

# Licensed Child Care Spaces in Toronto's 25 Wards\*

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Analysis of licensed child care facilities, child population, and average household income in Toronto's 25 wards. Investigation reveals a negative correlation between children per child care space and average household income by ward. This suggests increased competition for child care spaces in wards with lower income and decreased competition for child care spaces in wards with higher incomes. This finding demonstrates a lack of equity surrounding access to licensed childcare facilities in Toronto.

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## 1 Introduction

Access to child care is vital to the social and economic health of a community such as the City of Toronto. Accessible child care has been shown to influence occupational and educational

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\*Code and data are available at: [https://github.com/ThomasWilliamFox/toronto\\_child\\_care](https://github.com/ThomasWilliamFox/toronto_child_care)

opportunities for parents, especially those in low-income situations (Gunaseelan 2021). This leads to increased economic prosperity for parents and families which in turn, brings positive impacts to their physical and social well-being (Gunaseelan 2021). Child care access also has an impact on the health and development of children who attend these facilities (Rhijn et al. 2021). Vulnerable children greatly benefit from child care access as these centers help to facilitate early intervention methods (Underwood and Frankel 2012). Equitable access to child care is therefore an important facet of community health and development.

This paper explores data made available by Open Data Toronto (Gelfand 2022) related to licensed child care facilities and city ward profiles to explore the relationship between child care access and ward demographics. The data was analyzed and processed with the programming language R (R Core Team 2022). Various packages were also used in the processing, cleaning, and presentation of this information such as tidyverse (Wickham et al. 2019), here (Müller 2020), knitr (Xie 2023a), tinytex (Xie 2023b), dplyr (Wickham et al. 2023), janitor (Firke 2023), and plyr (Wickham 2011).

This analysis shows a negative correlation between the number of children in a ward per existing child care space and average household income (see 2.3). This suggests that lower income wards experience greater competition for child care access and higher income wards experience less competition. This finding demonstrates a trend of inequitable access to child care across the city of Toronto. As child care access plays a central role in the social and economic well-being of communities, and has an especially positive impact on vulnerable children and low-income families, these findings support measures and initiatives aimed at ensuring more equitable access to child care in the City of Toronto (see Toronto 2017).

The remainder of this paper outlines the data, the data analysis, and an investigation of the findings. Section 2 contains three sub-sections. Section 2.1 outlines the “Licensed Child Care Centres” data set (Toronto Children’s Services 2024) provided by the opendatatoronto (Gelfand 2022). Section 2.2 explores the “Ward Profiles (25-Ward Model)” data set (Toronto City Planning 2024) also provided by the opendatatoronto (Gelfand 2022). Section 2.3 investigates aspects of both data sets and their relationship.

## 2 Data

### 2.1 Licensed Child Care Centres in Toronto

The “Licensed Child Care Centres” data set is provided to Open Data Toronto (Gelfand (2022)) by the City’s Children’s Services division (Toronto Children’s Services 2024). The data set contains 1,063 entries which correspond to each licensed child care facility in Toronto. The variables chosen to include in the cleaned data set are the facility ID number, ward number where the facility is located, total number of individual child care spaces at the facility, and the facility’s operation type (Commercial, Non Profit or Public). Table 1 shows the first 6 entries in this data set.

Table 1: Sample of Cleaned Toronto Licensed Child Care Data

Facility ID	Ward Number	Total Spaces	Type
	1	3	Non Profit Agency
	2	8	Non Profit Agency
	3	25	Non Profit Agency
	4	10	Non Profit Agency
	5	20	Non Profit Agency
	6	24	Non Profit Agency

Figure 1 displays the total individual child care spaces found in each of Toronto’s 25 wards. Among the wards with the least amount of child care spaces are Scarborough-Rouge Park with 1909 spaces, Scarborough North with 2078 spaces, and Etobicoke North with 2089. The wards with the greatest number of child care spaces are Beaches-East York with 4598, Toronto-Danforth with 4894, and Etobicoke-Lakeshore with 4910.

