

An Analysis of The Use of Force by U.S. Law Enforcement Agencies

Summer 2022 Research: Report 1

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1 Introduction

Every year, over a thousand people lose their lives at the hands of law enforcement officials (See Table 1). Approximately 2 out of 100,000 men between the age of 25 and 29 are estimated to die due to deliberate use of force by the police, making it one of the leading causes of death for young men in the United States (U.S). Moreover, young men of color face an exceptionally high risk of being killed by police, with black men facing the risk of getting killed by police at a rate between 2.8 and 4.1 per 100,000 (Edwards et al., 2019).

Table 1: Deaths at the hands of law enforcement, United States (Sinyangwe et al., 2021)

Year	Total Deaths
2013	1087
2014	1049
2015	1102
2016	1070
2017	1092
2018	1144
2019	1096
2020	1128
2021	1136

In recent years, the killings of Amir Locke (22), Eric Garner (43), George Floyd (46), Laquan McDonald (17), Michael Brown (18), Oscar Grant (22), Tamir Rice (12), and Walter Scott (50) among other African American Civilians, were followed by unprecedented public outrage against police violence (Taylor, 2016). The public outrage following the protests have brought sustained national attention to the character of police violence against the civilian population (Zimring, 2017). In June of 2020, about 15 to 26 million people in the U.S. participated in Black Lives Matter demonstrations, making it the largest movement in U.S. history (Buchanan et al., 2020). However, the lack of national level data on officer involved fatal encounters limits the scope for scientists’ and researchers’ to empirically address the shortcomings of policing on a national scale (Nix et al., 2017; Swaine & Laughland, 2015). Zimring (2017) characterized it as a “civil rights crisis” leading to “a statistical and public policy mystery.”

2 Literature Review

2.1 Disciplines

The disciplines of the literature on the subject of policing can be categorized into roughly three sections: social psychology, law and criminology, and sociology. Unsurprisingly, the literature is often intertwined in various scopes. Moreover, in recent times, as data on police use of force become widely available, the subject draws the attention of statisticians, economists, journalists, and other researchers from a variety of fields.

2.2 Scopes

Despite the common interest across disciplines in inquiring about the patterns of policing and its outcomes, studies in recent times have a growing interest in assessing the presence and extent of racial bias in policing. This class of studies investigates the outcomes of fatal police force to uncover whether there are racial disparities in the use of fatal force by police. Yet, some studies have been invested in assessing the fatal risk involved in law enforcement as a profession. Another class of studies investigates how the use of force varies between states, counties, departments, size, and type of constituency, and firearm prevalence. Despite the lack of adequate data on law enforcement officials involved in fatal encounters with civilians, studies have also been interested to inquire how officer characteristics are related to the outcomes of fatal encounters.

2.3 Overview

Scholars have maintained a steady interest in studying the exposure of fatal force to different social groups. [Edwards et al. \(2019\)](#) studies age-specific odds of getting killed by police use of force across race and sex. They estimate that compared to their white peers, African American men and women, American Indian/Alaska Native men and women, and Latino men face a higher lifetime risk of being killed by police. They argue that racially unequal exposure to the risk of state-sanctioned violence profoundly affects public health, democracy, and racial stratification. Some scholars have utilized independently sourced databases to provide evidence of systemic racism in police killings across the U.S. [DeAngelis \(2021\)](#) utilized the Mapping Police Violence Database ([Sinyangwe et al., 2021](#)) to document racial disparity in police killings across U.S. population. The study finds that relative to the general U.S. population, Black civilians were over represented in police killings, compared to their white peers. The author argued that despite posing greater imminent threat (e.g. signs of mental illness, armed status) to the safety of the police officers, white civilians are less likely to be killed by police compared to their Black peers, relative to the U.S. population ([DeAngelis, 2021](#)).

