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Validating media-driven and crowdsourced police shooting data: a research note

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ABSTRACT

Researchers have yet to explore the validity of 'unofficial' media-driven and crowdsourced police-involved killings data. This omission is important because unofficial data are touted as providing accurate counts and narratives pertaining to officer-involved shootings – at least relative to official data. To address this shortcoming, we compared the incidence of and details surrounding officer-involved killings in three unofficial datasets (FatalEncounters.org, Deadspin, and the *Washington Post*) to officially collected data on officer-involved shootings from the city of Dallas. Reporting on the incidence of officer-involved killings was mostly consistent across data sources. Incident details varied across data sources, however, especially with respect to investigation outcomes.

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Introduction

Public concern over police-involved killings has increased following high-profile incidents such as the death of Michael Brown in Ferguson, Missouri, and Freddie Gray in Baltimore, Maryland. These and other highly publicized fatalities have sparked public disturbances and collective movements to improve police decision-making and transparency (Fyfe 1988; Liska and Yu 1992). A call to action even made its way to the White House, where the President's Task Force on 21st Century (2015) was charged with identifying best police practices for strengthening trust between officers and the communities they serve. Among its recommendations (Action Item 2.2.4) was an expanded national database of officer-involved killings.

The argument for the creation of a national database on police-involved killings is not new. As far back as 2002, Fyfe observed that there is no systematic or meaningful national data describing the frequency or consequences of police use of deadly use of force. While there are several data sources that have been used to *estimate* the prevalence of such events, there remains considerable variation between data sources (see Alpert 2015; Klinger 2012; Loftin et al. 2003; Planty et al. 2015; Washington Post 2001). An unfortunate consequence of having no comprehensive national data on police-involved shootings is that it is difficult to assess yearly trends, compare geographic areas, and identify the strongest correlates of police-involved shootings (Klinger 2012).

Acknowledging the limitations of the available official data sources on police-involved shootings, the media, and concerned citizens have taken it upon themselves to engage in their own data collection efforts. *The Washington Post*, *The Guardian*, and online crowdsourcing databases (e.g., FatalEncounters.

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org) have been developed to keep track of officer-involved killing incidents that might not be reflected in official data. Although all of these efforts are built on the assumption that official data severely underreport the frequency of police-involved killings, researchers have not yet attempted to validate and/or compare media-driven and crowdsourced data to official data. The current study seeks to address this problem.

Literature review

A number of data sources have been used to investigate police use-of-force, particularly officer-involved killings. We begin with a review of data used in – and findings from – agency-specific studies. Then we turn attention to national data-sets used for the analysis of officer-involved killings. We also summarize key findings from studies using national data. Finally, we introduce media-driven and crowdsourced data collection efforts, which form the basis for the present study.

Official national data-sets on officer-involved killings

The lack of a national data source on the frequency and circumstances surrounding police-involved killings has led to a knowledge base built more on anecdotal accounts than evidence. What little research is available in this area has primarily relied on data from the following sources: the National Vital Statistics System (NVSS), the Supplementary Homicide Reports (SHR), and the US Bureau of Justice Statistics Death in Custody Reporting Program (DCRP).

The first commonly used official data source are the Center for Disease Control's NVSS, which provides data through coordination between the National Center for Health Statistics (NCHS) and vital registration systems responsible for the registration of vital events (e.g., births, deaths, marriages, divorces, and fetal deaths) (Center for Disease Control and Prevention, 2016). The NVSS reports mortality data, which are derived from death certificates. The NCHS then codes the underlying cause of death using the World Health Organization's *International Classification of Disease* (*ICD-10*). The *ICD-10* provides a category for 'deaths by legal intervention,' which is designed to capture homicides caused by law enforcement officers, including on-duty military officials, in the course of arresting or attempting to arrest lawbreakers, suppressing disturbances, maintaining order, and engaging in other legal action (Barber et al. 2016; Klinger 2012).

There are several limitations associated with the NVSS. First, the classification as a 'death by legal information' can only be made if the police involvement is clearly stated on the death certificate (Barber et al. 2016). This is problematic because while the coroner or medical examiner typically mentions law enforcement involvement in their reports, it is not always mentioned on the death certificate itself (Barber et al. 2016). As such, these instances are not included in the NVSS statistics. Further, state counts reported to the NVSS are derived from the victim's state of residence, not the state in which the death occurred (Barber et al. 2016).

