Do More Subdivisions in Wards Increase 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 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

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

quo and did not feature ambitious policy platforms. Voter turnout across the city was 29.7% - the lowest in the city's history since amalgamation in 1997, with turnout ranging on a ward-by-ward basis from 22.1% to 38.5% (Marshall 2023; Warren 2022).

Individual turnout by ward largely 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 spreadsheets 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 OpenDataToronto Library (Gelfand 2022). The two different data sets used are: "Elections Voting Locations" (Data 2022) and "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), 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.

2.1 Election Voter Statistics

This dataset, published by the City Clerk's Office (Data 2023) comprises the number of eligible voters and corrections/additions to the Voter's List for the 2022 municipal election. The dataset is broken down by ward and voting subdivision, including voting for school board

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%

trustees. This data set was last refreshed on February 7, 2023 and captured for this paper on May 21, 2023. This data set outlines the total number of eligible electors in Toronto, by ward, subdivision, and the entire city.

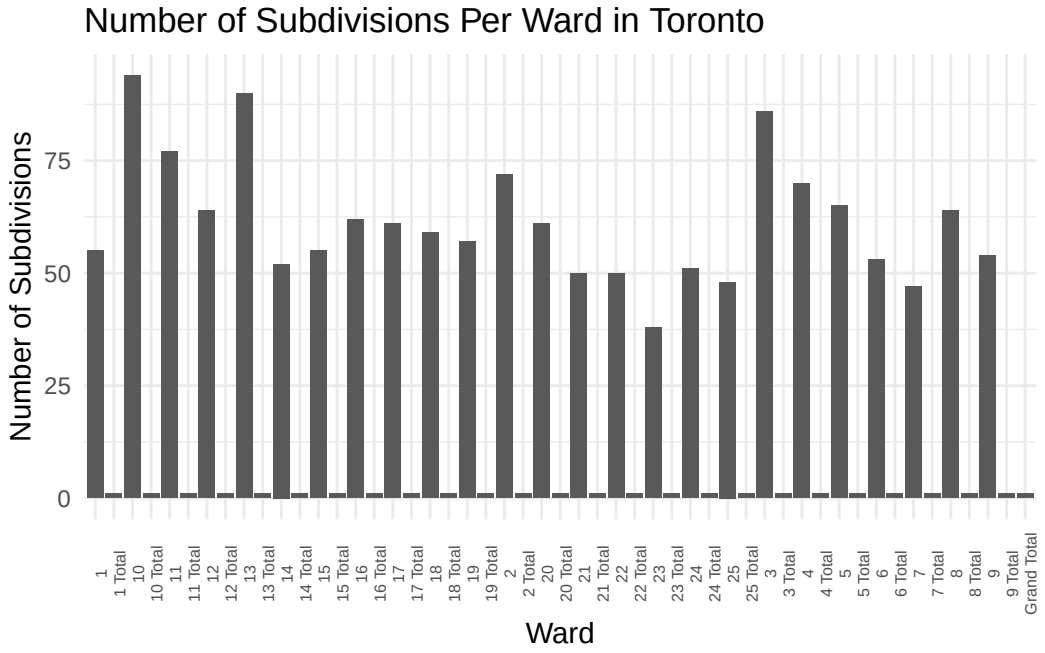
For the purpose of this paper, I included the Advance Vote and Mail In Voting subdivisions when counting the total number of subdivisions per ward. Firstly, there are only two Advance Vote locations distributed across an entire ward, meaning residents have to be motivated to travel farther away from 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 Toronto Elections drop boxes at select locations (Elections 2023a). Voters need to be more organized and motivated to vote in advance of election day.

Upon analysis, it was discovered that this data set included columns and data beyond the scope of this paper. I conducted basic cleaning of the data set to simplify column names and eliminate additional information (see Table 1).

I further cleaned the cleaned voter statistics data set to count the number of subdivision per ward and organize the number of subdivisions in descending order from the highest number of subdivisions to the lowest number of subdivisions.

Ward	Number of Subdivisions
10	94
13	90
3	86
11	77
2	72
4	70
5	65
8	64
12	64
16	62
20	61
17	61
18	59
19	57
15	55
1	55
9	54
6	53
14	52
24	51
22	50
21	50
25	48
7	47
23	38

3 Results


Number of Subdivisions Per Ward in Toronto
Number of Subdivisions
0
25
50
75
1
1 Total
10
10 Total
11
11 Total
12
12 Total
13
13 Total
14
14 Total
15
15 Total
16
16 Total
17
17 Total
18
18 Total
19
19 Total
2
2 Total
20
20 Total
21
21 Total
22
22 Total
23
23 Total
24
24 Total
25
25 Total
3
3 Total
4
4 Total
5
5 Total
6
6 Total
7
7 Total
8
8 Total
9
9 Total
Grand Total
Ward

Ward	Sub
1	1
1	2
1	3
1	5
1	6
1	7
1	8
1	9
1	10
1	11
1	12
1	13
1	14
1	15
1	16
1	17
1	18
1	19
1	21
1	22
1	23
1	24
1	25
1	26
1	27
1	28
1	29
1	30
1	31
1	32
1	33
1	34
1	35
1	36
1	37
1	38
1	39
1	40
1	41
1	42
1	47
1	48
1	49
1	51
1	52
1	53
1	54
1	55

```
  total  n
1    60 51
```

4 Discussion

5 Conclusion

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