

Etobicoke: Most Popular Death Registry Centre*

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Abstract

Death registry is an important record that reflects the end of individual legal identities, being crucial in creating timely and accurate population census and statistics. I obtained and analyzed Toronto's death registry statistics broken down by the civic centre where the registration occurred and the place of death, creating graphs to demonstrate my findings. Most deaths occurred within Toronto, with an increase in the number of death licenses registered at the Etobicoke centre, especially during 2020 to 2022, the years of the COVID pandemic. The findings can be utilized in enhancing the efficiency of civic centres.

1 Introduction

Every year, Canada conducts population census to provide various accurate statistics about its population. It is vital for estimates of population size, which is crucial information for healthcare system and public policy. Death registration is the legal end of a citizen's identity. In order for death registration to be complete in Ontario, a Statement of Death by an informant and a Medical Certificate of Death by a physician or coroner must be completed and submitted to the local city clerk's office ("How to Get a Copy of an Ontario Death Certificate Online," n.d.). Altogether, it can take up to 12 weeks for a death to be registered. Within death registration, information regarding cause of death also provides a glimpse at what areas policy are concerned and may need to target in the future. In combination with the COVID pandemic, there has been evidence of a disproportionate amount of deaths per community concentration of essential workers within Toronto (Rao et al. 2021). A better understanding of the details regarding death will provide essential guidance to which communities need the most support and are at the most risk. If Toronto is to respond to the most timely needs of its current population, knowledge about the current population's characteristics is crucial.

The Death Registry Statistics dataset published on Toronto Open Data Portal by Toronto's City Clerk Office provides a glimpse at some of the information that is recorded when a death registration is complete. This report will first consider the four different civic centres that process death registration within Toronto. First, an investigation into the typical place of death on the death licenses will be done, revealing that while the majority of death licenses are for those who have passed away within Toronto, there is still a significant portion of those who passed away out of Toronto's city limits. Then, an analysis over time of the number of death licenses per civic centre will reveal the Etobicoke civic centre is the currently busiest location that has also processed the most death licenses over the years. Finally, the number of death licenses processed by Etobicoke suggests that there may be a correlation between the COVID pandemic and the large popularity of the Etobicoke civic centre to process death registrations.

The findings of the paper provide a direction of improvement for Toronto's civic centre's efficiency. The massive imbalance in the number of death registrations processed by each civic centre, particularly between Toronto and Etobicoke's civic centre is evidence of a mismatch in resources. The significant portion of death licenses registered for those who passed away outside of Toronto's city limits also raises questions regarding Ontario's policy of death registration being conducted by local city clerks. With consideration of the long processing time for death licenses, it is crucial if the city wants to enhance its overall operating efficiency and utilization to quicken the death registration process.

*Code and data are available at :<https://github.com/annadlli/paper1.git>.

The remainder of the paper is split into three sections. Section 2 explains the data, data source, data collection method, potential bias within data, and data characteristics. Section 3 relays the limitations of this study and what are further steps that could be taken with the results.

2 Data

This report was conducted using the R statistical programming language (R Core Team 2020) , with specifically tidyverse (Wickham et al. 2019), lubridate(Grolemund and Wickham 2011), and janitor(Firke 2021) packages used for data cleaning. The packages knitr(Xie 2021) and ggplot2 (Wickham 2016) were mainly used for analysis. The package here (Müller 2020) was used to ensure the working directory paths were accurate. Data was downloaded by using the package opendatatoronto (Gelfand 2020), which connects to the Toronto Open Data Portal and acquire the desired dataset.

2.1 Data Source and Collection

The report uses Death Registry Statistics data obtained from the Toronto Open Data Portal, published by the City Clerk’s Office. The dataset is refreshed monthly, with the most recent update conducted on February 1, 2022. The information documented by Registry Services staff in the Scarborough (SC), North York (NY), Toronto (TO) and Etobicoke(ET) civic centre. The information is entered into the Registry Services Tracking System, which then creates a dataset that resides in an Oracle database (Fan (n.d.)).

The purpose of the dataset was to support the Vital Statistics Act of Ontario, which states “Subject to the regulations, the Registrar General shall direct a uniform system of registration of births, marriages, deaths, still-births, adoptions and changes of name in Ontario, and is charged with the enforcement of the provisions of this Act” (“Vital Statistics Act, r.s.o. 1990, c. v.4” (n.d.)).

