Toronto Robbery Victims are primarily Young Males between 2014 and 2019

Hong Shi

30 January 2021

Abstract

Robbery is the criminal action of taking properties from other persons by force or threat, causing serious emotional and psychological impact on its victims. This paper explores the Toronto Police Annual Statistical Report to analyze who are the primary victims of robbery in Toronto. Descriptive results show that young males within 12~34 age group are the major proportion of robbery victims.

1 Introduction

As robbery involves both threatened or actual violence and loss of property to victims, it ranks among the most serious and feared criminal offenses. (Harlow 1987) Previous studies on robbery have shown that robberies have serious and enduring effects on victims' social behavior and psychological health, such as increased nervousness, anxiety, fear of crime (Gale and Coupe 2005), acute stress disorder (Elklit 2002), etc. Therefore, a robbery victim profile using current data could help to inform potential victims at high risk for better robbery prevention. This paper explores who are major proportion of robbery victims in Toronto. We use the Toronto's Police Service Annual Statistical Report dataset on Victims of Crime as our data source and conduct descriptive analysis using a table, a line chart and a bar chart. The results shows that young males, particularly within 12~34 age group, are at more risk becoming victims of robbery.

We organize the rest of paper as follows: In Data section, we first introduce our data source and approach to collect the dataset. Then we examine some features and weaknesses of the dataset. Secondly, we discuss variables in the dataset. Finally, we use descriptive analysis to show our findings on Toronto robbery victims.[1]

2 Data

Our data is of Toronto robbery victims. We analyzed it using R (R Core Team 2020), and packages `tidyverse` (Wickham et al. 2019), `scales` (Wickham and Seidel 2020), `here` (Müller 2020), and formatted the document using packages `bookdown` (Xie 2020) and `kableExtra`(Zhu 2020) .

2.1 Data Collection and Dataset Features

The dataset we use is the Toronto's Police Service Annual Statistical Report on Victims of Crime published by Toronto Police Services (Services 2020). We obtain this dataset using R package `opendatatoronto` (Gelfand 2020).

The Victims of Crime dataset includes all identified victims of crimes against the person, including, but not limited to, those that may have been deemed unfounded after investigation, those that may have occurred outside the City of Toronto limits, or have no verified location (Services 2020). Therefore, this dataset records

[1]Code and Data are available at the GitHub repo: https://github.com/honn-ishinn/toronto_robbery_victims

only victims involved in the reported crime occurrences, and does not include victims of crimes not against the person, such as against the property and other criminal code violations.

Although the dataset categorizes crime victims into different subtypes (assault, sexual violation, robbery and other), it does not specify the severity level of recorded crime cases on victims. For robbery crimes, features such as whether the robber was armed, whether the victim was injured, and losses of the victim are not included in the dataset. The lack of severity of crime cases might hinder our intention to construct an accurate victim profile that suffer the most from robbery.

2.2 Variables Description

To explore who are the major proportion of robbery victims, we use the following variables in the dataset:

- `Sex`: records the sex of identified victim. We remove crime cases which the victim's sex is unavailable.
- `AgeCohort` records the age cohort of identified victim. There is another variable `AgeGroup` in the dataset that records the age group of the identified victim by child, youth or adult. Since `AgeCohort` provides a more detailed classification of victims by their age range (e.g. 18-24), we choose `AgeCohort` instead of `AgeGroup` to analyze the age feature of robbery victims. We remove crime cases which the victim's age cohort is unavailable, and `AgeCohort` refers to "age group" in the context of this paper.
- `Count_` records the count of identified victims; duplicate persons are possible if the same person was victimized for the same offence during the same period.
- `Subtype` records the crime category subtype. We use `Robbery` to identify robbery victims.
- `ReportedYear` records the year crime was reported between 2014 and 2019.

2.3 Descriptive Analysis

The following table (Table 1) shows the general information about robbery victims in Toronto. On average, total victims associated with crimes against the person are fairly equal between males and females between 2014 and 2019 (13235 on males vs 13174 on females). However, robbery victims contribute around 18.8% of the total crime victims on males, which are almost 3 times of those on females (18.8% on males vs 6.36% on females).