Tregle et al. (2019) casts a reasonable skepticism on using population as a benchmark for measuring racial bias. The study argues that using population as a benchmark for measuring racial bias falsely assumes that everyone in the population has the same likelihood of coming in contact with police in violent encounters. They further argue that violent criminal activity and weapons offenses (arguably the most dangerous arrest scenarios) act as a even better benchmark. Experimental studies in social psychology, however, are keener to ask whether officers involved in fatal shootings show implicit bias in their decisions to shoot at civilians. Correll et al. (2002) investigates how social stereotype may function as a factor that aids to clarify ambiguous situations such as violent encounters that may lead to racial disparity in officer-involved shootings. They use a simple video game comprised of a series of complex background and target images to investigate the effect of the target's ethnicity on the participant's decision to shoot or not shoot a potentially dangerous suspect. The authors of the study argue that cultural stereotypes (e.g. characterizing African Americans as violent) may influence shooter's decision to shoot the target.

3 Data Sources

3.1 Uniform Crime Reports (UCR)

One of the key limitations faced by scholars in the subject is the lack of reliable and comprehensive national database documenting police killings (Nix et al., 2017). The Federal Bureau of Investigation (FBI) collects data on justifiable homicides¹ through the Uniform Crime Reports (UCR) program. However, the reporting is voluntary and not all agencies participate in the program. In 2015, after months of protests following the killing Eric Garner and Tamir Rice in the previous year, The Guardian reported that none of the victims' names were on the UCR database. Of 18,000 law enforcement agencies around the US only 224 agencies reported a fatal shooting by their officers to the FBI's UCR database in 2014 (Swaine & Laughland, 2015). The then FBI director James B. Comey called the lack of accurate information about police-involved shootings 'ridiculous,' 'embarrassing' (Davis & Lowery, 2015). Studies have found that FBI and National Vital Statistics System (NVSS) undercounts the number of citizens killed at the hands of police by almost half than the original number (Klinger et al., 2016). Despite its proven lacking in providing accurate information on officer involved shootings, there are some potential use of UCR database. I use the use UCR database for collecting data on the following fields:

3.1.1 National Incident-Based Reporting System (NIBRS)

Implemented to improve the overall quality of crime data collected by law enforcement, NIBRS captures details on each single crime incident—as well as on separate offenses within the same incident—including information on victims, known offenders, relationships between victims and offenders, arrestees, and property involved in crimes. Unlike data reported through the UCR Program's traditional Summary Reporting System (SRS)—an aggregate monthly tally of crimes—NIBRS goes much deeper because of its ability to provide circumstances and context for crimes like location, time of day, and whether the incident was cleared.

3.1.2 Law Enforcement Officers Killed and Assaulted (LEOKA)

For testing the hypothesis of Maskaly & Donner (2015), this database can turn out to be extremely useful. Maskaly & Donner (2015) argue that policing practices or patterns of use of force is often affected by incidents of assaults and homicide of law enforcement officers. We aim to see how death/injury of officers influence police use of force. See table 3.

¹the killing of a felon by a law enforcement officer in the line of duty

3.1.3 Crime in the United States

Our plan is to use violent crime and property crime data to see how it influences police decision to use force. Violent crime is composed of four offenses: murder and non-negligent manslaughter, rape, robbery, and aggravated assault. Property crime is composed of Burglary, Larceny - theft, Motor vehicle - theft, Arson. See Table 2

3.2 Fatal Encounters: National Officer-Involved Homicide Database

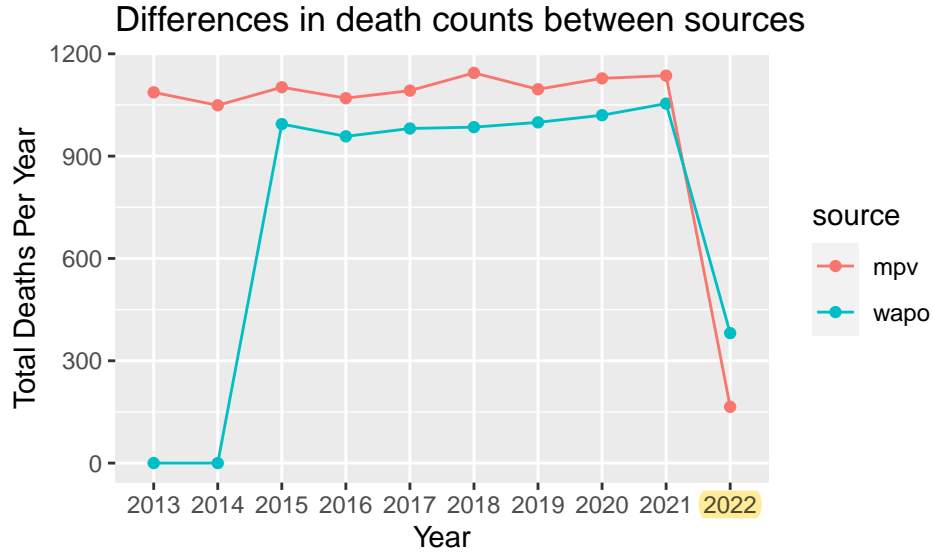
Our study, like many others, utilize crowd sourced databases for data on officer-involved shootings and other use-of-force incidents resulting in civilian deaths. National Officer-Involved Homicide Database is an initiative by Center for Economic and Social Research (CESR) with support from University of Southern California.