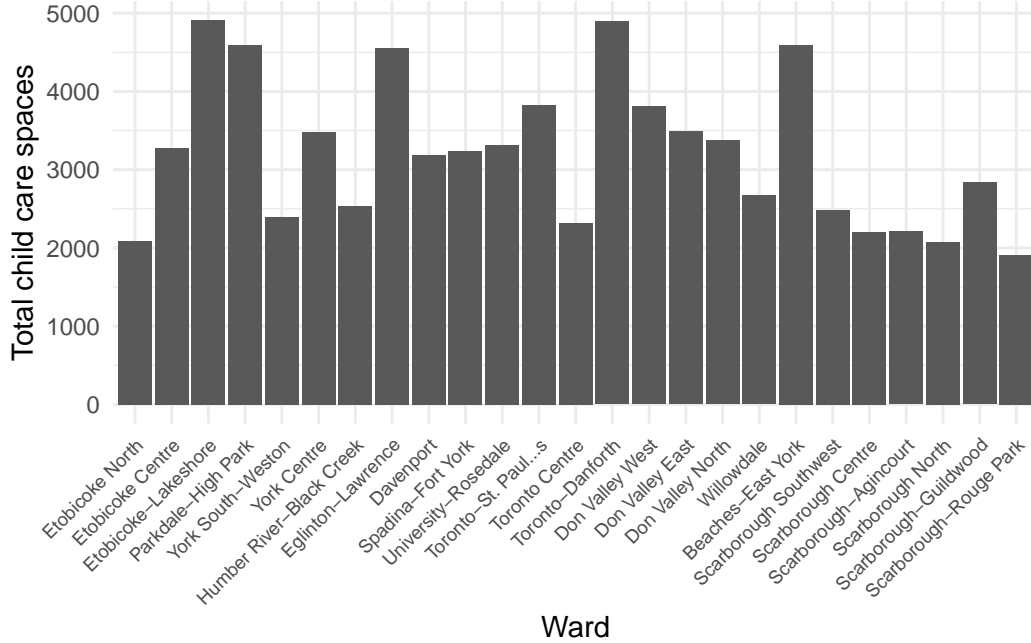


Figure 1: Total number of child-care spaces by ward

## 2.2 Toronto Ward Profiles Based on 2021 Canada Census Data

The “Ward Profiles (25-Ward Model)” data set is provided to Open Data Toronto (Gelfand (2022)) by Toronto City Planning (Toronto City Planning 2024). This resource contains three

separate data sub-sets. Statistics Canada Census data related to Toronto’s 25 wards from 2011, 2016, and 2021 is found in the first sub-set. Geographic locations of each ward can be found in the second sub-set, followed by a sub-set containing each ward number and its corresponding name. The data sets of interest in this paper are the “2023-WardProfiles-2011-2021-CensusData” set which is used to determine demographic information related to each ward, and the “25-WardNames-Numbers” set that is used to help with data visualization in this paper (Toronto City Planning 2024). Variables isolated from the 2021 Canada Census include ward number, average household income, median household income and population counts for age ranges: 0 - 4, 5 - 9, and 10 - 14. Table 2 shows the first six entries in the cleaned data set.

Table 2: Sample of Cleaned 2021 Canada Census Data

Ward Number	Age 0-4	Age 5-9	Age 10-14	Average Household Income	Median Household Income
1	5755	6160	6585	95200	81000
2	5105	5825	6370	146600	100000
3	6765	6180	5515	127200	90000
4	4770	5015	5230	127200	85000
5	6045	6060	6360	88700	72000
6	5265	5205	5085	107500	82000

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A sense of the dataset should be communicated to the reader.

The broader context of the dataset should be discussed.

All variables should be thoroughly examined and explained.

Explain if there were similar datasets that could have been used and why they were not.

If variables were constructed then this should be mentioned, and high-level cleaning aspects of note should be mentioned, but this section should focus on the destination, not the journey.

It is important to understand what the variables look like by including graphs, and possibly tables, of all observations, along with discussion of those graphs and the other features of these data.

Summary statistics should also be included, and well as any relationships between the variables. If this becomes too detailed, then appendices could be used.

```
ordereddata <-
  census_childcare_data |>
  arrange(total_spots)
tail(ordereddata)
```

```
# A tibble: 6 x 8
  ward                pop_0_to_4 pop_5_to_9 pop_10_to_14 avg_hh_income med_hh_income
  <chr>                <dbl>    <dbl>    <dbl>        <dbl>        <dbl>
1 Toronto-St. Pa~      4520      4345      4595        160400        86000
2 Eglinton-Lawre~      5835      6205      7075        176400        97000
3 Parkdale-High ~      4770      5015      5230        127200        85000
4 Beaches-East Y~      6035      6455      6195        130600        89000
5 Toronto-Danfor~      5350      5775      5060        130800        93000
6 Etobicoke-Lake~      6765      6180      5515        127200        90000
# i 2 more variables: total_spots <dbl>, total_under_15 <dbl>
```

