Inequitable Access*

An Analysis of Licenced Child Care in Toronto's 25 Wards

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Child care is a fundamental factor impacting the well being of families as well as the children attending these facilities. This paper examines the accessibility of licensed child care centres in Toronto. Findings indicate that there are less children per child care space in wards with higher household incomes, higher proportions of English speaking households, and lower proprotions of population identifying as racialized. These findings point to inequitable access across a variety of factors and support initiatives aimed at increasing access to licensed child care in the City of Toronto.

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*Code and data are available at: https://github.com/ThomasWilliamFox/child_care_access.git.

1 Introduction

Using R Core Team (2023) and Wickham et al. (2019).

The paper's estimand is that average household income has a negative relationship with the number of children per child care space by ward.

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

2 Data

2.1 Licensed Child Care Centres

Table 1: Sample of Cleaned Toronto Licensed Child Care Centre Data

Facility ID	Ward Number	Total Spaces	Type	Subsidy	SWELCC
1	3	164	Non Profit Agency	Y	Y
2	8	83	Non Profit Agency	Y	Y
3	25	102	Non Profit Agency	Y	Y
4	10	65	Non Profit Agency	Y	Y
5	20	26	Non Profit Agency	Y	Y
6	24	62	Non Profit Agency	Y	Y

2.2 Toronto Ward Profiles

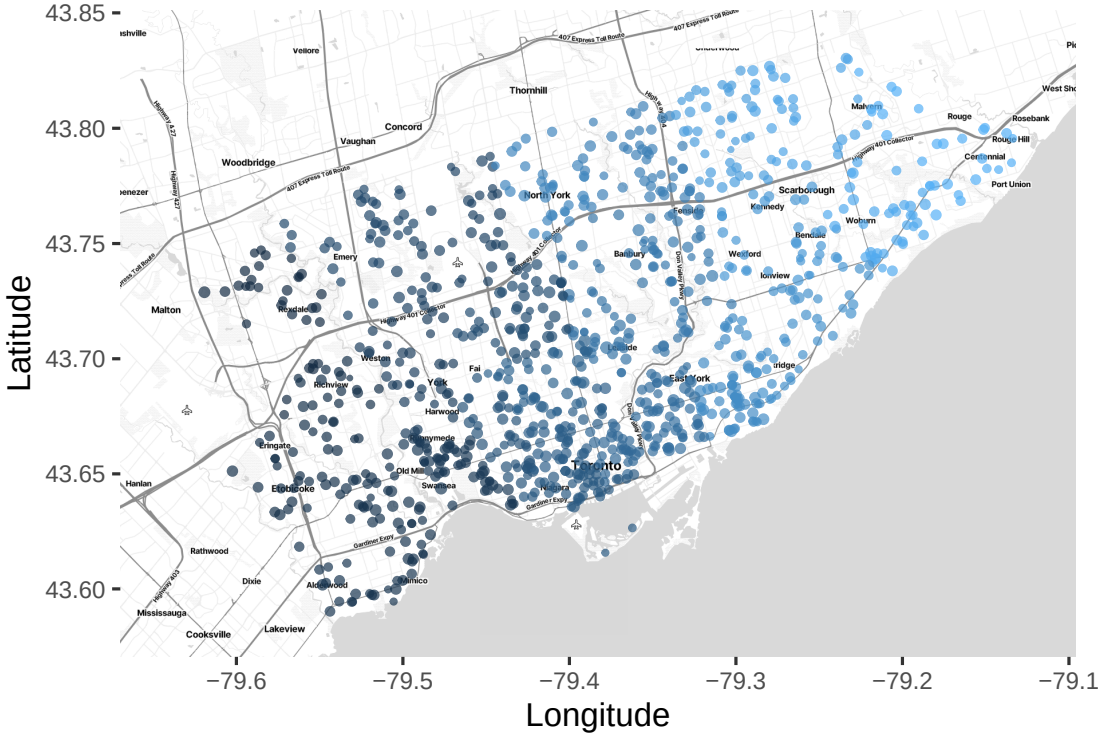

Figure 1: Child care centres in Toronto

Table 2: Sample of Cleaned Toronto Ward Data

Ward	Total Population	Children under 15	Average Household Income	Median Household Income	English spoken most often in household	Population identifying as racialized
1	115120	18500	95200	81000	67360	90130
2	117200	17300	146600	100000	85330	37210
3	139915	18460	127200	90000	105230	48675
4	104715	15015	127200	85000	85720	30445
5	115675	18465	88700	72000	76075	67120
6	107355	15555	107500	82000	63260	56405

3 Model

The goal of our modelling strategy is twofold. Firstly,...

