

Toronto's Food Bank Usage From 2013 to 2023

Moohaeng Sohn

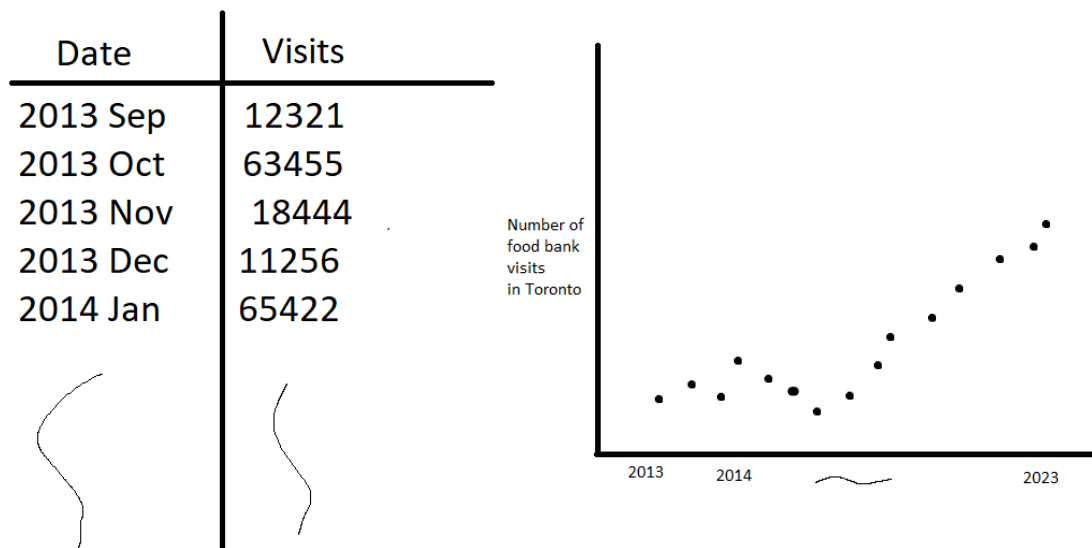
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Toronto's Foodbank Usage From 2013 to 2023

After the COVID-19 pandemic, the cost of essential items such as food, housing, gas has risen significantly Chen and Tombe (2023). Due to this, many Canadians are not able to afford groceries, possibly affecting food bank usage. This report aims to find out how the food bank usage changed over time in Toronto, from 2013 September to 2023 September. This project closely follows methods mentioned in *Telling Stories with Data* Alexander (2024).

Plan

We will need a data set which contains the year and the month, and number of visits to the food bank for that year and month. We will use a scatter plot to plot the number of visits. A rough sketch of the data set and the graph would look something like (Figure 1)



- (a) Quick sketch of a dataset that we can use to analyze food bank visits over time
- (b) Quick sketch of a possible graph of the number of food bank visits by month

Figure 1: Sketches of the dataset and graph related to food bank visits in Toronto

Simulate

We can simulate the dataset by randomly generating visits for a given year/month combo. I have used R version 4.3.2 and a library called Tidyverse to create this simulation (R Core Team 2023) (Wickham et al. 2019).

```
#### Preamble ####
# Purpose: Simulate monthly toronto foodbank data for 2013 Sep-2023 Sep
# Author: Moohaeng Sohn
# Date: Jan 13, 2024
# Contact: alex.sohn@mail.utoronto.ca

#### Workspace setup ####
# Load packages
library(tidyverse)

#### Simulate data ####
# set the seed
set.seed(302)
# dates going from 2013 September 1st to 2023 September 1st increasing monthly
```

```

dates <- seq(as.Date("2013/9/1"), as.Date("2023/9/1"), "month")
# filter out year and month from dates and format it as YEAR/MONTH
dates_formatted <- format(dates, "%Y/%m")
# use the formatted dates and poisson distribution to simulate visits
simulated_foodbank_data <-
  tibble(
    date = dates_formatted,
    visits = rpois(length(dates_formatted), lambda = 25000)
  )