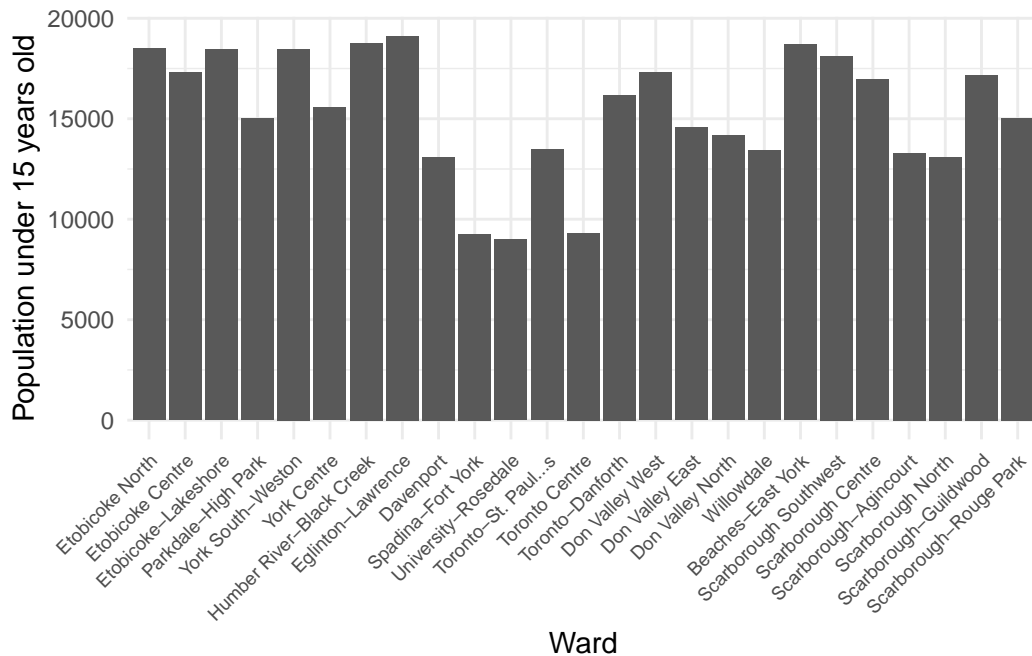


Figure 2: Population under 15 years of age by ward

I then looked at what the average income was per ward (Figure 3).

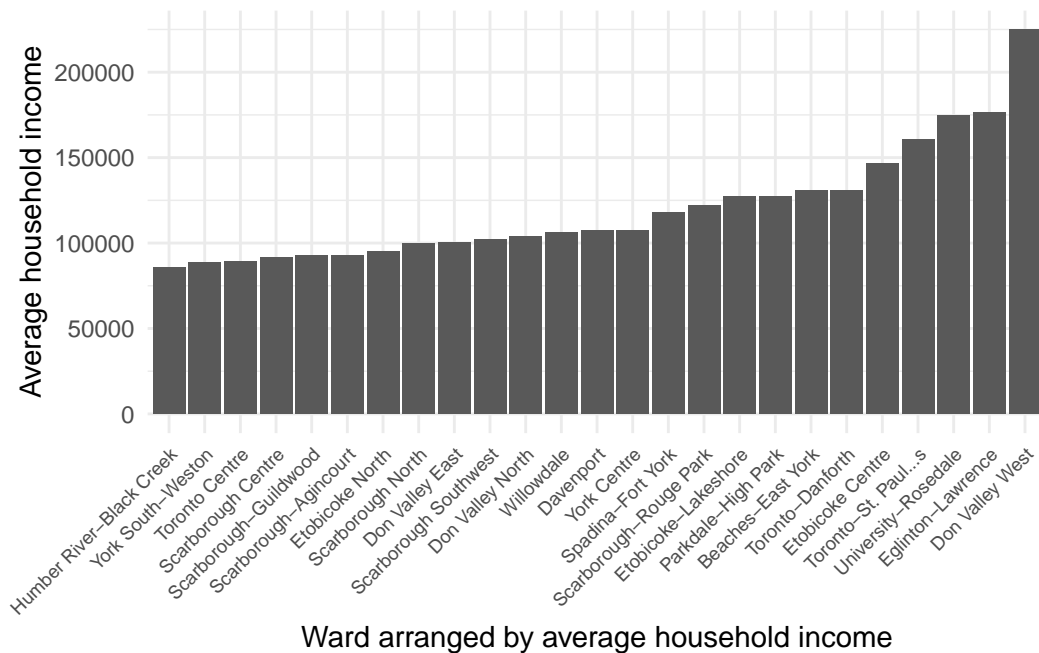


Figure 3: Average household income by ward

## 2.3 Investigation

I then made a graph that displayed the number of child care spaces in each ward in ascending order based on average household income (Figure 4)

I then constructed a scatter plot showing the number of children under the age of 14 per child care space in each ward arranged in ascending order by average household income (Figure 5).