Table 1: Average Annual Crime Victims between 2014 and 2019

Sex	Crime Victims	Robbery Victims	Percentage of Robbery Victims
Female	13174	838	6.36%
Male	13235	2493	18.84%

To analyze if there are changes of robbery victims from 2014 to 2019 in Toronto, we use a line chart (Figure 1) as shown below:

The line chart shows that the number of robbery victims for both males and females remains relative constant between 2014 and 2019, except some increases on males in 2016 and 2017. Since male robbery victims are almost twice more than those of females, males should be more cautious about robbery to prevent any potential losses.

Besides, we also explore characteristics of robbery victims by age. The bar chart as shown below (Figure 2) implies that males within 12-17, 18-24 and 25-34 age groups are much more likely to become victims of robbery. And on average, 53% of all robbery victims in Toronto are males within 12-34 age group, further suggesting needs to raise awareness of potential robberies for young males.

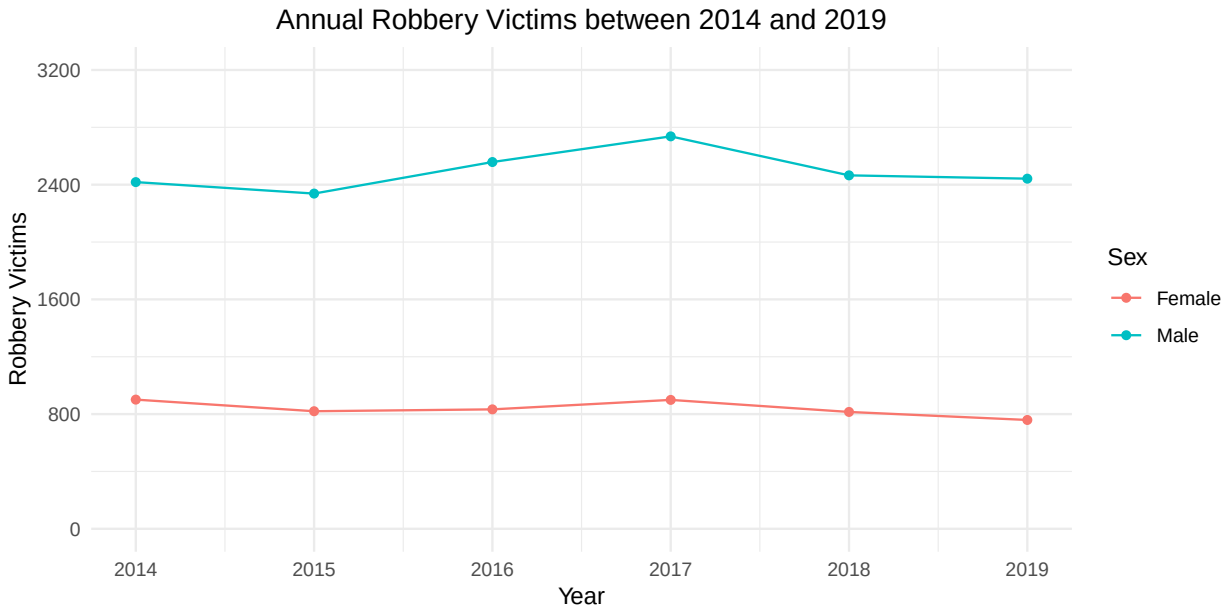

Figure 1: Annual Robbery Victims between 2014 and 2019

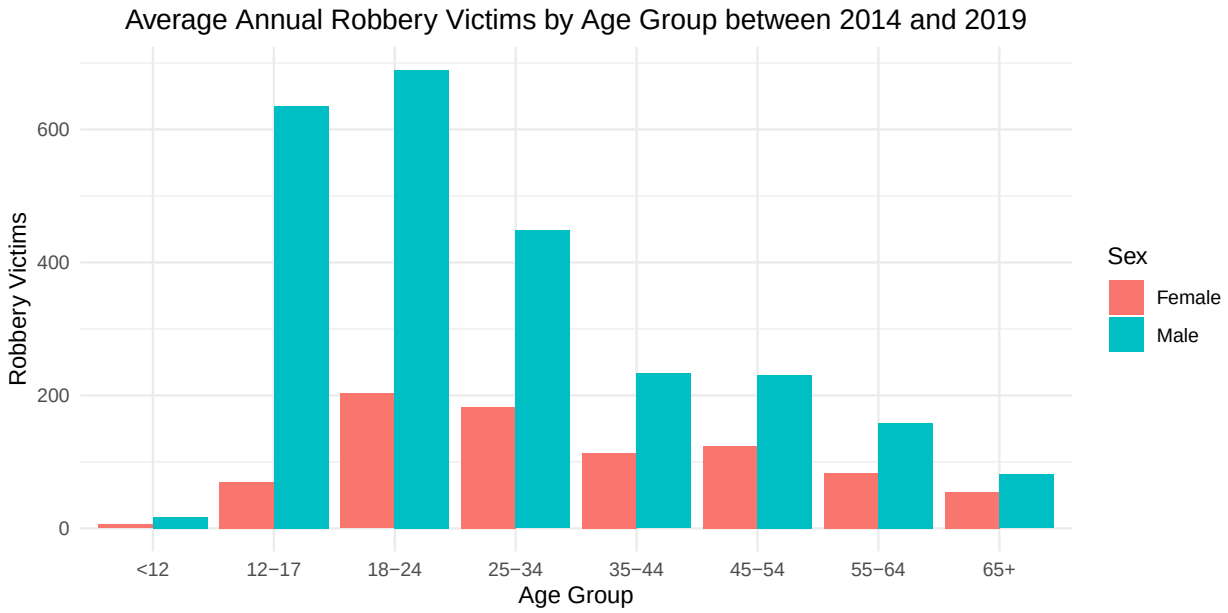

Figure 2: Average Annual Robbery Victims by Age Group between 2014 and 2019

References

Elklit, Ask. 2002. "Acute Stress Disorder in Victims of Robbery and Victims of Assault." *Journal of Interpersonal Violence* 17 (8): 872–87.