3.3 Mapping Police Violence Database

We are primarily interested to use this database for our analysis. The database contains information on the involved police department and counts off-duty police killings.

3.4 National Police Shooting Database

The Washington Post’s database contains records of every fatal shooting in the United States by a police officer in the line of duty since Jan. 1, 2015. In 2015, The Post began tracking more than a dozen details about each killing — including the race of the deceased, the circumstances of the shooting, whether the person was armed and whether the person was experiencing a mental-health crisis — by culling local news reports, law enforcement websites and social media, and by monitoring independent databases such as Killed by Police and Fatal Encounters. The Post conducted additional reporting in many cases. One of the lacking of the posts data collection is that it does not record police shooting by off-duty police officers ([Sinyangwe et al., 2021](#)).



4 Discussion

With the given data in our hands, there are a few things we can and cannot do. Firstly, our study (as we know it now) does very less to analyse the general trends of policing in the U.S. We instead concern ourselves with a subset of policing: the use of Fatal force, and We cannot, not through numbers presented to us, determine if bias within individual officers was the single driving force behind the racial disparities uncovered. Secondly, given the diversity of 17,985 police agencies in the U.S., spread across with a variety of law enforcement regulations, constituency size, crime rates, it is difficult to produce results that generalize to states or the nation in general. Therefore, national-level studies might offer less precision and suffer aggregation bias (Tregle et al., 2019). Klinger et al. (2016) point out from the analysis of police shootings over a 10-year period that 208 out of 355 census block groups blocks (58.6%) did not experience a single police shooting. This leads to lack of precision because it masks heterogeneity with in much smaller units of analysis, such as cities or census blocks. Hence any attempt to nationally aggregated analysis might not produce much useful results.

4.1 What contributes to the police use of force?

Lim et al. (2014) identify a few factors that likely contribute to police use of force: Individual (e.g., officer and citizen characteristics), situation (e.g., event that brought the police and citizens together), organization (e.g., agency policy), and neighborhood (e.g., crime rates). Maskaly & Donner (2015) speaks of mortality salience primes: mortality salience prime likely makes the officers hold to their authoritarian and aggressive worldview

taught through, and reinforced by, the police subculture. Simultaneously, it validates the assumption that the public is dangerous and out to kill or injure law enforcement, and, thus cannot be trusted. Information about officer death/injury could serve as a mortality salience prime, which increases the officers' perceptions and general paranoia of armed suspects. [Correll et al. \(2002\)](#) argues that cultural stereotypes (e.g. characterizing African Americans as violent) may influence shooter's decision to shoot the target. They explain that in a potentially dangerous scene, they use social stereotypes to "ease" the ambiguity. To me, it seems potentially flawed if we are to account for individual officers, because we don't have data available to infer about individual officers. It's been proved well by [Knox & Mummolo \(2020\)](#). In that case our best shot will be to try and evaluate tactical level police decision making which are affected by situation influences ([Lim et al., 2014](#)). An interesting way to look at it would be to compare two neighborhoods with same level and intensity of crimes, but how the same police department reacts differently. [Lim et al. \(2014\)](#) indicates that race of an area might have more impact than race of the citizen and situational characteristics influence more than individual characteristics.

