

ANALYZING NEW YORK CITY SHOOTING DATA

Muthuporutotage Christeen Perera

Department of Physical Sciences, Wagner College



Abstract

This project focuses on the issue of gun violence in New York City in order to see what commonalities there are to shootings in this specific city. By starting with one city, more and more locations can be studied and compared, which can help educate us on the issue as well as address ethical concerns. Through the use of Mathematica programming, an NYPD dataset was analyzed. The research found how the five boroughs compare and contrast, what dates and times shootings are likely to occur, and what the common traits of victims are. Based on the patterns found, one can interpret what can decrease their chances of getting shot in NYC and discover what underlying ethical issues need to be addressed.

Background and Significance

Gun violence impacts our health and safety, political views, and culture. This has impacted how people in the U.S. view guns and why gun violence may be more prevalent in the U.S. compared to other nations. We could find a way to keep us safer since other nations have shown examples of how they are addressing this issue (Cook, 2014). It is important to educate ourselves on this to understand what factors that play a role and to see what changes we could make. Therefore, starting with analyzing New York City is helpful; we get to see what specifically affects it and if those factors are common in all boroughs. In the long run, this can contribute to raising ethical concerns and finding themes in gun violence overall.

Methods

Data Collection. The data used for this study was retrieved from the NYPD database and it pertains to shooting incidents in NYC from the years 2013-2017. It was then imported into a Mathematica notebook to be analyzed. After analyzing the NYPD shooting data through Mathematica programming, I was able to compare boroughs, find common dates and times of shootings, and see what the victims of shooting incidents have in common.

Analytic Methods. Pie charts were created in order to illustrate the traits of the victims of shootings, such as race and sex. The ReverseSort and Counts functions were used to rank the number of shootings from highest to lowest that occurred at a certain time. The BarChart function enabled a figure to be created that revealed the total number of reported shootings in each borough. Length calculated how many incidents were reported each year in NYC.

Results

Boroughs. Out of the 6,407 cases in the database, 2,646 of them came from Brooklyn, which is about 41%. The second most reported borough was the Bronx with a total of 1,838 cases, which is roughly 29%. The last three are Queens (15%), Manhattan (12%), and Staten Island (4%). The bar chart below, Figure 1, illustrates this.

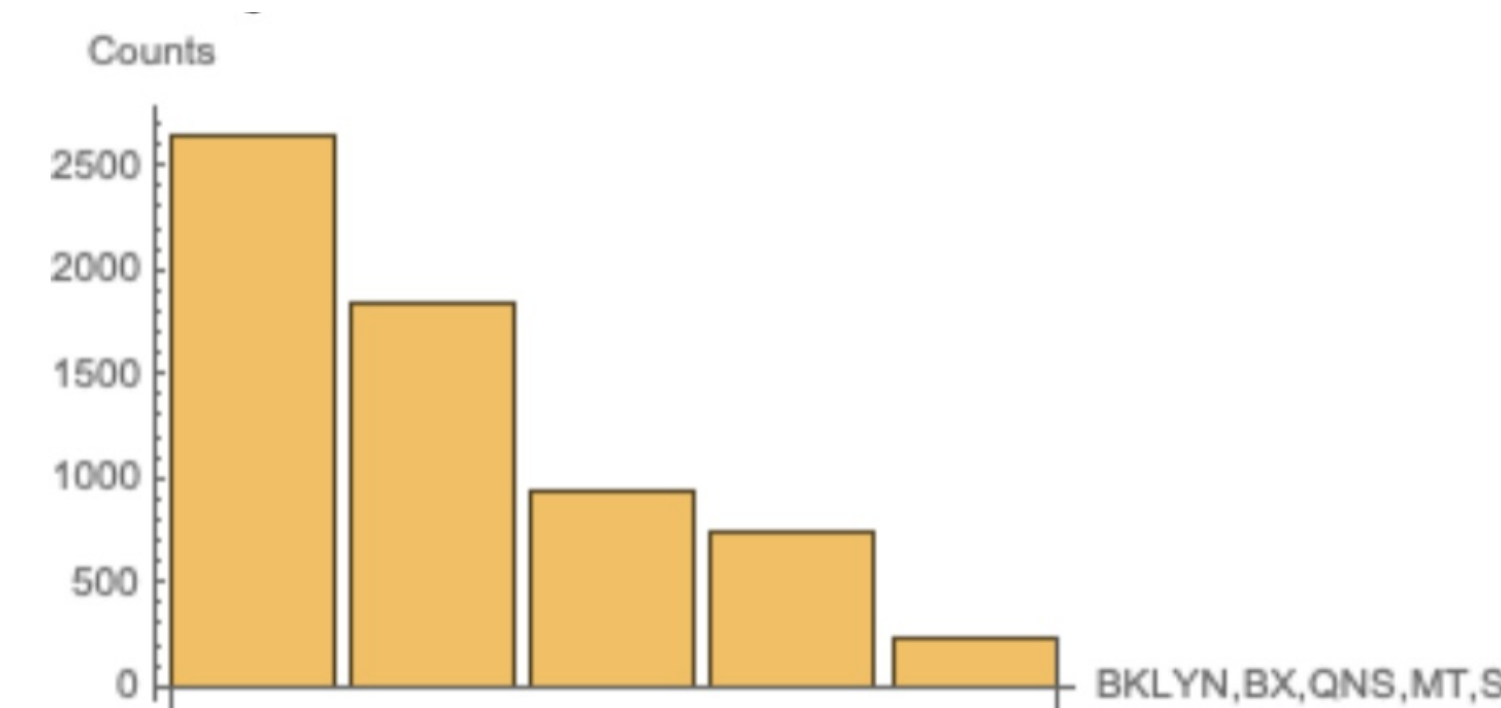


Fig. 1: Total Number of Shootings in Each Borough of NYC from 2013-2017

Dates and Times. Many of the incidents took place during the weekend or close to the weekend and summer months were in the top ten most reported dates, which is shown below in Figure 2. It was also found that the most reported time for a shooting to occur is at 23:30, followed by 01:30 and 21:00, which are all close to midnight.