2.1.1 Potential Issues and Bias

While the information is collected by the City Clerk’s Office, the information is not entered at an equal pace. For the month of January in 2022, there has only been entries from the Etobicoke civic centre. This may cause analysis to be potentially biased, as there are an unequal amount of observations per civic centre. While it may be that the other civic centres had 0 death licenses registered, there are no records of 0 within the dataset. It may be that these observations of 0 are directly omitted from the dataset by the provider, but no explanation is given.

This also raises concerns regarding the collection process. The completion of the death registration is said to take up to 12 weeks in Ontario. This could imply that deaths licenses that started the registration process in January were finalized in March. If the collection process was consistent between all four civic centres, information should be updated at the same rate. The difference implies that the Registry Services staff in the various centres may be using different methods in documenting, managing, and relaying the death registry information from their centre. An example may be a difference in the timing of entering a death registration, with some entering it at the beginning of the process, and others when the license is finally issued. The difference in timing limits the usefulness of looking at trends over time.

Moreover, it is important that there is a difference drawn between a death that occurred in the neighbourhood and a death registered by a civic centre. The number of death licenses processed by a civic centre only indicates the amount of requests the centre has received from informants and physicians. The request only needs to be submitted to the City Clerk’s Office, with no specification regarding the civic centre. Results of this report do not represent the number of deaths per community or the overall number of deaths per year. The report simply discusses the death licenses the city of Toronto has processed with its four civic centres.

2.2 Data Characteristics

A total of 782 observations are within the Death Registry Statistics dataset. Entries are separated by the four civic centres, place of death (Toronto or outside of Toronto), year, and month. A glimpse at the dataset is included below in table 1.

Table 1: Data Overview

Year	Month	Civic Centre	Place of Death	Number of Death Licenses
2011	Jan	ET	Outside City Limits	69
2011	Jan	ET	Toronto	341
2011	Jan	NY	Outside City Limits	141
2011	Jan	NY	Toronto	540
2011	Jan	SC	Outside City Limits	129
2011	Jan	SC	Toronto	545
2011	Jan	TO	Toronto	297
2011	Feb	ET	Outside City Limits	83
2011	Feb	ET	Toronto	224
2011	Feb	NY	Outside City Limits	81

Table 1 is created through the kable function in the knitr package. It provides an overview of the first 10 observations. Civic centres are represented by their abbreviation, Scarborough (SC), North York (NY), Toronto (TO) and Etobicoke (ET). While death licenses are supposed to be registered by the local City Clerk's Office, Table 1 reveals that there are a good number of death registrations, over 50 per month and per civic centre, for deaths that occurred outside of the city limits.

To investigate the instances of death licenses for those whom passed away outside of the city limits, a barplot is used in Figure 1.

