Do More Subdivisions in Wards Increase Voter Turnout? An Analysis of the 2022 Toronto Municipal Election*

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

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1 Introduction

As mandated by the Government of Ontario, residents of the City of Toronto went to the polls on October 24, 2022 to elect a mayor, councillors, and school board trustees. Then-sitting

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*Code and data from this analysis are available at: https://github.com/InessaDeAngelis/Toronto_Elections

Mayor, John Tory, sought re-election, along with a number of incumbent city councillors. Coming out of the height of the Covid-19 pandemic, the 2022 election largely upheld the status quo and did not feature ambitious policy platforms. Voter turnout across the city fell to 30% - the lowest in the city's history since amalgamation in 1997, with turnout ranging on a ward-by-ward basis from 22% to 38% (Marshall 2023; Warren 2022).

Individual turnout by ward depended on local candidates and the accessibility of subdivisions to cast a ballot. The City of Toronto Elections (2023b) defines a ward as "a geographical area represented by a member of Council." Following Premier Doug Ford's decision in the summer of 2018 to cut down the number of wards in the city to match federal and provincial riding boundaries, there are currently 25 wards in the City of Toronto (Lucas and McGregor 2021). Subdivisions are defined by the City of Toronto (Data 2023) as "…. geographical area[s within a ward] designated by the City Clerk." Previous studies concentrating on large cities in the United States, including Atlanta revealed that having polling locations in close proximity to a voter's home bolsters turnout and even minor changes in placement of a polling location can have significant impact on a voter's decision to cast a ballot (Haspel and Knotts 2005). There has been little research into the impact of polling location placement in relation to election turnout, especially in Canadian cities like Toronto and this paper will contribute to the investigation of this phenomenon.

To examine the impact of subdivision placement on voter turnout, this paper is organized into the following sections: Data, Results, Discussion, and Conclusion. In the Data section, I discuss the nature of the spreadsheet obtained through the City of Toronto's OpenDataToronto Library (Gelfand 2022) and the steps I took to clean and analyze the data. The Results section highlights trends found during the analysis process, while the Discussion section further evaluates the trends and presents insight. Lastly, the Conclusion section summarizes the main findings from this paper.

2 Data

The data utilized throughout this paper was obtained through the City of Toronto's Open-DataToronto Library (Gelfand 2022). The data set used is entitled 'Elections - Voter Statistics' (Data 2023). Data was collected and analyzed using the statistical programming software R (R Core Team 2023), with additional support from `tidyverse` (Wickham et al. 2019), `ggplot2` (Wickham 2016), `dplyr` (Wickham et al. 2023), `readr` (Wickham, Hester, and Bryan 2023), `tibble` (Müller and Wickham 2023), `janitor` (Firke 2023), `KableExtra` (Zhu 2021), `Knitr` (**rknitr?**), and `here` (Müller and Bryan 2020). A further discussion of the data collection, cleaning, and analysis process can be found later on in this paper.

Table 1: Sample of Cleaned Voter Statistics Data

Ward	Sub	Total Eligible Electors	Number Voted	Percent Voted
1	1	1567	275	18%
1	2	1656	355	21%
1	3	1266	232	18%
1	5	2669	284	11%
1	6	1837	268	15%

2.1 Election Voter Statistics

This dataset, published by the City Clerk's Office (Data 2023) outlines voter statistics on a ward-by-ward and entire city basis for the 2022 municipal election. For each subdivision within a ward, the data set shows the polling location name and address, number of additions and corrections to the voter's list, number of eligible electors and number who voted, and rejected and declined ballots. This data set was last refreshed on February 7, 2023 and captured for this paper on May 21, 2023.

Upon analysis, columns such as rejected and declined ballots were deemed beyond the scope of this paper. I conducted the first step of basic data cleaning to eliminate additional columns and simplify the names of retained columns (see Table 1).

2.2 Number of Subdivisions

The Election Voter Statistics data set (Data 2023) listed "NA" for the number of subdivisions per ward, but included the voter turnout average for all subdivisions within a ward. Consequently, I wrote a script to count the number of subdivisions per ward. For the purpose of this paper, I included the Advance Vote and Mail In Voting subdivisions when counting the total number of subdivisions per ward see **?@tbl-summarized_voter_statistics**. Firstly, there are only two Advance Vote locations distributed across an entire ward, meaning residents have to be motivated to travel farther away from their home to cast their ballot. Secondly, Mail In Voting requires applying online or by phone through Toronto Elections and then returning the completed Mail In Voting package by dropping it in a Canada Post mailbox or hand delivering it to one of the select Toronto Elections drop boxes (Elections 2023a). Despite the number of subdivisions per ward, the City of Toronto has earmarked subdivision 97 for Mail In Voting, while subdivisions 98 and 99 are designated Advance Vote locations.