Sherman and Langworthy (1979) were among the first researchers to examine counts of police-involved killings in large US cities using NVSS data compared to agency-level data. They concluded that the NVSS underreported incidents of civilian deaths by as much as 50% nationwide. Using the same data, Jacobs and Britt (1979) tested the conflict theory perspective that police-involved killings are more likely to occur in areas of economic disadvantage. Rates of officer-involved homicides were computed using the number of police-caused homicides in each state by the mean population using Census data from 1960 to 1970 (Jacobs and Britt 1979). Economic inequality was measured with Internal Revenue Service data using a Gini index computed with state income distributions. The study found that police were most likely to use deadly force in the most unequal states. Also, the amount of violent crimes, riots, and the percentage change in the population were associated with deadly force (Jacobs and Britt 1979). Liska and Yu (1992) also gathered data from the NVSS from the police records of cities over 250,000 in population ($n = 45$) in order to examine the effects of 'threatening people' on the overall police-homicide rate. The authors found that while controlling for income inequality, segregation,

population, police department size, and threatening acts, the 'percent nonwhite' strongly predicted the overall police homicide rate.

Another commonly used data source are the SHR, which is affiliated with the FBI's Uniform Crime Reporting program. The SHR provides readily available, incident-level information on homicides reported to the FBI from local police jurisdictions across the country. It reports the number of 'justifiable homicides' committed by law enforcement officers (Klinger 2012). These supplemental reports are submitted by local police and sheriffs' departments and include both cause of death and a brief statement concerning the circumstances surrounding the victim's death (U.S. Department of Justice 2004).

Unfortunately, as Fyfe (2002) noted, there are some important drawbacks to the use of SHR data. The data are submitted voluntarily to the FBI and thus only represent incidents that are properly recorded and reported to the UCR. The two most commonly cited limitations of the SHR are non-reporting of incidents and missing information for reported homicides (Fox and Swatt 2009), both of which are a result of the research design used by the UCR. Additionally, homicides occurring on federal property (e.g., federal prisons, tribal lands, and military bases) are not included in the report (Barber et al. 2016). Lastly, the data collection methods from agency to agency in reporting these incidents may vary tremendously.

Notwithstanding data limitations, several studies on police-involved killings have been conducted using data from the SHR. For example, Sorensen, Marquart, and Brock (1993) included all police officer-involved killings of felons during 1976–1988 ($n = 4,419$) in their situational analysis. The authors found that most police killings resulted from necessity, such as when the officer's safety was threatened or a crime was in progress (Sorensen, Marquart, and Brock 1993). In the community-level analysis, data were limited to include police killing incidents in large cities between 1980 and 1984 (n = 1,231). The rate of police killings of felons per million residents was calculated for each city included in the analysis. In their community-level analysis, Sorensen and colleagues (1993) found that percent black, economic inequality, and violent crime rate were all significant predictors of the number of citizens killed by police in large cities.

In a similar endeavor, Jacobs and O'brien (1998) utilized data from the SHR in 1980 in large US cities with a population greater than 100,000 ($n = 170$). Since police killing is a rare event, the authors calculated the rate of police killings per 100,000 residents in each city between 1980 and 1986. Jacobs and O'brien (1998) concluded that cities with more blacks and a recent growth in the black population had higher police killing rates of blacks, but the presence of a black mayor served as a protective factor, reducing the occurrence of these incidents.

In Smith's (2003) investigation of factors related to police-involved killings, data were gathered from four sources: UCR data from 1994 to 1998, SHR data from 1994 to 1998, 1990 Census data, and the 1997 Law Enforcement Management and Administrative Statistics survey (LEMAS). The number of police killings was measured as the total number of killings reported to the SHR between 1994 and 1998. Smith (2003) found that measures of racial threat and community violence were significant predictors of police-involved killings in cities with 100,000 or more residents, but community violence was not a significant predictor in cities with more than 250,000 residents. In a similar study, Smith (2004) utilized these same data sources (UCR, SHR, Census, and LEMAS) to examine organizational characteristics related to police-involved killings. Overall, the results revealed that measures of racial threat and community violence were significant predictors of police killings, whereas organizational factors were largely unrelated to police-involved homicides (Smith 2004).