4.2 Police homicide vs police use of force

[Klinger et al. \(2016\)](#) argues that death at the hands of the police is not a sound operationalization of the concept "police use of deadly force." The study argues that (1) police miss most shots i.e. successfully hit minority of targets ([Klinger, 2012](#)) (2) most gunfire wounds are non-fatal i.e. a minority of gunfire are fatal. I am interested to find the distribution of overall shootings with an intent to kill from the subset of shootings that end up being fatal. This can be roughly done with the measure of violent crimes (often leading to use of force). For a homicide sample big enough, the number of violent crimes (presumably proportional to the number of firearm discharge by the police) should give us a breakdown of racial distribution of the total firearm discharge by police.

5 Appendix

5.1 Definitions

Justifiable Homicide: The killing of a felon by a law enforcement officer in the line of duty.

Uniform Crime Reports: The Uniform Crime Reporting (UCR) Program generates statistics for use in law enforcement. Crime statistics are compiled from UCR data and published annually by the Federal Bureau of Investigation (FBI) in the Crime in the United States series. The FBI does not collect the data itself. Rather, law enforcement agencies across the United States provide the data to the FBI, which then compiles the Reports. It collects data in six divisions: Crime in the United States, National Incident-Based Reporting System (NIBRS), Law Enforcement Officers Killed and Assaulted (LEOKA), Hate Crime Statistics, National Use-of-Force Data Collection, Topical Crime Reports.

5.2 Tables

Table 2: Violent Crime and Property Crime, 2013

State	City	Population	Violent crime	Property crime
MO	Cole Camp	1111	2	24
IL	Red Bud	3613	14	34
IL	Galena	3392	1	36
TX	Del Rio	35499	72	768
LA	Zachary	15749	39	497
NJ	Ocean Township, Ocean County	8565	1	81
MA	Deerfield	5120	7	86
PA	Old Lycoming Township	5049	5	126
NC	Bunn	350	2	22
PA	Blair Township	4573	1	33

Note:

Uniform Crime Report: Crime in the United States, 2013

Table 3: Law Enforcement Officers Killed in 2013

State	Agency	Total
CA	Galt	1
CA	Riverside	1
CA	San Bernardino County	1
CA	Santa Cruz	2
FL	Charlotte County	1
FL	St. Lucie County	1
IL	Cook County	1
IN	Indianapolis	1
IA	Rockwell City	1
KY	Bardstown	1
LA	Chitimacha Tribal Police	1
MD	Baltimore County Police	1
MA	Massachusetts Institute of Technology Police	1
MI	State Police, Hart	1
MS	Jackson	1
MS	Tupelo	1
NY	Buffalo	1
TX	Burleson County	1
TX	Hood County	1
TX	Killeen	1
TX	San Antonio	1
TX	Texarkana	1
TX	Upton County	1
UT	Draper City	1
VA	State Police, Dinwiddie County	1
WV	Mingo County	1

Note:

Source: Uniform Crime Report: Law Enforcement Officers Killed and Assaulted, 2013

Table 4: Civilian Deaths by agency per year, United States

Responsible Agency	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total civilian deaths
Tulsa Police Department	1	4	0	8	5	4	4	4	3	1	34
Austin Police Department	3	2	6	6	4	6	4	1	4	0	36
Baltimore Police Department	9	4	4	4	4	2	4	2	4	0	37
Kansas City Police Department	6	5	2	2	4	7	2	5	5	1	39
San Diego Police Department	6	4	7	3	4	3	3	5	2	2	39
Tucson Police Department	5	5	3	5	2	5	3	5	6	0	39
Harris County Sheriff's Office	5	2	5	2	5	6	4	4	5	2	40
Albuquerque Police Department	5	6	3	2	4	6	4	6	4	1	41
Dallas Police Department	8	10	6	5	2	6	3	1	1	0	42
Denver Police Department	4	4	4	5	2	5	5	8	5	0	42
St. Louis Metropolitan Police Department	7	4	3	5	10	2	8	2	1	0	42
Pennsylvania State Police	1	0	2	5	5	10	5	7	9	0	44
Philadelphia Police Department	10	4	2	5	5	5	0	8	4	1	44
Columbus Division of Police	7	5	6	6	5	9	1	5	2	0	46
San Bernardino County Sheriff's Department	3	4	5	2	3	6	11	8	5	0	47
Jacksonville Sheriff's Office	7	6	6	3	7	4	6	8	2	1	50
Kentucky State Police	2	9	6	8	4	6	8	4	2	2	51
Miami-Dade Police Department	15	5	7	5	7	3	3	5	3	0	53
Riverside County Sheriff's Department	7	7	7	3	5	4	7	6	7	0	53
California Highway Patrol	4	7	4	6	11	4	6	7	6	0	55
Oklahoma City Police Department	7	9	8	6	6	5	7	5	2	0	55
San Antonio Police Department	7	7	5	9	4	4	11	8	11	0	66
Las Vegas Metropolitan Police Department	5	9	11	4	11	13	6	11	9	1	80
Houston Police Department	11	12	12	8	6	6	8	9	11	3	86
Chicago Police Department	14	20	10	13	10	4	5	6	6	0	88
U.S. Marshals Service	6	7	7	15	2	13	12	11	15	0	88
New York Police Department	12	13	10	10	10	5	14	7	7	2	90
Los Angeles County Sheriff's Department	15	20	16	16	9	9	12	15	9	0	121
Phoenix Police Department	20	15	8	16	15	23	13	14	8	2	134
Los Angeles Police Department	17	22	23	19	17	16	12	7	17	0	150