```

```
simulated_foodbank_data
```

```

# A tibble: 121 x 2
  date      visits
  <chr>    <int>
1 2013/09  25035
2 2013/10  25067
3 2013/11  24957
4 2013/12  24978
5 2014/01  25150
6 2014/02  25079
7 2014/03  24995
8 2014/04  24869
9 2014/05  25093
10 2014/06  24767
# i 111 more rows

```

Acquire

We have found data about monthly food bank visit in Toronto from City of Toronto's data dashboard (Toronto 2023). Downloading this data via `opendatatoronto` R package was impossible as it lead to the data dashboard website (as WEB format) instead of the csv itself (Gelfand 2022).

```

library(opendatatoronto)
library(tidyverse)

# get package
list_package_resources("2d48a61d-da9b-4cfb-9dac-19f65492f756")

```

```
# A tibble: 2 x 4
  name                id                format last_modified
  <chr>              <chr>              <chr>   <date>
1 food-bank-usage-csv 3e2fb130-497f-42a7-9523-53258fbaf~ WEB      NA
2 food-bank-usage-readme c96a90bd-f25d-4daf-b725-205bc60e1~ XLS    2019-07-23
```

Therefore we resorted to downloading the csv manually from the City of Toronto website. We can see what the dataset looks like:

```
head(read.csv("inputs/data/toronto_foodbank_data.csv"))
```

	Measure.Name	Year	Period	Value
1	Food Bank Usage	2007	Jan	51428
2	Food Bank Usage	2007	Feb	48163
3	Food Bank Usage	2007	Mar	56092
4	Food Bank Usage	2007	Apr	51555
5	Food Bank Usage	2007	May	57977
6	Food Bank Usage	2007	Jun	54200

And we can clean up the data, merging year and period to be in the same “date” column, and changing “value” column to “visits”. At this point, we also changed the dates column to be R data type date because we want to make a graph, and graphing will be much easier if we have Date datatype column instead of a string. We also filtered out data to be between 2013 September to 2023 September. We have used R (R Core Team 2023), with packages tidyverse (Wickham et al. 2019), janitor (Firke 2023), and lubridate (Grolemund and Wickham 2011) to clean this data.

```
#### Preamble ####
# Purpose: clean monthly toronto foodbank data for 2013 Sep-2023 Sep
# Author: Moohaeng Sohn
# Date: Jan 13, 2024
# Contact: alex.sohn@mail.utoronto.ca

#### Workspace setup ####
# Load packages
library(tidyverse)
library(janitor)
library(lubridate)

#### Clean data ####
# load raw data
```

```

raw_data <- read.csv("inputs/data/toronto_foodbank_data.csv")
# clean data
# change dates in string format to int https://stackoverflow.com/a/76469586
# filter data to be between 2013-09-01 and 2023-09-01
cleaned_data <-
  clean_names(raw_data) |>
  mutate(period = recode(period,
    Jan = 1,
    Feb = 2,
    Mar = 3,
    Apr = 4,
    May = 5,
    Jun = 6,
    Jul = 7,
    Aug = 8,
    Sep = 9,
    Oct = 10,
    Nov = 11,
    Dec = 12
  )) |>
  mutate(date = make_date(year, period, 1)) |>
  select(date, visits = value) |>
  filter(as.Date("2013-09-01") <= date & date <= as.Date("2023-09-01"))

#### Save data ####
write_csv(
  x = cleaned_data,
  file = "outputs/data/cleaned_toronto_foodbank_visits.csv"
)

head(cleaned_data)

```

	date	visits
1	2013-09-01	56700
2	2013-10-01	62700
3	2013-11-01	57200
4	2013-12-01	54500
5	2014-01-01	56300
6	2014-02-01	54800