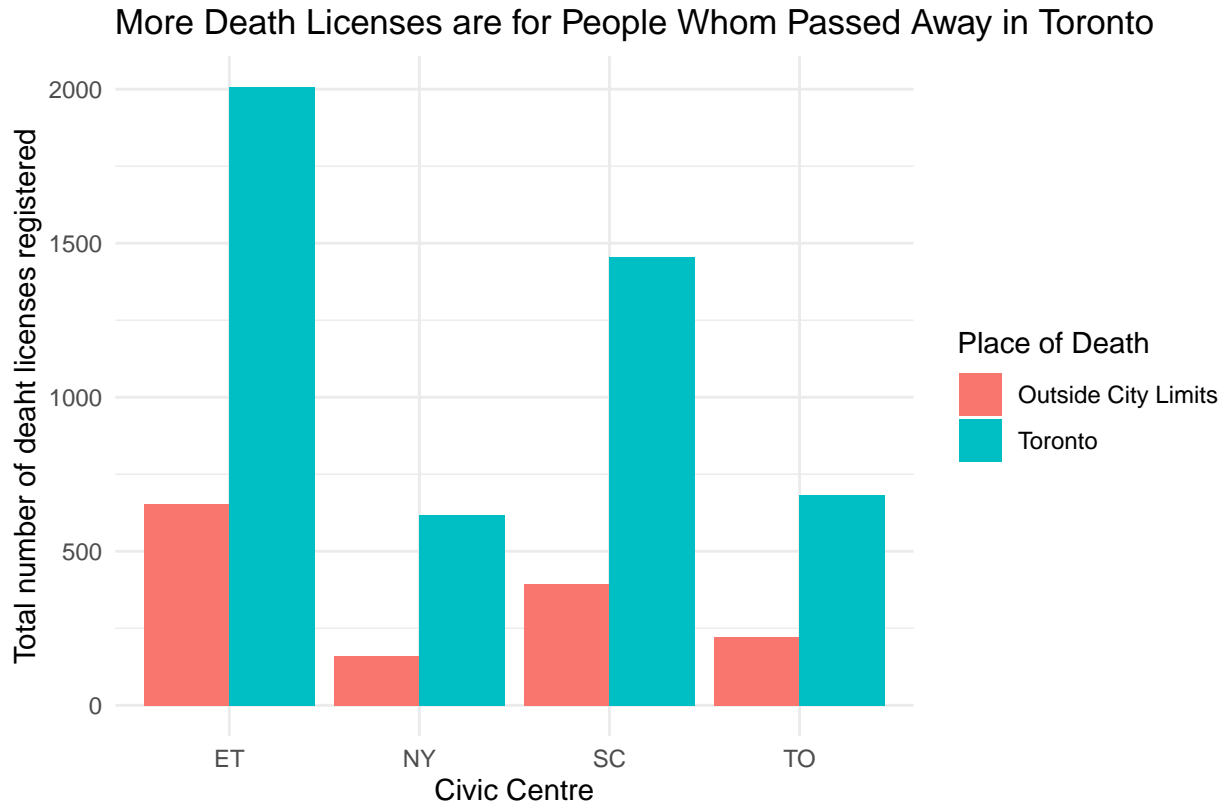


Figure 1: Total Death Licenses, Grouped by Civic Centre and Place of Death

Overall, for all four civic centres the majority of the death licenses registered are for those who passed away within Toronto. The number of death licenses for those who passed away outside of Toronto still make up a significant portion, being around one third of the number of death licenses for those who passed away in

Toronto. Figure 1 does not report the situation per year or month, so there may be variation during different periods. Nevertheless, the significant number of deaths that occur outside city limits which are handled by Toronto's civic centres calls for action to investigate the cause, seeing whether Toronto's civic centres are covering work that is of other cities.

After looking at the characteristics of Toronto's overall death registration processing situation, Figure 2 looks specifically at the trends of the civic centres over the period of 2011 to 2022.