Note:

Source: Mapping Police Violence (Sinyangwe et al., 2021).

The table is a sample of 30 out of 3256 agencies responsible for civilian death

5.3 Codes

```
knitr::opts_chunk$set(echo = TRUE)
library(readr)
library(dplyr)
library(kableExtra)
library(tidyverse)
library(kableExtra)

##fatal shooting data

mpvData <- read_csv("~/Police Violence in the U.S./police-violence-study/Datasets/mpv.csv")

#keeping relevant variables

mpvData <- mpvData %>% select(name ,age, race, city, state,zip,county,agency_responsible, date, day, month)
mpvPeryear <- mpvData %>% group_by(year) %>% summarise("Total Deaths Per Year" = n())

##crimes in the U.S. data

offenses2013 <- read_csv("~/Police Violence in the U.S./police-violence-study/reports/report1/Offenses2013.csv")

##wapo national police shooting database
wapoData <- read.csv("~/Police Violence in the U.S./police-violence-study/Datasets/wapoComplete.csv")

##LEOKA data

LEOKilled2013 <- read.csv("~/Police Violence in the U.S./police-violence-study/reports/report1/OfficersKilled2013.csv")

knitr::kable(mpvPeryear[1:9,1:2], col.names = c("Year", "Total Deaths"), caption = "Deaths at the hands of police")

#wapo's per year data
wapoPerYear <- wapoData %>% group_by(year) %>% summarise(`Total Deaths Per Year` = n())
#because wapo started collecting data from 2015
wapoPerYear <- add_row(wapoPerYear, year = 2013, `Total Deaths Per Year` = 0, .before = 1)
wapoPerYear <- add_row(wapoPerYear, year = 2014, `Total Deaths Per Year` = 0, .before = 2)

##differences across sources
wapoPerYear$source = "wapo"
mpvPeryear$source = "mpv"

#for creating the plot
mergedDataWapo_MPV <- rbind(wapoPerYear, mpvPeryear)
mergedDataWapo_MPV %>% group_by(source) %>% ggplot(aes(x = year, y = `Total Deaths Per Year`, colour = source))

sampleOffense2013 <- slice_sample(offenses2013, n = 10)
#making the table
knitr::kable(sampleOffense2013, caption = "Violent Crime and Property Crime, 2013") %>% kable_styling(bootstrap = TRUE)
```

```

#making the table
knitr::kable(LEOKilled2013, caption = "Law Enforcement Officers Killed in 2013") %>% kable_styling(1

mpvData$`Responsible Agency` = mpvData$agency_responsible

#agency data aggregated over year
agencyData <- mpvData %>% group_by(year, `Responsible Agency`) %>% summarise("Deaths per agency per year

#creating an additional column for sorting
agencyDataT <- agencyData %>% mutate(`Total civilian deaths` = rowSums(agencyData[,2:11]))

#data frame containing the top 150 departments ranked by number of civilian deaths
shorterAgencyData <- tail(agencyDataT %>% arrange(`Total civilian deaths`), n = 30)

#making the table
knitr::kable(shorterAgencyData, caption = "Civilian Deaths by agency per year, United States") %>% land

```

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