There have also been several efforts to compare the various national data sources on police-involved killings. In one such study, Loftin and colleagues (2003) compared NVSS counts of police-involved homicides to data gathered by the SHR during 1976 – 1988. The authors found that while both the NVSS and the SHR undercounted the number of homicides committed by the police, the NVSS reported fewer incidents, with the SHR reporting a 29% higher estimate than that of the NVSS (Loftin et al. 2003). Loftin and colleagues (2003) suggested that this discrepancy may be partially attributable to the NVSS misclassifying cases as homicides because certifiers failed to mention police involvement in the death.

In 2003, the US Bureau of Justice Statistics (BJS) created the DCRP with the intention of counting every citizen death that occurs during criminal justice system processing, including the number of

arrest-related deaths (ARD). The DCRP began after the passage of the Death in Custody Reporting Act of 2000 (P.L. 106-297). At the time of the Act's passage, only two states (California and Texas) collected information on all types of ARD (Bureau of Justice Statistics 2014). Thus, the DCRP was designed as the first attempt for an exhaustive count of all ARD.

A problem is that the DCRP reporting protocol varies from state to state. Reporting agencies to the BJS include state criminal justice commission (22 states), state attorneys general state police departments (8 states each), and departments of corrections (5 states). As a result, there has been criticism about the data quality and coverage of incidents reported, resulting in a suspension in 2014 of the ARD portion of the DCRP (Bureau of Justice Statistics 2014).

Recently, a report to the US Department of Justice found that the number of ARD reported to the DCRP program between 2003 and 2009 captured only about 50% of the estimated number of police-caused killings nationally (Planty et al. 2015). Indeed, researchers have compared national- and state-level ARD data to the SHR data and found considerable differences in the ARD program at the state level (Planty et al. 2015). Thus, Planty and colleagues (2015) concluded that while national estimates by the ARD program have improved since its inception, it is estimated that between 31 and 41% of police-involved killings are not captured in these data.

In a comparison of the three most commonly used data sources and agency-level data, Klinger (2012) compared the SHR, DCRP, and the NVSS data from 2003 to 2006 and found that none of the three sources contained the same counts for any of the years examined. He further found that when comparing the agency-level data from the Los Angeles Police Department and Los Angeles Sheriff Department to the SHR, the SHR estimates were significantly lower than the number of incidents reported at the local agency level. Clearly, there are inconsistencies between the various data sources.

Findings from media and crowdsourced data on police killings

As a result of the increased attention to the lack of a quality data on officer-involved killings, media outlets, and web-based crowdsourcing efforts have been employed to collect data regarding the frequency and nature of these events. An effort by *The Washington Post* (2001) collected data on police-involved shootings in the 51 largest law enforcement agencies from 1990 to 2000 and found considerable variation in the rates at which agency personnel fatally shoot civilians. Using the data, a 2001 *Washington Post* article concluded that the lowest rates of police-involved fatal shootings were in northern and eastern departments, suggesting regional variations in police shootings are not well captured in aggregate-level data (Washington Post 2001).

More recently, the *Wall Street Journal* analyzed data from 105 of the nation's largest police agencies and found that more than 550 police killings during the years analyzed were missing from the national tally or did not list the agency involved (Barry and Jones 2014). Similarly, in a year-long *Washington Post* study of police-involved shootings, Kindy and colleagues (2015) compiled a record of every fatal police shooting in the nation (the study continued into 2016, as well, but the year had not ended as of this writing). The authors compared their data to the SHR data from the same year. They found that more than one-half of the nation's 18,000 police departments report their incidents to the FBI, and that more than twice as many fatal shootings occur each year as reported in the SHR (Kindy et al. 2015).

