

# How Toronto's homeless death toll over the years shows the dangers of addiction's epidemic?\*

Data analysis of homeless deaths in Toronto from 2017 to 2023

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Homelessness is a well-known problem in Toronto, and this article takes an in-depth look at the tragic reality of homelessness in Toronto. Focuses on the devastating impact of drug addiction by analyzing homeless death toll data from 2017 to 2023. Our top findings reveal a worrying rise in addiction-related homeless deaths over the years. By examining causes of death, age groups and gender, we provide a comprehensive overview revealing the dangers faced by this vulnerable group.

## 1 Introduction

Toronto is currently experiencing an escalating drug poisoning crisis, with challenges posed by the Covid-19 pandemic further exacerbating the public health dilemma. This article explores the details behind this crisis through a comprehensive analysis of homeless deaths from 2017 to 2023.

Drug addiction has a profound impact on the homeless community. Our result reveal the rapid spread of drug poisoning in Toronto. This article takes an depth look at the proportion of deaths caused by drug poisoning and sheds light on the impact of the COVID-19 pandemic on the drug poisoning crisis.

To examine the impact of the COVID-19 pandemic on the drug poisoning crisis, this article is divided 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 Open-DataToronto (Toronto Public Health 2023) and the steps I took to clean and analyze the data. The Results section displays the trends discovered during the analysis, and the Discussion

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\*Code and data are available at: [https://github.com/zero616/Homeless\\_Death\\_Analysis](https://github.com/zero616/Homeless_Death_Analysis).

section evaluates the trends and provides insights. Finally, the conclusion summarizes the main findings of this paper.

## 2 Data

The dataset used in this analysis was obtained from the City of Toronto’s OpenDataToronto Library (Gelfand 2022), adhering to ethical guidelines and ensuring personal anonymity. It includes important information such as year of death, cause of death, age group, gender and number of people. To maintain transparency and reproducibility, all analyzes were performed using the R programming language and visualized with ggplot2 (Wickham 2016) and tables created with knit (Xie 2023).

Table 1 provides a summary of the dataset outlining the key variables under consideration: time to death, cause of death, sex and age group. The time of death started in 2017 and ended in 2023, and the age groups were divided into <20, 20-39, 40-59, 60+.

Table 1: Sample Table of Toronto Homeless Death

Year of Death	Cause of Death	Age Group	Gender	Count
2017	Accident	40-59	Male	2
2017	Accident	60+	Male	3
2017	Cancer	60+	Female	1
2017	Cancer	40-59	Female	2
2017	Cancer	40-59	Male	2
2017	Cancer	60+	Male	4

Table 2 provides the total number of deaths summarized by age group and cause of death in the dataset, outlining the key variables available for analysis: cause of death, age group and number of deaths.

Table 2: Sample Table for total death number of causes of death by Age Group

Age Group	Cause of Death	Total Count
20-39	Accident	11
20-39	Cancer	1
20-39	Cardiovascular Disease	4
20-39	Drug Toxicity	179
20-39	Homicide	5
20-39	Other	7

Table 3 provides the total number of deaths in the data set summarized by year of death and cause of death, outlining the key variables in the analysis of addiction harm to homeless people: cause of death, time of death, and number of deaths.

Table 3: Sample Table for total death number of causes of death by Age Group

Year of Death	Cause of Death	Total Count
2017	Accident	5
2017	Cancer	9
2017	Cardiovascular Disease	13
2017	Drug Toxicity	31
2017	Homicide	1
2017	Other	8

Figure 1 shows the distribution of causes of death among homeless people, stratified by age group. This figure provides an impactful sketch of the leading causes of death among homeless people.