Here we briefly describe the Bayesian analysis model used to investigate... Background details and diagnostics are included in Appendix B.

3.1 Model set-up

Define y_i as the number of seconds that the plane remained aloft. Then β_i is the wing width and γ_i is the wing length, both measured in millimeters.

$$y_i|\mu_i, \sigma \sim \text{Normal}(\mu_i, \sigma) \tag{1}$$
$$\mu_i = \alpha + \beta_i + \gamma_i \tag{2}$$
$$\alpha \sim \text{Normal}(0, 2.5) \tag{3}$$
$$\beta \sim \text{Normal}(0, 2.5) \tag{4}$$
$$\gamma \sim \text{Normal}(0, 2.5) \tag{5}$$
$$\sigma \sim \text{Exponential}(1) \tag{6}$$

We run the model in R (R Core Team 2023) using the `rstanarm` package of Goodrich et al. (2022). We use the default priors from `rstanarm`.

3.1.1 Model justification

We expect a negative relationship between average household income and the number of children per child care space by ward. In particular…

We can use maths by including latex between dollar signs, for instance θ.

4 Results

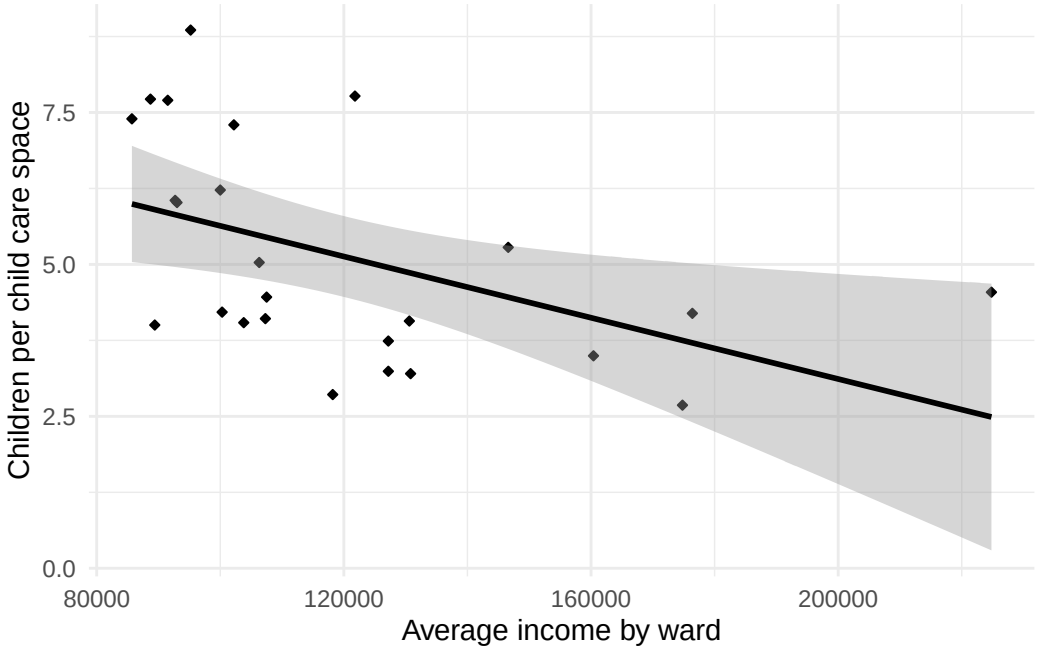

Figure 2: Relationship between income and child care spaces

Our results are summarized in **?@tbl-modelresults**.

5 Discussion

5.1 First discussion point

The discussion is a chance to show off what you know and what you learnt from all this.