Day of the Week	Date-Month-Year	Count
Saturday	20 Jul 2013	19
Sunday	6 Jul 2014	18
Monday	4 Jul 2016	17
Sunday	29 Jun 2014	16
Sunday	23 Aug 2015	16
Sunday	28 Aug 2016	16
Sunday	17 Aug 2014	15
Monday	1 Sep 2014	15
Friday	30 Jun 2017	15
Sunday	21 Jul 2013	14

Fig. 2: Top Ten Reported Dates for a Shooting to Occur in NYC in 2013-2017

Victim Characteristics. Those who are most commonly victims of gun violence in NYC are males. The research finds that 5,831 of the victims were males, 573 females, and 3 unknown. This means that approximately 91% of these cases involve male victims. The most common race of a gun violence victim is black. Approximately 72% of the victims were black and the second highest amount was 13% of the victims being White Hispanic. Additionally, the age group with the highest number of victims is 25-44 years old. 2,847 out of the 6,407 cases consisted of this age group which is about 44%.

Conclusion

Based on this analysis, one interpretation that can be made is that Brooklyn is the most dangerous borough for shootings while Staten Island is the safest. Approximately 84% and 70% of the victims were black in both Brooklyn and Staten Island, respectively. Comparing them showed that the patterns do not significantly vary across boroughs. One could be cautious by being careful when going out late and living in areas with lower shooting rates.

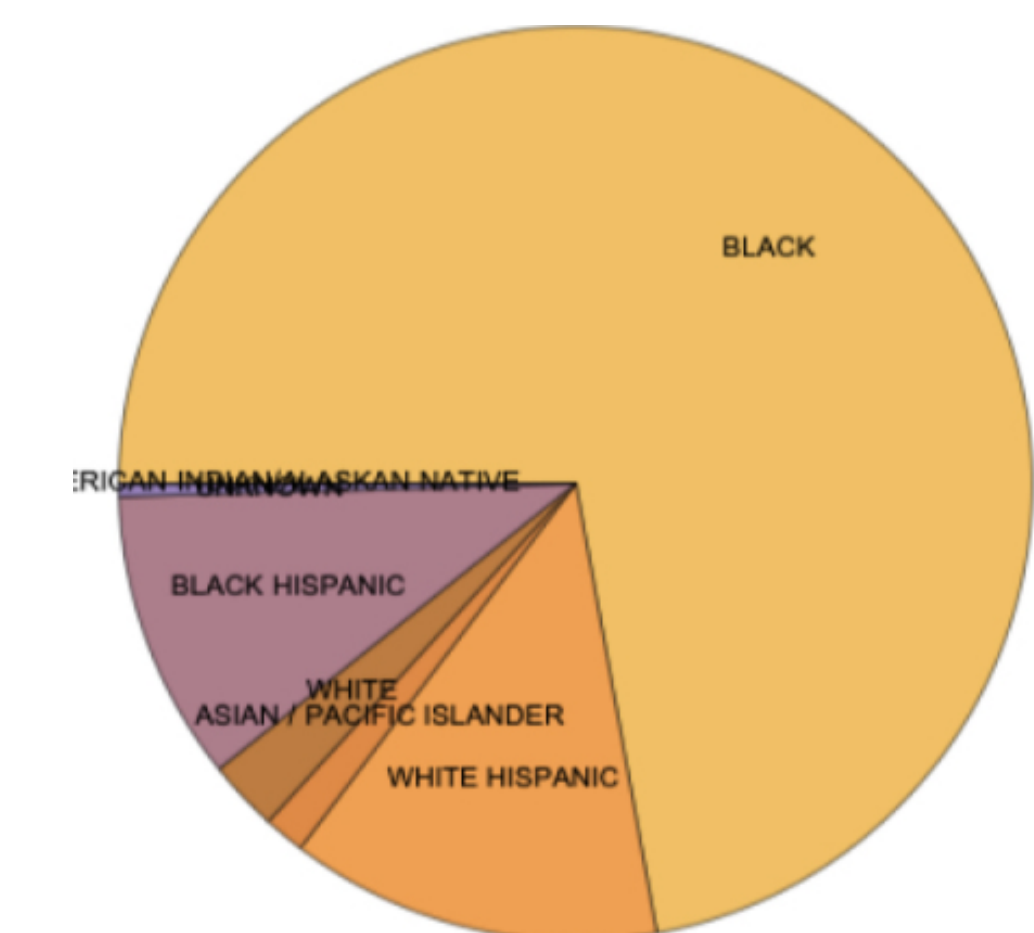


Fig. 3: Victim Race

Remarks

Since there were a lot of unknowns on the characteristics of the perpetrators, more research should be done on this. It is also important to consider that this data was from 2017 in NYC, so data collected from other dates/ locations would help with this analysis.

Acknowledgements

Special thanks to Dr. Sharma from the Physical Sciences Department at Wagner College for his mentorship throughout this project in his Introduction to Scientific Computing course.

References

- Cook, P. J., Goss, K. A. (2014). The gun debate: What everyone needs to know. Oxford University Press, USA.
- DeGrazia, D. (2014). Handguns, moral rights, and physical security. Journal of moral philosophy, 13(1), 56-76.
- NYPD (2017). NYPD Shooting Incident Data (Historic): NYC Open Data. Retrieved from <https://data.cityofnewyork.us/Public-Safety/NYPD-Shooting-Incident-Data-Historic-/833y-fsy8>