Although both *Washington Post* studies varied in their methodologies, they both concluded, perhaps rightly, that official counts of police-involved killings underestimate the frequency of these events by as much as 50% (Klinger et al. 2015). However, as Alpert (2015) noted, the estimates gathered by the media and other public domains have not been audited or verified empirically. That said, in one recent study, Williams, Bowman, and Jung (2016) concluded that open source records (such as *The Washington Post, The Guardian*, and *The Wall Street Journal)* identified, on average, 25–50% more cases per year than official federal or state databases. They also noted that open source data can be richer in terms of specifics of an incident.

With the rise of public concern and demands for more transparency regarding police-involved killings, a number of online and crowdsourced data collection efforts have commenced, including most

notably 'FatalEncounters.org.' Crowdsourcing was first defined as 'the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call' (Howe 2006). The use of crowdsourcing data has increased as the public documentation of police actions have increased over recent years. Citizens have readily captured cases like the killing of Eric Garner in New York and the shooting death of Walter Scott in North Carolina (Gates 2015).

As Gates (2015) noted, the use of crowdsourcing data raises several questions, including: (1) Do they mitigate the absence of a national reporting system? (2) Do they provide credible estimates of police killings? (3) Who contributes to crowdsourcing efforts? To date, researchers have not attempted to validate or formally test the quality of either media-driven or crowdsourced police killing data collection efforts. We seek to address this gap in the literature.

Methods

The current study has two objectives. The first is to compare the *incidence* of officer-involved killings reported in an official data-set from Dallas to three 'unofficial' data-sets: FatalEncounters.org, Deadspin, and the *Washington Post* (details on each below). The second is to provide an exploratory comparison of various details reported in official police data to those reported in a crowdsourced effort, namely FatalEncounters.org. By attempting to 'match' incidents reported by one large urban police department to those reported by crowdsourcing contributors, we take the first step toward validating unofficial data on officer-involved killings.

Data sources

Dallas police department

Our benchmark for comparison consists of official data reported by the Dallas Police Department. Official data may or may not undercount the incidence of officer-involved killings, but these data provide a starting point for comparison between data sources. We make no claim that official Dallas data are completely accurate. We merely use Dallas as a benchmark with which to compare data from three other unofficial sources. It is worth mentioning, though, that under Texas law enacted in September 2015, law enforcement agencies throughout the state are now required to report data on officer-involved shootings, so there are legal incentives to report data accurately.

Data on officer-involved shootings in Dallas are available through the Dallas Open Data (DOD), published online by the City of Dallas.[1] Available information includes the following: incident information and location; shooting outcome (death, injury, miss); type of weapon, if any, used by the suspect; suspect's name, race, gender, and age; officer's or officers' name, race, gender, and years of service; grand jury disposition (all officer-involved shootings in Dallas are investigated by a grand jury); a narrative summary of the incident; and geolocation of the incident. The DOD Portal contains data on all police shootings in the city going back to January 1, 2003, for a total of 211 incidents at the time data for this study were collected (March 3, 2016). While DOD provides officer-involved shooting incidents, we focused on the incidents that resulted in civilian fatalities. We also removed deaths that did not result from the use of firearms, which reduced the 211 incidents reported in DOD to 74.

FatalEncounters.org

FatalEncounters.org (FE) purports to offer an impartial, comprehensive, and searchable national database of people killed during interactions with law enforcement officers. Funded by donations, FE's records of officer-involved killings date back to 1 January 2000. Since both FE and Dallas data go back so far, it is possible to make comparisons between both data sources on a larger number of cases. Even when FE data, which are nationwide, are filtered to Dallas, a sufficient number of incidents are available for comparison (the Findings section below goes into further detail). As of 3 March 2016, FE's database contained information on 11,268 records.

FatalEncounters.org uses three main methods for collecting data: (1) paid researchers; (2) public records requests; and (3) crowdsourced data collection. Donations pay for paid researchers and staff to perform public records requests. Crowdsourcing relies solely on volunteers who seek out and upload information about shooting incidents. Before crowdsourced data are uploaded, users must first search the last names of the civilian(s) they want to add in the databases to ensure they are not already included. Finally, submitted input should link to local news sources about the incident to ensure accuracy.

FE reports the name, age, gender, and race of the suspect; whether the suspect displayed signs of mental illness; the date of the incident and its location; the responsible police agency; the cause of death; a brief description of the incident; the official disposition; and a news link.[2] FE focuses only on incidents resulting in civilian deaths. For example, accidents by police officers that resulted in civilian death are also included in FE's database. The website does not report shootings in which suspects survived.

