Racial Inequality in Police Violence: Injuries and Fatalities from Police Use of Force

Project Summary

Since the 2014 police killings of Michael Brown, Eric Garner and Tamir Rice, and through the recent killings of George Floyd, Breonna Taylor and Rayshard Brooks, national attention has focused on police killings of African Americans and other non-white civilians, in turn renewing research interest in police killings and use of force more generally, and the prospect of racial bias in its use. While research on inequalities in police violence is growing, this project addresses two limitations: the emphasis on fatal injuries in studies of police violence, and in turn, the limited data on non-fatal injuries. For each of these, the challenges of consistent and accurate coding of police deaths and non-fatal injuries remains urgent.

Recognizing the limitations of government databases on police killings, several crowd-sourced databases have been created to track police killings.[1] Relying on media and police reports, information in these databases have been analyzed to estimate the circumstances and racial disparities in fatal police violence. By their estimates, about 1,000 persons are killed each year by the police.[2] Theories motivating these studies have examined racial inequality, policing tactics and organizational design, social and crime conditions, and threat situations. Recent studies[3] have decomposed these killings into situational interactions to better understand the factors that explain lethal force and assess racial disparities in both the macro and granular details of fatal police violence.

Killings by police are a critical but censored portion of the totality of police use of force. Compared to the growing body of data and research on police killings, very little, if any, research has focused on the incidence of non-lethal police use of force at a national level.[4] Unlike police killings, there are no, single reliable nationwide reporting systems or databases for non-lethal police use of force. The few studies on non-lethal police force typically count self-reported incidents, catalog the types of force used, and correlate force with the outcomes of police-civilian encounters. Most are limited in their scope to a few agencies and places.[5] Only one captures the range of injuries to civilians: an observational study in three cities[6] It evaluated the validity of police reports of injury violence through confirmation by physicians, but the supply of cases was controlled by police, censoring cases where injuries are either unreported and or cases selected by police decisions to seek medical attention for suspects. This censoring and sample limitation complicate estimates of the extent of police use of force, and estimates of the medical and social "distance" between non-lethal and lethal force.

To address these limitations and further research on racial inequalities in police use of force, this project will proceed through three phases. First, we will develop, augment and harmonize a series of national medical and criminal justice databases that use varied methods to record fatal and non-fatal police use of force. Sources will include public health and police jurisdiction records of mortality and nonfatal injury at the hands of police, using detailed coding methods to identify intentional injuries through legal intervention. We will resolve estimates of police use of lethal and non-lethal force across datasets. The result will be a unique database that we will publish for broad use.

Second, we will analyze the relative risks of police-caused injury or death by civilian race, institutional contexts of police agencies and actions, and population demography. We will integrate details of the contexts of police injuries and deaths including agency characteristics, level and intensity of police-civilian contacts, and social and economic dimensions of crime and inequality. Additional integration will include data on civilians' exposure to police enforcement activity, and threats/risks to police. Data on lethal and non-lethal police violence will be aggregated for all US counties to ease comparisons and facilitate integration and harmonizing. This integration will allow us to create a continuum of police use of force across a spectrum of county-types as well as nonfatal injury and death.

Using this continuous measure of police use of force, the third component will be a series of analyses to respond to two related dimensions of race and threat. We will expand on recent studies of police use of deadly force to examine police violence across a range of force as mechanisms of coercion and social control of subordinate groups that threaten both dominant groups and also that are perceived as threats to the police. We will estimate the effects of a range of measures of inequality and racial threat to

understand and explain civilian injuries and fatalities in police-civilian interactions. The second dimension will incorporate measures of policing - specific tactics, frequency of police civilian contact, the racial composition of police departments, and the organizational design of police agencies - to understand how variations in policing may contribute to levels of police use of lethal and non-lethal force. For police killings, we will include measures of threats to police as an additional source to explain patterns of police violence. These will include measures of threats to police (injuries and deaths) and incorporate details of the interactions and circumstances of civilian deaths to test racial disparities in the pat police shootings.

Project Design

Building the Injury and Fatality Database

A database on the continuum of police violence will integrate data on fatalities and non-lethal injuries. We will harmonize a series of national public health and criminal justice datasets on police killings, both private crowd-sourced data and data of government origin. Several private sources of data on police killings have been created since 2014 and some include events that predate the Michael Brown killing. Overall, many of the crowd-sourced records have identified nearly twice the number of police killings that appear in the F.B.I. Supplementary Homicide Reports (SHR) archives, the major criminal justice archive of homicides, including police killings. Accordingly, we focus our attention initially on the integration of privately archived datasets, including Fatal Encounters, Mapping Police Violence, The Counted and the Washington Post database of police killings.[7]