Gale, Julie-Anne, and Timothy Coupe. 2005. "The Behavioural, Emotional and Psychological Effects of Street Robbery on Victims." *International Review of Victimology* 12 (1): 1–22.

Gelfand, Sharla. 2020. *Opendatatoronto: Access the City of Toronto Open Data Portal*. https://CRAN.R-project.org/package=opendatatoronto.

Harlow, Caroline Wolf. 1987. *Robbery Victims*. US Department of Justice, Bureau of Justice Statistics.

Müller, Kirill. 2020. *Here: A Simpler Way to Find Your Files*. https://CRAN.R-project.org/package=here.

R Core Team. 2020. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Services, Toronto Police. 2020. *About Police Annual Statistical Report - Victims of Crime*. https://open.toronto.ca/dataset/police-annual-statistical-report-victims-of-crime/.

Wickham, Hadley, Mara Averick, Jennifer Bryan, Winston Chang, Lucy D'Agostino McGowan, Romain François, Garrett Grolemund, et al. 2019. "Welcome to the tidyverse." *Journal of Open Source Software* 4 (43): 1686. https://doi.org/10.21105/joss.01686.

Wickham, Hadley, and Dana Seidel. 2020. *Scales: Scale Functions for Visualization*. https://CRAN.R-project.org/package=scales.

Xie, Yihui. 2020. *Bookdown: Authoring Books and Technical Documents with R Markdown*. https://github.com/rstudio/bookdown.

Zhu, Hao. 2020. *KableExtra: Construct Complex Table with 'Kable' and Pipe Syntax*. https://CRAN.R-project.org/package=kableExtra.