2.3 Turnout by Ward

Moreover, using the cleaned voter statistics data set, I created a table with

Table 2: Sample of Summarized Voter Statistics Data

Ward	Number of Subdivisions
1	55
2	72
3	86
4	70
5	65

2.4 Merged Number of Subdivisions and Turnout

3 Results

During the 2022 municipal election, there were 1,535 subdivisions across Toronto's 25 wards. Ward 10 (Spadina-Fort York) had the highest number of subdivisions at 94, while Ward 23 (Scarborough North) had the lowest number at 38. Ward 13 (Toronto Centre) had the second highest number of subdivisions at 90, with Ward 3 (Etobicoke-Lakeshore) coming in third highest with 83 subdivisions. Ward 7 (Humber River-Black Creek) had the second lowest number of subdivisions at 47, following by Ward 25 (Scarborough-Rouge Park) with 48. The range of subdivisions within Wards varied more than anticipated, given that ward boundaries and their corresponding population are relatively equal.
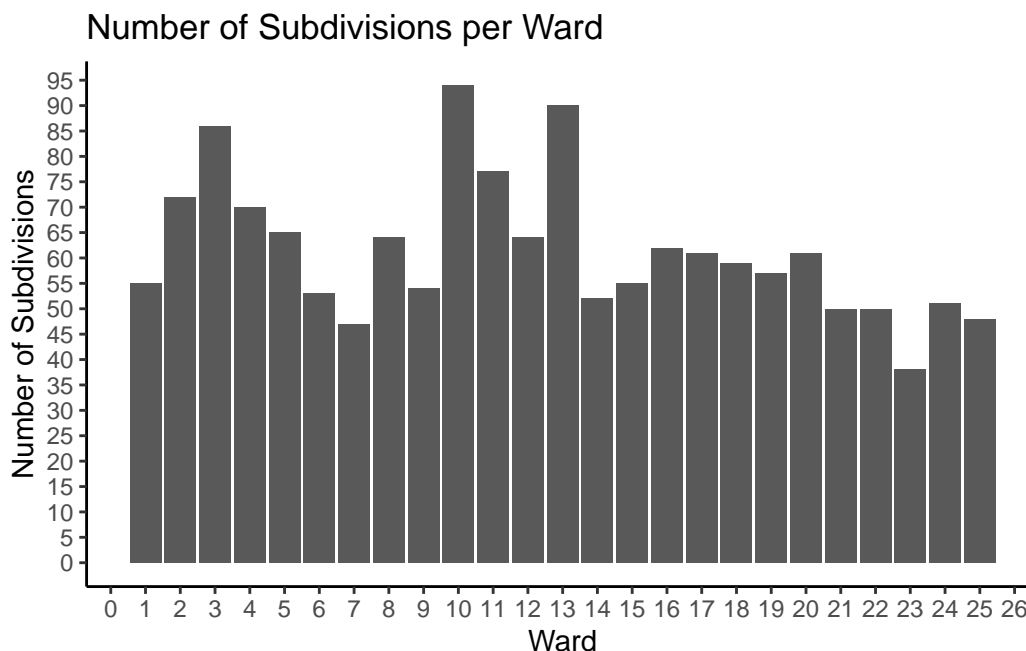
Number of Subdivisions per Ward
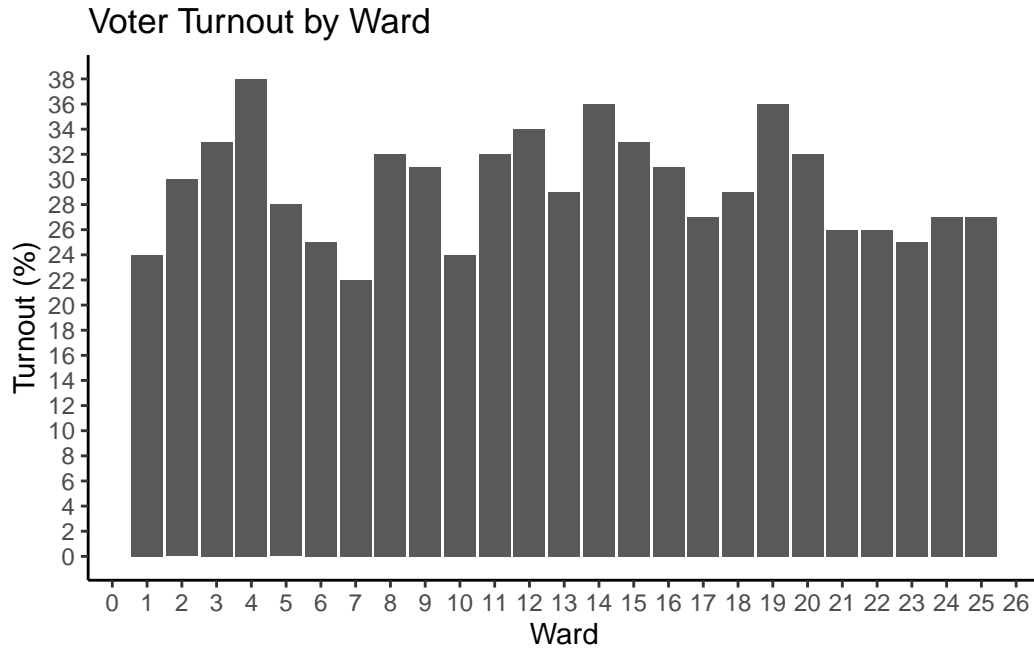
Figure 1: **?(caption)**

4 Discussion

5 Conclusion

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