Explore

Again using R (R Core Team 2023) and tidyverse (Wickham et al. 2019), we were able to plot monthly visits to Toronto's food banks (Figure 2).

```
##### Preamble #####
# Purpose: explore monthly toronto foodbank data for 2013 Sep-2023 Sep
# Author: Moochaeng Sohn
# Date: Jan 13, 2024
# Contact: alex.sohn@mail.utoronto.ca

##### Workspace setup #####
# Load packages
library(tidyverse)

##### Load in Data #####
cleaned_data <-
  read_csv(
    "outputs/data/cleaned_toronto_foodbank_visits.csv",
    show_col_types = FALSE
  )

##### Explore Data #####
# create a graph showing the change in visits to the foodbank
cleaned_data |>
  ggplot(aes(x = date, y = visits)) +
  geom_point() +
  labs(x = "Date",
       y = "Monthly Visits to the Food Bank") +
  theme_minimal() +
  scale_y_continuous(labels = scales::comma_format()) +
  expand_limits(y = 0)
```

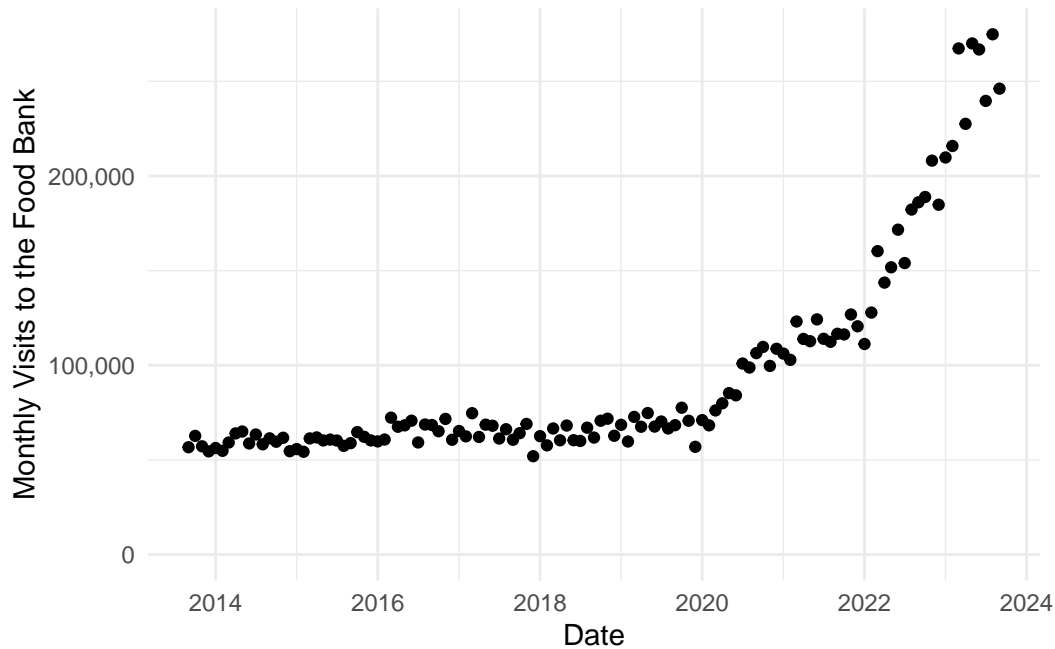


Figure 2: Monthly visits to food banks in Toronto from 2013 September to 2023 September

Share

After the COVID-19 pandemic, Canada’s inflation skyrocketed to record-breaking levels (Chen and Tombe 2023). This meant less people could afford groceries in normal grocery stores. Thus increasing the demand for food banks. In Toronto, the Daily Bread Food Bank has 25 locations in the city of Toronto (n.d.). We will observe the number of monthly visits to Daily Bread Food Bank.

We downloaded the dataset from Toronto’s data dashboard (Toronto 2023). Data was cleaned using programming language R (R Core Team 2023) and a package for R called `tidyverse` (Wickham et al. 2019). A graph was created with the same tools.

We have observed that monthly visits to food banks skyrocketed after 2020, when the COVID-19 pandemic has started taking over. It has almost quadrupled in the span of 3 years. The growth does not seem to be slowing down either.

This may be a concern to those food banks as they may have not enough resources to provide to match this surge in demand. There are many factors that could have contributed to this increase in visits to food banks. It could be that Canada is growing in population at the highest rate since 1957 (Canada 2023), or as we mentioned, could be from inflation (Chen and Tombe 2023). Further research is needed to find the relationships between these factors and how they have affected food bank visits, and possibly on how food bank visits are related to number of people in poverty.

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