Talk more about it.

And also planes. (You can change the height and width, but don't worry about doing that until you have finished every other aspect of the paper - Quarto will try to make it look nice and the defaults usually work well once you have enough text.)

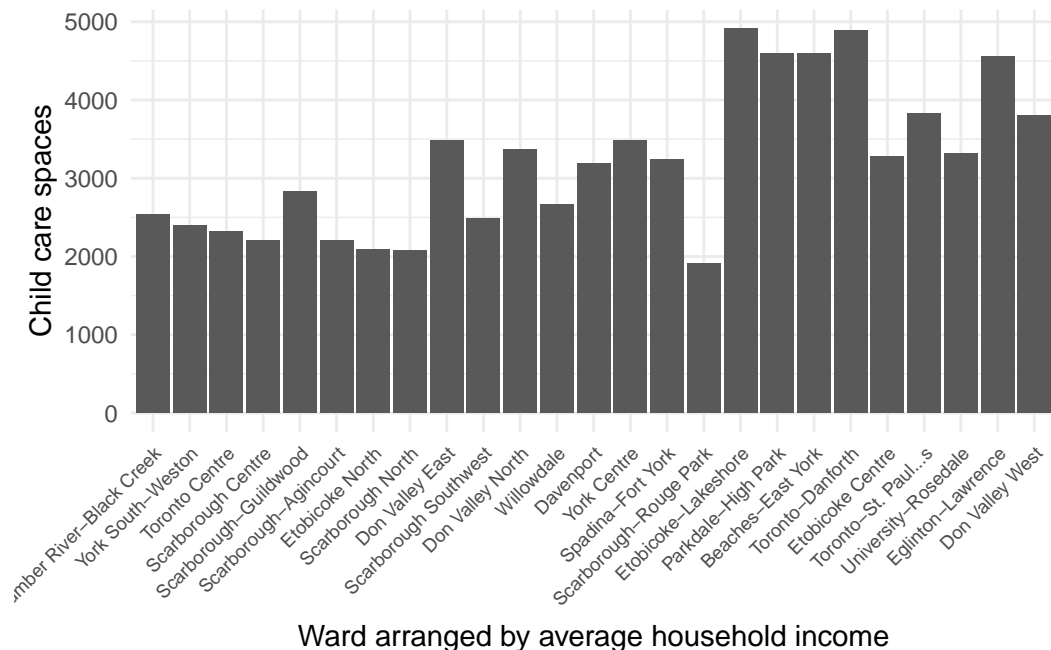


Figure 4: Number of child care spaces by ward (arranged by average income)

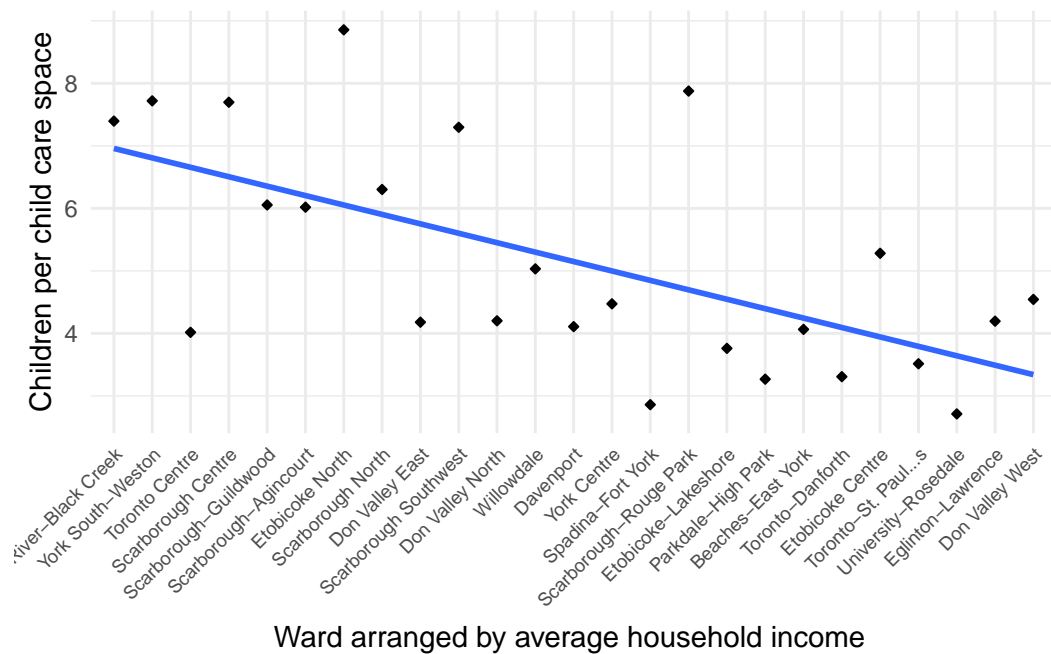


Figure 5: Number of children per child care space by ward

## Appendix

Table 3: Sample of Merged Licensed Child Care Centres in Toronto and Ward Profiles (2021 Census Data) used to build graphs