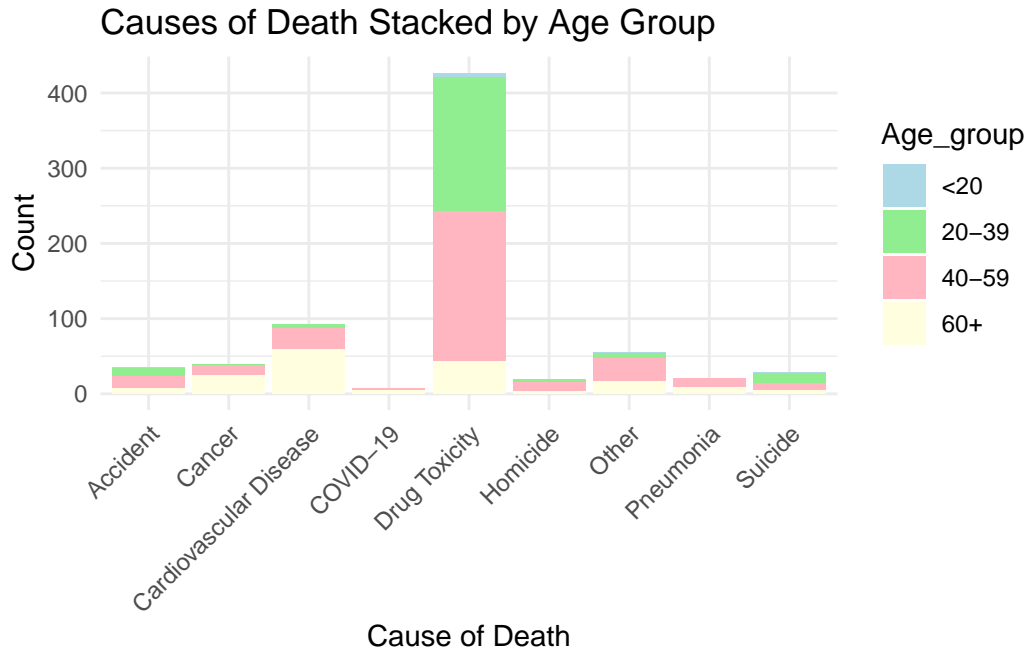


Figure 1: Causes of death analysis by age

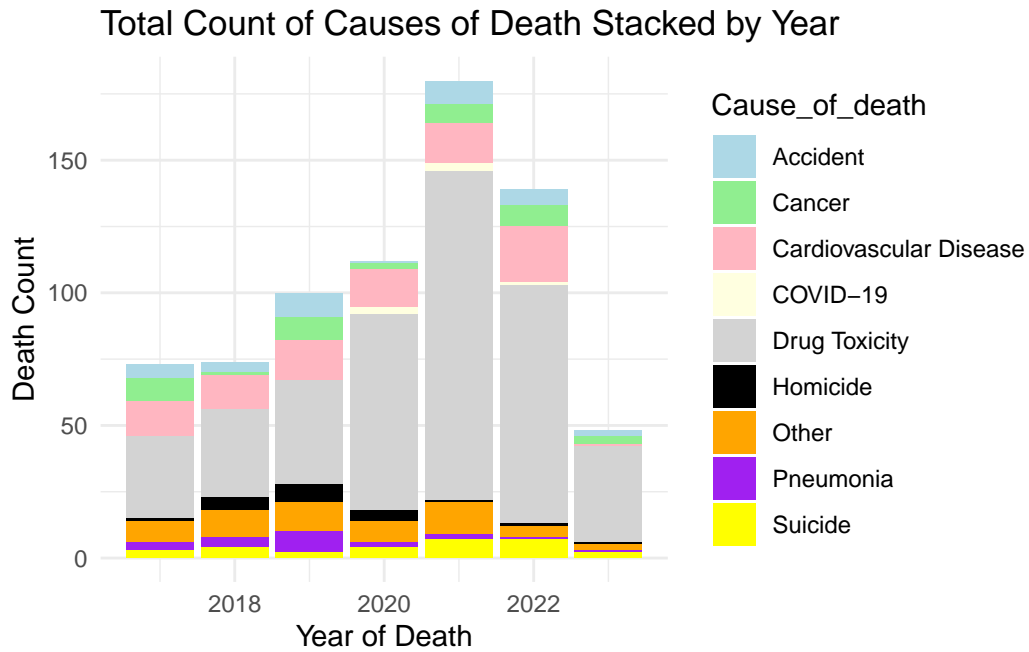


Figure 2: Causes of death analysis by year

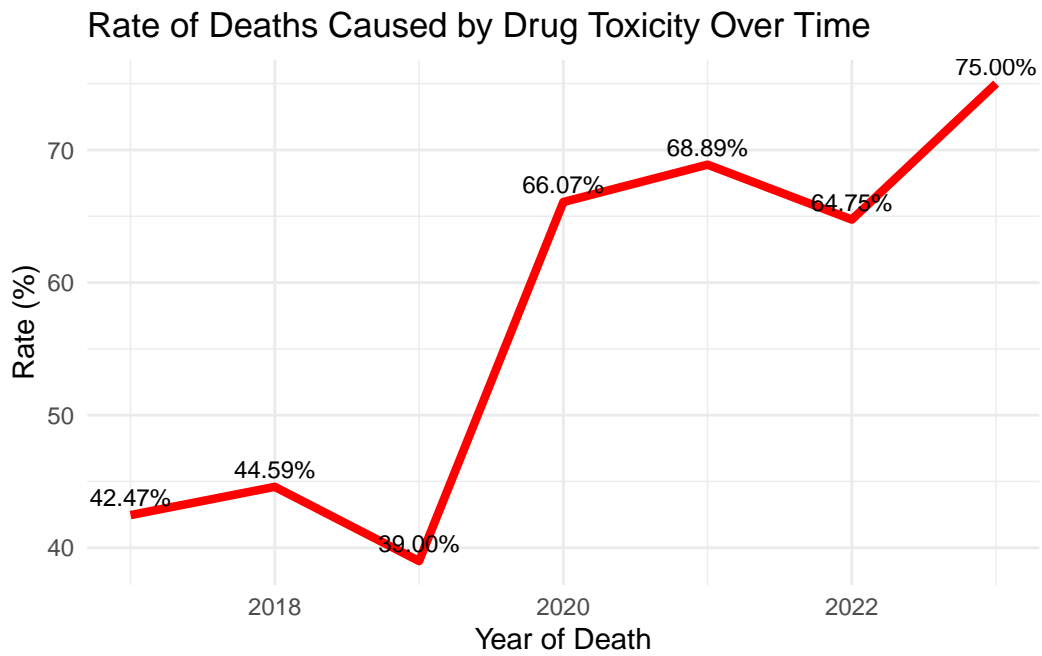


Figure 3: Rate of death Caused by Drug Toxicity Over Time

### 3 Results

Our results are summarized in `?@tbl-modelresults`. `#| echo: false #| eval: true #| warning: false #| message: false`

```
library(rstanarm)
```

```
first_model <- readRDS(file = here::here("outputs/models/first_model.rds"))
```

```
#| echo: false #| eval: true #| label: tbl-modelresults #| tbl-cap: "Explanatory models of  
flight time based on wing width and wing length" #| warning: false
```

```
modelsummary::modelsummary( list( "First model" = first_model ), statistic = "mad", fmt  
= 2 )
```

### 4 Discussion

#### 4.1 First discussion point

If my paper were 10 pages, then should be at least 2.5 pages. The discussion is a chance to show off what you know and what you learnt from all this.

#### 4.2 Second discussion point

#### 4.3 Third discussion point

#### 4.4 Weaknesses and next steps

Weaknesses and next steps should also be included.

## 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... `##| eval: true ##| echo: false ##| message: false ##| warning: false ##| label: fig-ppcheckandposteriorvsprior ##| layout-ncol: 2 ##| fig-cap: "Examining how the model fits, and is affected by, the data" ##| fig-subcap: ["Posterior prediction check", "Comparing the posterior with the prior"]`

```
pp_check(first_model) + theme_classic() + theme(legend.position = "bottom")
```

```
posterior_vs_prior(first_model) + theme_minimal() + scale_color_brewer(palette = "Set1") + theme(legend.position = "bottom") + coord_flip()
```

#### 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... `##| echo: false ##| eval: true ##| message: false ##| warning: false ##| label: fig-stanareyouokay ##| fig-cap: "Checking the convergence of the MCMC algorithm" ##| fig-subcap: ["Trace plot", "Rhat plot"] ##| layout-ncol: 2`

```
plot(first_model, "trace")
```

```
plot(first_model, "rhat")
```

## C References