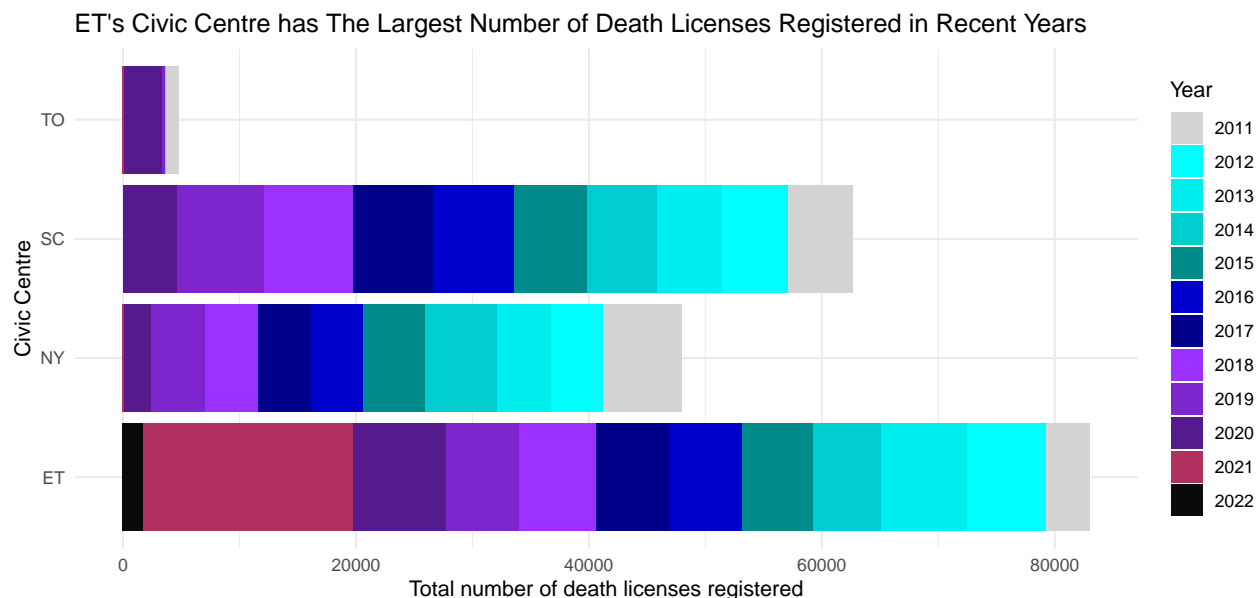


Figure 2 :Death License Registered per Civic Centre between 2011–2022

Figure 2 demonstrates the total number of death licenses registered over the years by the different civic centres. Overall, Etobicoke has processed the most death licenses, having over 80,000. The Toronto civic centre has processed the least, registering around 5,000 licenses only. The drastic difference in the overall processing number indicates the popularity of the different civic centres. Moreover, looking at the differences over the years, Etobicoke has recently processed the most amount of death licenses. From having a slightly larger number of death licenses registered in 2020, Figure 2 shows that Etobicoke totally dominates the number of death licenses registered in 2021 and 2022. Further investigation into the reasons behind Etobicoke's domination in the number of death licenses registration would help provide insight into the efficiency of the various civic centres.

Out of all civic centres, Etobicoke is utilized the most to conduct death registration. To further investigate Etobicoke's increase over time, 2 looks at the Etobicoke civic centre specifically.

Table 2 looks at the number of death licenses registered by Etobicoke every January from 2011 to 2022, specifically looking at the deaths that occurred in Toronto. The overall number of death registrations processed by the Etobicoke civic centre was generally stable over 2011 to 2020, ranging from around 300 to 600. 2021 and 2022 reveals a large spike in the number of death licenses to 1712 and 1326 respectively. The observations of 2021 and 2022 correspond with COVID, where the overall mortality has increased in Toronto.

3 Results

The disproportionate amount of death licenses processed per civic centre suggests a difference in utilization of the civic centre services. It would seem that Etobicoke is over utilized and Toronto underutilized, having a mismatch of resources. However, it could be that this is an intentional decision by the City Clerk's Office, whether it be Etobicoke having more staff or the other civic centres being tasked with doing other tasks as a priority. Nevertheless, if all four civic centres are to offer the service, it should still be valid to establish a comparison of their efficiency. Efficiency can be defined as the number of death licenses processed per year.

Table 2: A Deeper Dive into Etobicoke Civic Centre

Year	Month	Civic Centre	Place of Death	Number of Death Licenses
2011	Jan	ET	Toronto	341
2012	Jan	ET	Toronto	396
2013	Jan	ET	Toronto	631
2014	Jan	ET	Toronto	569
2015	Jan	ET	Toronto	487
2016	Jan	ET	Toronto	422
2017	Jan	ET	Toronto	610
2018	Jan	ET	Toronto	605
2019	Jan	ET	Toronto	612
2020	Jan	ET	Toronto	416
2021	Jan	ET	Toronto	1712
2022	Jan	ET	Toronto	1326

While it used to be quite proportionate in 2011-2016 as shown in Figure 2, Etobicoke has dominated the current years. This suggests that Etobicoke has become more efficient. Conversely, the minimal amount of death registration processed by the Toronto civic centre over the years suggest that it may be better if the centre focused on providing services in other areas instead.

Overall, how the current death registry situation may be improved depends on what the intentions of the City Clerk’s Office are for the death registration process. Etobicoke is the most efficient currently at processing death licenses, meaning that if this was a situation of efficiency, more resources and death registrations applications should be tasked to the Etobicoke centre. If it were an issue of convenience, there should be a consideration of increasing the number of civic centres responsible, such as including the East York civic centre. This report provides a basic understanding of the death registry situation in Toronto. While it has broad policy implications, further investigations is necessary to make detailed suggestions.

3.1 Next Steps

The large number of death licenses registered by Etobicoke in recent years could have a correlation with the disproportionate amount of deaths regarding essential worker concentration observed in Rao et al. (2021). It is likely that local deaths would go to their closest civic centre to register for a death license. Next steps investigating the relationship between essential worker concentration and death registration civic centres could provide insight regarding mortality statistics in Toronto.

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