Ward Number	Average Household Income	Child Care Spaces	Population Aged 0 - 14
Etobicoke North	95200	2089	18500
Etobicoke Centre	146600	3276	17300
Etobicoke- Lakeshore	127200	4910	18460
Parkdale-High Park	127200	4596	15015
York South-Weston	88700	2392	18465
York Centre	107500	3478	15555



## References

- Angelis, Inessa De. 2023. “Do More Subdivisions in Wards Increase Voter Turnout? An Analysis of the 2022 Toronto Municipal Election.” [https://github.com/InessaDeAngelis/Toronto\\_Elections](https://github.com/InessaDeAngelis/Toronto_Elections).
- Firke, Sam. 2023. *Janitor: Simple Tools for Examining and Cleaning Dirty Data*. <https://CRAN.R-project.org/package=janitor>.
- Gelfand, Sharla. 2022. *Opendatatoronto: Access the City of Toronto Open Data Portal*. <https://CRAN.R-project.org/package=opendatatoronto>.
- Gunaseelan, Vinusha. 2021. “A New Normal for Child Care in Canada: Accessible, Affordable, Universal. Wellesley Institute.” <https://www.wellesleyinstitute.com/children-youth/a-new-normal-for-child-care-in-canada-affordable-accessible-universal/>.
- Müller, Kirill. 2020. *Here: A Simpler Way to Find Your Files*. <https://CRAN.R-project.org/package=here>.
- R Core Team. 2022. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. <https://www.R-project.org/>.
- Rhijn, Tricia van, Kathryn Underwood, Elaine Frankel, Donna S. Lero, Karen Spalding, Magdalena Janus, Martha Friendly, and Arlene Haché. 2021. “Role of Child Care in Creating Inclusive Communities and Access for All.” *Canadian Public Policy* 47 (3): 399–409. <https://doi.org/10.3138/cpp.2021-010>.
- Toronto Children’s Services. 2024. “Licensed Child Care Centres.” <https://open.toronto.ca/dataset/licensed-child-care-centres/>.
- Toronto, City of. 2017. “Torontos Licensed Child Care Growth Strategy.” <https://www.toronto.ca/wp-content/uploads/2022/11/9791-Torontos-Licensed-Child-Care-Growth-Strategy.pdf>.
- Toronto City Planning. 2024. “Ward Profiles (25-Ward Model).” <https://open.toronto.ca/dataset/ward-profiles-25-ward-model/>.
- Underwood, Kathryn, and Elaine B Frankel. 2012. “The Developmental Systems Approach to Early Intervention in Canada.” *Infants & Young Children* 25 (4): 286–96. <https://doi.org/10.1097/IYC.0b013e3182673dfc>.
- Wei, Christina. 2023. “No Evidence of Discrimination Accessing COVID-19 Immunization Clinics Across the City of Toronto.” <https://github.com/christina-wei/INF3104-1-Covid-Clinics/tree/main>.
- Wickham, Hadley. 2011. “The Split-Apply-Combine Strategy for Data Analysis.” *Journal of Statistical Software* 40 (1): 1–29. <https://www.jstatsoft.org/v40/i01/>.
- Wickham, Hadley, Mara Averick, Jennifer Bryan, Winston Chang, Lucy D’Agostino McGowan, Romain François, Garrett Grolemond, et al. 2019. “Welcome to the tidyverse.” *Journal of Open Source Software* 4 (43): 1686. <https://doi.org/10.21105/joss.01686>.
- Wickham, Hadley, Romain François, Lionel Henry, Kirill Müller, and Davis Vaughan. 2023. *Dplyr: A Grammar of Data Manipulation*. <https://CRAN.R-project.org/package=dplyr>.
- Xie, Yihui. 2023a. *Knitr: A General-Purpose Package for Dynamic Report Generation in r*. <https://yihui.org/knitr/>.

———. 2023b. *Tinytex: Helper Functions to Install and Maintain TeX Live, and Compile LaTeX Documents*. <https://github.com/rstudio/tinytex>.