Deadspin

Deadspin is another source of information on civilian-police conflicts that resulted in civilian deaths.[3] Similar to FE, Deadspin's compilation is based on deaths. Contained in Deadspin's records is information on dates, names, ages, genders, races/ethnicities, outcomes (injuries/killings), whether suspects were armed or unarmed, locations, agencies, the number of shots fired in each incident, brief narratives, and links to stories from local newspapers and/or news agencies.

Unlike FE, however, Deadspin's data collection window is narrower than that of FatalEncounters.org. Incidents in its database spanned a period from 20 August 2014 to 7 December 2015. As of 3 March 2016, the date on which our data were collected, the site contained 2,181 cases from all across the nation. When we limited the Deadspin data to Dallas, only 13 cases were comparable.

Washington Post. The third data source we used for comparison was the *Washington Post's* (the *Post*) police shooting database. Soon after the Michael Brown shooting in Ferguson, Missouri, the *Post* began in 2015 compiling a comprehensive data-set on the fatal police shooting incidents throughout the United States. The *Post's* database is based on news reports, public records, internet databases, and original reporting.[4] As discussed further below, there were few police shootings in Dallas during 2015, so we were unable to use the *Post's* data to perform in-depth comparisons between both samples. We were able, however, to explore whether both sources reported the same number of police killings.

It bears mentioning that the *Post's* attempt to build an archival data on civilian deaths is in its early stages. Staff are continuing to add cases, and 2016 data were being gathered and prepared for use at the time this study was conducted. Also, unlike, crowdsourcing databases, the *Post's* data are arguably more consistent and reliable. The data will remain an important resource for ascertaining the incidence, causes, and correlates of civilian deaths caused by police.

Comparison procedure

Several steps were taken to ensure comparability across each of the aforementioned data sources. This was necessary, first, because there are different criteria for including cases in each database (e.g., DOD reports all shooting incidents regardless of deadly outcome but FE reports only killings). Second, because data from each source were collected during different timeframes, we performed two sets of comparisons.

Our first comparison was concerned with the *incidence* of police killings reported in DOD, FE, Deadspin, and the *Post*. Whereas DOD and FE report incidents going back several years, Deadspin and the *Post* contain only recent data. Nevertheless, it was possible to make comparisons across all four data-sets to determine whether the number of police killings in Dallas was consistent across each source. We could not, however, perform meaningful comparisons pertaining to the facts and circumstances surrounding each incident because, for example, Dallas reported just five fatal shootings in 2015, so comparisons with the *Post's* data would be based on an exceptionally small sample. We, therefore, decided to compare the details of each incident between just DOD and FE.

To ensure an apples-to-apples comparison between DOD and FE, we filtered agency information in the nationwide FE data to include only Dallas cases. Next, we filtered DOD data to include only cases in which the suspect or suspects died (recall DOD data include cases in which the suspect survived and/or a shot was fired and did not hit its intended target). Next, we filtered cases in order to remove DOD deaths that resulted from asphyxiation or accidents caused by police. Our sole focus was on officer-involved killings in which firearms were used. These steps reduced the 211 incidents reported in DOD to 74. In other words, there were 74 officer-involved shootings that killed suspects during the same span of time as that included in the FatalEncounters.org data.

Next, we turned to a comparison between DOD and two other data-sets, namely Deadspin and *Washington Post*. As mentioned earlier, Deadspin covers a period between 20 August 2014 and 7 December 2015. The same logic as above was used to compare Deadspin data to DOD (only fatal incidents from DOD is compared for the same time window). Finally, we applied the same procedure for the *Washington Post* data for the year 2015, which was the only year for which data were available at the time this study was conducted.

Results

Table 1 compares Dallas incidence data to other sources. DOD reported a total of 74 cases (DOD Total) during the observed time window. Seventy-one of those records were also reported in FE. However, DOD contained information on three more incidents that were not reported in FE ('Only DOD' column). Similarly, FE reported four incidents that DOD did not include ('Only Other' column). We further investigated these four cases. First one was a non-shooting related incident, but shown as gunshot death in FE.[5] As for second and third ones, although they were reported as fatal shooting incidents, we failed to confirm the veracity of the reports.[6] The last case was a duplicate; the same Google news source that was used for another person's case was shown. Therefore, the last one was mistakenly input.