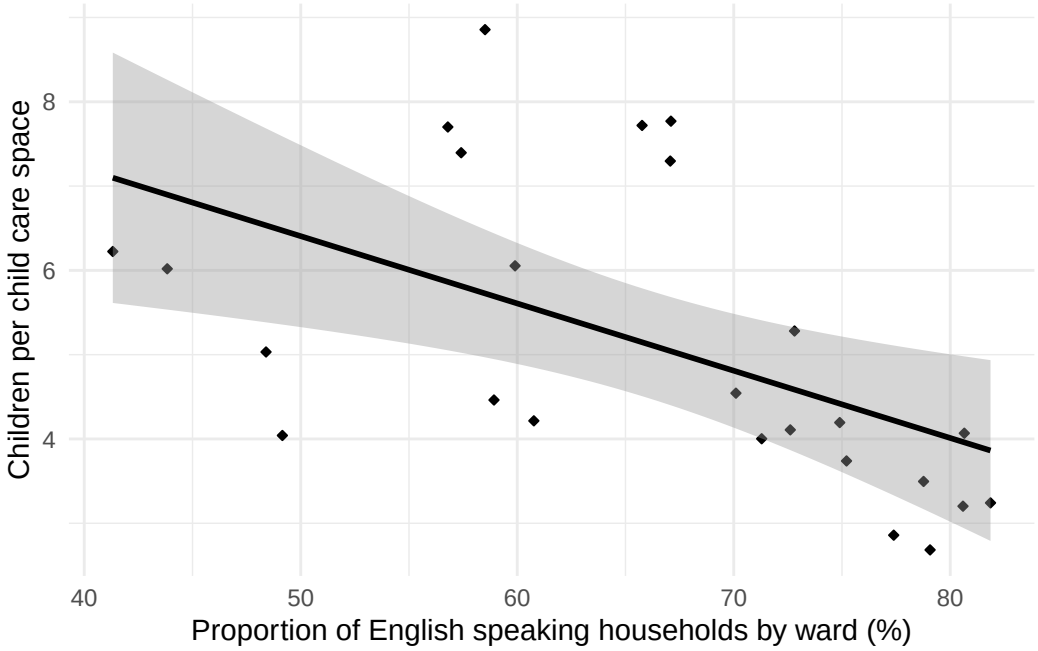

Figure 3: Relationship between language and child care spaces

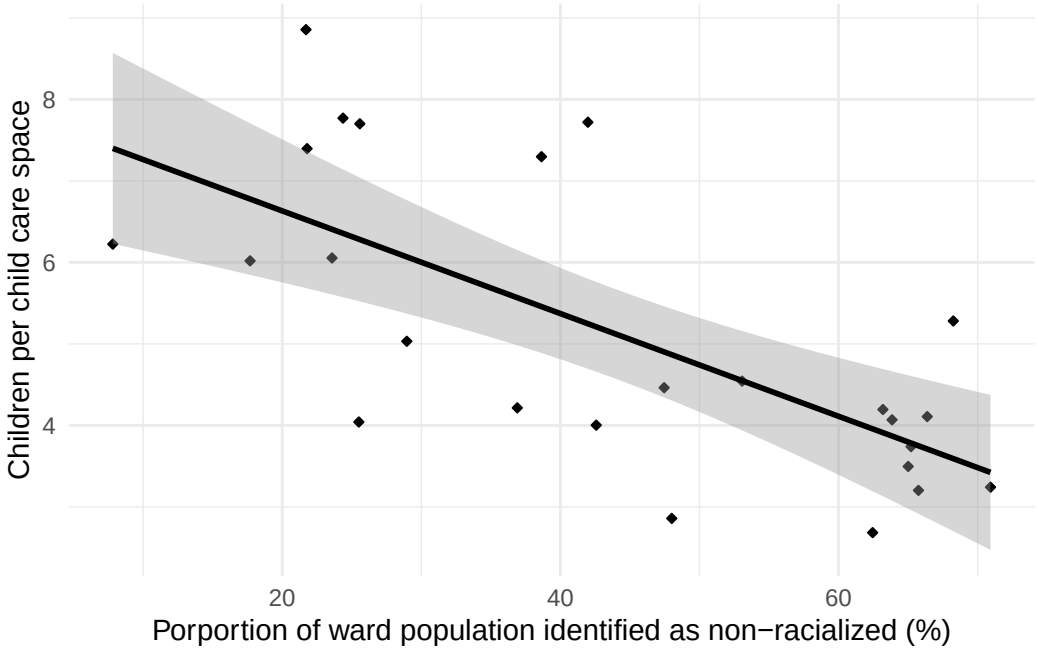

Figure 4: Relationship between non-racialized population by ward and child care spaces

5.2 Second discussion point

5.3 Third discussion point

5.4 Weaknesses and next steps

Appendix

A Additional data details

B Model details

B.1 Posterior predictive check

In **?@fig-ppcheckandposteriorvsprior-1** we implement a posterior predictive check. This shows…

In **?@fig-ppcheckandposteriorvsprior-2** we compare the posterior with the prior. This shows…

B.2 Diagnostics

?@fig-stanareyouokay-1 is a trace plot. It shows… This suggests…

?@fig-stanareyouokay-2 is a Rhat plot. It shows… This suggests…

References

Goodrich, Ben, Jonah Gabry, Imad Ali, and Sam Brilleman. 2022. "Rstanarm: Bayesian Applied Regression Modeling via Stan." https://mc-stan.org/rstanarm/.

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. 2019. "Welcome to the tidyverse." *Journal of Open Source Software* 4 (43): 1686. https://doi.org/10.21105/joss.01686.