Medical and public health archives provide additional - and in many instances richer - data on police killings. These data to date have not been integrated to create a common archive. Table 1 briefly summarizes the public health data archives that we will integrate with criminal justice and private archives to provide an enhanced database of police killings that overcome the biases and reporting limitations of the existing sources. Public health data are coded for intentional injury and also for the source of the injury or death, including legal intervention. In particular, the Restricted Access files from the NVDRS combine data from law enforcement, medical examiner and coroner investigations.[8] The NVDRS records include consistent and detailed coding on the cause or means of death (e.g., "weapons," traumatic brain injury"), and a uniform determination of police action as the cause of death (e.g., a classification for "legal intervention" to mark police killings). Prior studies have shown their efficacy in verifying police killings that maybe unreported elsewhere.[9] These archives have been used to estimate the volume, demography and situational patterns of fatal police violence. Some date back to 2005.[10] Data will be coded to the county level, a concise unit that captures boundaries of both policing and public health agencies.

Nationwide datasets on hospital admissions and emergency room treatment will provide the basis for estimating non-fatal police violence. As in the fatality databases, each record is coded with an ICD-10 code indicating the nature of the injury and the source. We will focus on intentional injuries by type of injury (e.g., gunshot, blunt instrument trauma, and source of injury. In this study, we focus on injuries through 'legal intervention,' a determination made based on patient reports and secondary intake evaluations by medical staff. The records will be coded to county, and a county will be constructed from 2010-2019.

These data will be integrated and scaled by county and year to a develop a continuum of police injury-violence. Counts of incidents can be aggregated by county to show type and severity of injury, medical care received, outcome (fatal or non-fatal), and victim demographics for each year in the panel. The counts and details about the incidents can be scaled and arrayed to show the medical space or "distance" from non-lethal to lethal violence using common metrics of violence. And there is a space that combines severity of police violence by its frequency that invites careful measurement and multidimensional scaling methods.

Risk and threat to police will be assessed from an archive of data reporting injuries and deaths in the line of duty, *Law Enforcement Officers Killed in the Line of Duty* (LEOKA). The database is maintained by Department of Justice through annual reports by police agencies. We also will estimate police contact with civilians through datasets on arrests in the Uniform Crime Reports, and two police stops from the *Stanford Open Policing Project*.

Additional data on county contexts will be compiled from census archives, and data on administrative expenditures on policing and health/mental health, and education. Measures of inequality and racial threat and conflict will be estimated from census data. Diversity by race and gender will be estimated by county and year from the and information on police agencies from the *Law Enforcement Management and Administrative Statistics* (LEMAS) data series collected by the U.S. Bureau of Justice Statistics.

Table 1. Data sources reporting police-related injuries and fatalities	
Source	**URL and Description**
Newspaper and Advocacy Sources	*The Guardian: The Counted* -- http://www theguardian com/us-news/ng-interactive/2015/jun/01/the-counted-police-killings-us-database# -- Features real-time and detailed data, inclusive of any cause of death due to police action (e g , gun, Taser, physical force, etc), starting as of January 1, 2015 *The Washington Post* -- http://www washingtonpost com/graphics/national/police-shootings/ -- Features real-time data for "only shootings in which a police officer, while on duty, shot and killed a civilian," starting as of January 1, 2015 *Fatal Encounters* -- http://www fatalencounters org/ -- Includes **records of people who've been killed through interactions with law enforcement since Jan. 1, 2000.** *Mapping Police Violence* - https://mappingpoliceviolence org - Aggregates data from three private archives: Fatal Encounters, Killed by Police, U S Police Shootings database - Includes deaths cause by police in the line of duty and off-duty, including bystanders - Detailed codes for attack, armed, threat of suspect
US Vital Statistics	Compressed mortality data (publicly available county-level data back, for 1968-2018) -- http://wonder cdc gov/mortSQL html CDC Wonder detailed mortality data (publicly available county-level data, for 1999-2013) -- http://wonder cdc gov/ucd-icd10 html National Violent Death Reporting System (publicly available state level data for 32 states, presently covering 2003-2012) -- http://www cdc gov/ViolencePrevention/NVDRS/
Federal Bureau of Investigation, U.S. Department of Justice	Unified Crime Reporting Program: Supplementary Homicide Reports (SHR) -- https://www fbi gov/about-us/cjis/ucr/crime-in-the-u s/2012/crime-in-the-u s -2012/offenses-known-to-law-enforcement/expanded-homicide/expandhomicidemain -- Records provide the age, sex, and race of the murder victim and offender; the type of weapon used; the relationship of the victim to the offender; and the circumstance surrounding the incident -- Data include self-determined "justifiable homicides" by law enforcement officers-- Dataset available at: http://www icpsr umich edu/icpsrweb/NACJD/studies/36124)
Hospitalizations and Emergency Department Treatment	State Emergency Department Databases (SEDD) via the US Agency for Healthcare Research and Quality (AHRQ) - Annual data starting 1999 for up to 42 states of all hospital emergency department visits; contains ICD10/external cause codes (E-codes) with Y35 93XA, legal intervention, as well as several other key supporting data fields (see https://www hcup-us ahrq gov/seddoverview jsp) National Trauma Databank (NTDB) via the American College of Surgeons – annual data of all US trauma center hospital patients; contains ICD10/external cause codes (E-codes) with Y35 93XA, legal intervention, as well as several other key supporting data fields (see https://www facs org/quality-programs/trauma/tqp/center-programs/ntdb)