Next, we compared the Deadspin incidence data to DOD. With Deadspin's narrower time window, only 24 DOD cases could serve as benchmarks. Interestingly, only 13 cases matched with DOD during the observation period. DOD provided all the information that Deadspin included, and two more which were not included in Deadspin's database. The *Washington Post's* data collection period was the narrowest of three alternatives; only five DOD cases occurred during 2015. The *Post's* data and DOD matched perfectly, but that was for just one year of data.

Next, we compared incident details between DOD and FE. As discussed above, the FE Data predate the DOD data, affording a larger sample for comparison purposes. As Table 1 shows, 71 matched cases were available for comparison. In order to perform the comparison, individual factors (e.g., age and race) were coded with a '1' (match) if FE reports matched DOD reports; otherwise, they were coded with a '0' (mismatch). It is important to note here that we did not focus on the veracity of rival sources, but only on whether incident data matched between the two sources.

Mismatches may or may not be trivial. On the one hand, if a record in one source indicates that a suspect's age is 27, but another source reports it as 29, the resulting difference may be inconsequential for analysis. On the other hand, racial mismatches could be serious in light of the centrality of race in many analyses of police shootings. If, for example, African-Americans are reported in crowdsourced data as being shot more often, such inaccuracies could fuel racial tensions.

Table 1. Comparison of crowdsourced and media data to dallas official data.

	DOD total	Matched cases	Only DOD	Only other
FatalEncounters.org (03/18/2003-present)	74	71	3	4
Deadspin (12/27/11-8/10/14)	24	13	11	0
Washington Post (1/1/15-12/31/15)	5	5	0	0

Sources: Dallas Open Data Portal, FatalEncounters.org, Deadspin, and Washington Post.

When FE and DOD were compared on age (left panel of Figure 1), there was a 15% difference between both sources. The discrepancy primarily owed to having reported the suspect as 25 in one source and 35 in the other. Remaining differences were relatively minor, ranging from one to two years. In the Dallas data, the average age of the suspect was 30, while it was 31.7 in FE.

As for race (right panel of Figure 1), just over one in 10 cases were mismatched. During the observation period, DOD reported 32 African-American (45%), 15 Hispanic (21%), and 24 White (34%) suspects, whereas FE reported 28 African-Americans (39%), 19 Hispanics (27%), and 24 Whites (34%). Although mismatches in the counts are apparently occurring between African-American and Hispanic suspects, there is no clear evidence of 'inflating' minority representation in crowdsourced data.

In Figure 2, FE date and address data were compared to DOD. To the extent date mismatched cases were found (left panel of Figure 2), they were in days of the week, rather than months. In addition, most date mismatches did not exceed one day. Finally, date mismatches existed in only seven percent of the 71 observed records. As for address consistency, we compared address numbers and street names. The former is reported in the right panel of Figure 2. Interestingly, they were inconsistent in 34% of 71 records examined. Street names mismatches were minimal, however.

Finally, we compared investigation and outcome consistency between the two data sources. 'Investigation' refers to the official process initiated against police officers after civilian deaths. In the DOD data, these were classified as grand jury dispositions (grand juries investigate all officer-involved shootings in Dallas). These were: 'no bill,' 'true bill,' 'pending,' or 'not available.' Just two DOD cases were classified as 'not available.' FE classifies disposition in several ways, but the matching incidents were presented as 'justified,' 'unreported,' 'no bill,' and 'pending investigation.'[7] There were 23 'unreported' incidents in FE. The left panel of Figure 3 shows that 32% of the cases were mismatched. This suggests that there is either a great deal of reporting error in investigation outcomes or misunderstanding of the different investigative outcomes.

