.03 %
839	85	10.13 %
1286	109	8.48 %
1870	510	27.27 %

Table 3: Ratio of rent to income, in percentage (subsidies)

total_income_per_month	rent_per_month	percentage
2301	199	8.65 %
2538	735	28.96 %

We observe that in Table 3 there are no longer any percentages over 100%, which is a very positive sign. Moreover, all of them are now below 30%. Their financial situation has greatly improved with the help of subsidies. This is a significant aid for low-income households. We can revisit the histogram to analyze this situation further.

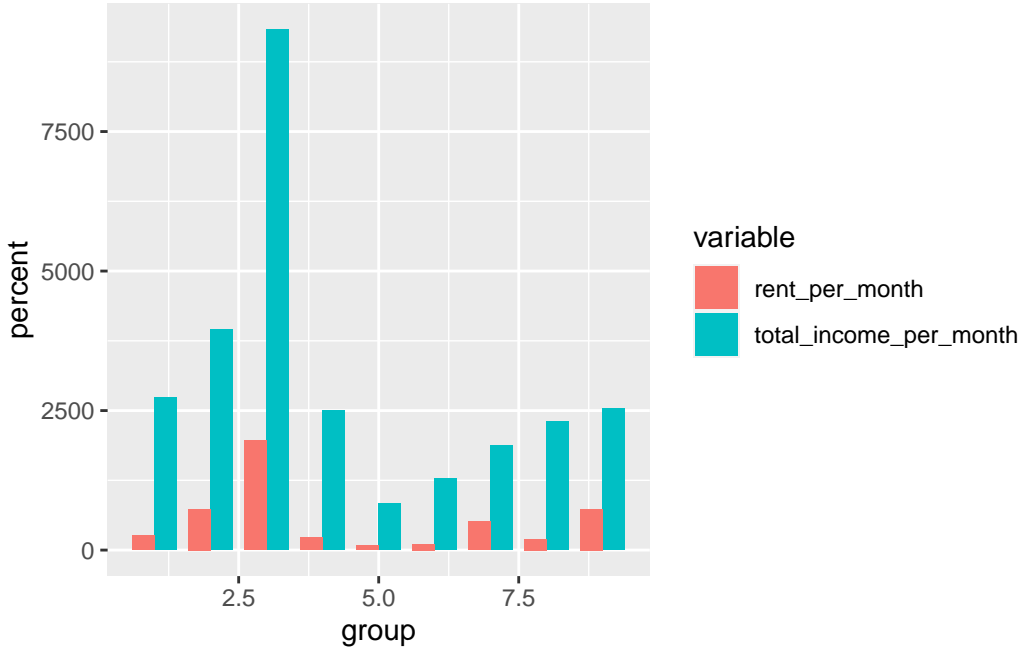


Figure 2: Histogram of rent and income, with subsidies

The figure presents a clear indication that the blue bars are much higher than the orange bars, demonstrating that their income is significantly higher than their rental expenses.

Therefore, subsidies are crucial for low-income households, as they can help reduce rent and greatly improve and distress their financial situation.

Appendix

The differences between average rent and market rent is also significant. We can have a look here.

Table 4: ratio of market to average

average	market	diff
1961	3818	1.946966
1961	3818	1.946966
1961	3818	1.946966
1703	2885	1.694069
1225	1707	1.393469
1446	2082	1.439834
1446	2082	1.439834
1446	2082	1.439834
1225	1707	1.393469

We can observe that the minimum increase is around 40%, whereas the maximum is almost double the average rent. This indicates that market rates are very high, likely due to inflation, making it a struggle for low-income households to afford housing.

References

- Gelfand, Sharla. 2022. *Opendatatoronto: Access the City of Toronto Open Data Portal*. <https://CRAN.R-project.org/package=opendatatoronto>.
- R Core Team. 2022. *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 Golemund, et al. 2019. “Welcome to the tidyverse.” *Journal of Open Source Software* 4 (43): 1686. <https://doi.org/10.21105/joss.01686>.
- Xie, Yihui. 2023. *Knitr: A General-Purpose Package for Dynamic Report Generation in r*. <https://yihui.org/knitr/>.