Estimate Risk of Injury and Fatal Violence Based on Parameters of Police Contact
Using a set of contemporary epidemiological methods, we will estimate the risks of injury and death by population groups with differential exposure to police. Contact with police takes several forms, including street stops and arrests, and the estimates will be disaggregated to different types of exposure adjusted for population risk. Specifically, we can estimate the risk ratios of injury and violence by race, gender, and type of police contact. The risk estimates are likely to vary by county structure, and we will introduce these factors as moderators of risk for injury or fatality. In addition to risk ratios, we will also consider absolute risks, attributable risk, and attributable fractions.[11] We also will estimate risks for a sample of 30 counties, based on a sorting process for counties reflecting variation in policing regimes, variation in population parameters across cities, and variation in crime and other exposure variables. Variation in risks to officers will also be included in the sampling and selection of counties for closer analysis. Injury risks to civilians will be arrayed over time starting in 2010, with marginal effects incorporated to show differences in injury and fatality risks between racial and ethnic groups.

Understanding Racial Inequality in Police Violence and Injury
We plan to analyze these data to expand our understanding of police violence and fatal and non-fatal injury to civilians. First, we will revisit earlier findings about political and threat explanations for the use of police force that focus on the share and change in the minority population, local crime and social conditions, and policing models and activity. The analyzes will focus on the ways in which police behavior and coercive crime control can deepen social divisions and disadvantage of subordinate racial

and ethnic groups.[12] Using the injury and fatality measures, as well as a measure of the continuum of police violence, we will estimate a series of regressions to identify differences in injuries to Black and LatinX populations. Policing variables will be the core predictors, with controls for county contexts. Following recent work on the effects of police encounters on educational attainment and mental health indicia,[13] we will develop a second set of models estimating the impacts of police violence and injury on those outcomes, by racial and ethnic group, controlling for the social contexts in counties. Separate models by racial and ethnic groups will be estimated, with county and state fixed effects.

We will develop a set of negative binomial models based on both event counts (fatalities and non-fatal injuries) and population rates, with county and state fixed effects. The first set of models will estimate the number of police killings in a particular year as a function of various city-level predictors including the size and change of the minority population as measures of group threat. A second set of models will elaborate on those risks by adding both violent crime rates and specific crime patterns that address group threat: black-white homicide rates, as well as threats to police.[14]

Implications and Scholarly Products

This project focuses on one of the most critical issues in an era of social and political conflict: racial disparities in police violence. It directly addresses one of the core foci of the Foundation: racial inequality before the law and in racial inequality in health risks from police violence. The debate over democratic regulation of policing has become a leading indicator of broader tensions and crises in race in the U.S., with the question of systemic racism in criminal justice at the forefront. This project will provide evidence with unique contributions: the use of public health data to estimate injuries and deaths, the integration of the "dark" measures of non-fatal force with police-caused fatalities. The project also will test a set of research questions designed to resolve important questions of racial threats from police, and the justifying ideologies of the "thin blue line" that are a source of political resistance to reform.

Three contributions will result from this work. First, a set of papers will address the core questions of racial disparities and inequalities in police violence and fatalities. Second, a measurement design and integrative method will contribute to future research. Third, the database produced in the study will be publicly available for further research and theoretical development in sociology, public health, and law. It will provide an important alternative to the current reliance on data produced by criminal justice agencies, including the police themselves, to measure the effects of policing on the policed.

Investigators, Management and Budget

The research team integrates the disciplines criminology and law with injury epidemiology and health disparities. Jeffrey Fagan is a professor of law at Columbia Law School and a leading police researcher on racial disparities in policing. He also is a professor of epidemiology in the Mailman School of Public Health at Columbia. Charles Branas is the Chair of the Department of Epidemiology, and a member of the Institute of Medicine. His work on violence and community includes experiments on reducing firearm violence through urban design, and a series of studies on the epidemiology of gun violence and its health implications. The research team will also include a Project Manager, a doctoral student in epidemiology who will collaborate with the PIs on the design of the database, scaling and measurement of the critical variables, and the theoretical models. A research assistant will be work half-time on the project for two years, assisting in data collection and integration, and development and maintenance of the databases. In addition to RSF funding, Fagan's time will be contributed by Columbia Law School, and Branas' time will be contributed by the School of Public Health. Project support will fund the Project Manager and the Research Assistant at 50% time. Funds will also be used to purchase databases that have been privatized in recent years. Columbia law students will be supported in-kind to issue public records requests for data from states and counties as well as local agencies, as needed. The project will take two years, and the direct cost budget is estimated at ███████.

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