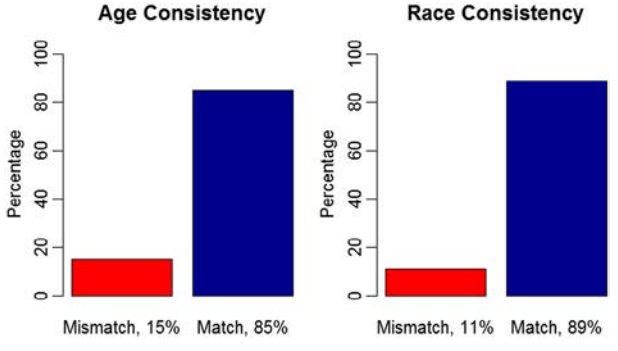

Figure 1. Age and race consistency.

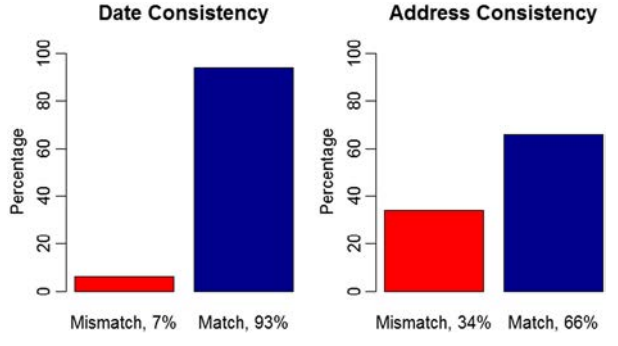

Figure 2. Date and address consistency.

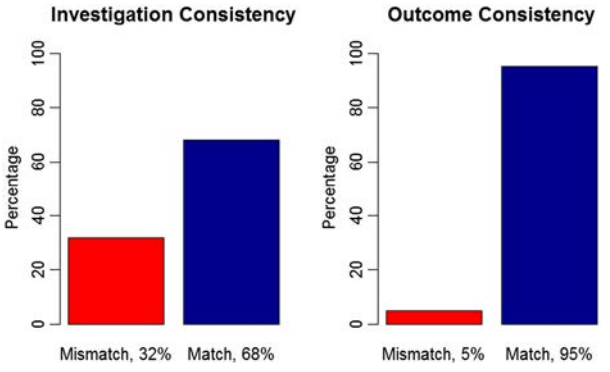

Figure 3. Disciplinary action and outcome consistency.

As for outcome consistency (right panel of Figure 3), we focused on deaths compared to injuries. Although there were 71 cases in which the suspect died that we could use for comparison between DOD and FE, upon close examination, especially of the narratives in both sources, we found some inconsistencies. For example, in one DOD case, the outcome was shown as injury, but the brief narrative explanation of the incident (shared as a pdf file in Dallas Open Data) indicated that the actual outcome was death (the case was also reported as death in FE). There were two such cases in the DOD data. Also, there were two more cases that DOD reported as injuries in both brief reports and outcome classifications, but FE counted these incidents as fatal. In total, four cases, or 5**%** of the compared cases, were inconsistent in terms of the shooting outcome.[8]

Discussion

Our exploratory study sought to achieve two objectives. First, we examined the extent to which the incidence of police killings is counted correctly in unofficial data (crowdsourced and media-driven) relative to official data. Second, we provided a qualitative comparison of matched incidents between two data sources: the Dallas Police Department's official data and data collected by FatalEncounters.org.

In terms of qualitative conformity (irrespective of mismatches between individual data elements, such as age or race), crowdsourced incident records are comparable with official data. At least with respect to Dallas-related incidents, we found that crowdsourcing (especially FE) and media-driven data collection efforts (notably that of the *Washington Post*) do an adequate job of keeping a parallel record of police-related killings. However, once we delved into the details surrounding each incident, we found a good deal of variability between two sources.

Age and race had a mismatch of 15 and 11**%**, respectively, in FE relative to DOD. To some extent, the inconsistency in age can be explained by typing errors (for example, 35 might have been entered as 25); however, this may not be the case for all the mismatches in age. With respect to race, there was inconsistency in the data-sets. We found that FE does not report more African-American killings than DOD, but Hispanic representation was higher in FE in comparison to DOD.

Date data were mismatched seven percent of the time. Most mismatched records occurred due to a different account of days, rather than months or years. Address inconsistency, on the other hand, was prevalent; inconsistencies were observed in 34**%** of the compared cases. This may have been due to the inclusion of even slightly mismatched address numbers. Street names were rarely mismatched, however. Critical date and addresses mismatches are therefore minimal between the two sources.

Finally, we examined investigation results and outcome consistency. We found a 32**%** mismatch in investigation results. If the DOD data are accurate, this suggests that the FE data have not kept pace with investigation outcomes. This could be explained by the time difference between an entry of a specific record and the action that followed the incident. For example, a user might provide an entry,

but the judicial or administrative action might take place after the incident was entered into the crowdsourced database. Last, perhaps the most important individual element, incident outcome (i.e., death), was mismatched in just five percent of the compared cases. This was among the smallest mismatch percentages in the study. Such a low mismatch may be indicative of crowdsourcing data validity, at least with respect to the general outcome of each incident.

The consistencies and inconsistencies found between police-involved killing data sources warrant further discussion. As reporting was largely similar across sources, there is some evidence that crowdsourced efforts provide comparable data on police-involved killings. Moreover, the increased interest in crowdsourced data may be attributed to the lack of trust in official data as well as a lack of official interest to provide nationwide police killing data (Klinger 2012). The inconsistencies found across data sources may also result in increased interest in creating reliable official data regarding the incidence of police killings. Likewise, these inconsistencies may influence officials to pay closer attention to the details provided in official reports.

It is important to note that while the current study attempts to contribute to the literature by assessing the conformity between crowdsourced and official data, it is not without limitations. Most notably, a Dallas-based inquiry is not sufficient to reach a definitive conclusion about the validity of crowdsourced data. In other words, a city-level comparison that includes more cities is needed as a next step. Our comparison provides just a glimpse of the problem. Future studies should examine civilian deaths by the police with an eye on the variations between states, gender, race, and other related factors. They will benefit from better data that is being developed by a number of open sources, such as *The Guardian's* database.

Another limitation is that some users of FE entered information coming from DOD data.[9] The point of our study, though, is to check official data against other sources that may or may not use official data along with other information, so this limitation is not particularly serious. Finally, shooting incidents resulting in death, missing the targets, or injuries should be examined on a national scale, collapsing by age, gender, and race to reveal if there is a bias in officers' decisions to pull the trigger.

Conclusion

Amidst calls for a national database of police-involved killings, it is important to gage the accuracy of current data collection efforts, notably, those are media-driven or crowdsourced. Indeed, it could be that these sources are as capable of measuring police killings as government officials could be. While there were errors and inconsistencies in the data we compared, they were not rampant.

A comprehensive national police-involved shootings database should host accurate information on yearly trends, officer characteristics, locational variations, and other related factors (Klinger 2012). These databases should also expand upon measures of police-involved shootings. For example, Fyfe (1978) argued that in order to properly measure police shootings, all shooting incidents should be reported and counted, not just incidents in which a death or injury occurred. Klinger et al. (2015) echoed this sentiment when their analyses found that approximately only half of police shooting incidents resulted in an injury, whereas only one in six resulted in a civilian fatality. Additionally, what factors play a role in police-caused killings should be studied using this national database to uncover departmental and individual officer characteristics (i.e., rookie vs experienced) that are related to civilian deaths. What we are faced with at present, however, are haphazard state-by-state data collection efforts, limited national data, or media-driven and crowdsourced data collection efforts, each of which is piecemeal and limited in scope. As long as data collection is ad hoc and imperfect, it is important to look closely at the comparability of each data source, as we have attempted to do here.

In closing, we wish to emphasize that we did not differentiate sources on their fidelity to the actual incidents. In other words, we make no claims that one source reports police killings any more *accurately* than the next. Instead, an official data-set (from Dallas) was used as a benchmark with which to compare data from three other unofficial sources and summarize discrepancies between them. Our sample size was also small, so by no means, were we able to provide a definitive comparison. As such, we hope

future research efforts will analyze data from other large police departments and compare them to the increasingly popular crowdsourced and media-driven data collection efforts. Lessons learned could help guide the formation of a comprehensive and accurate national data-set.

Notes

1. https://www.dallasopendata.com/
2. The data regarding FE were obtained from http://www.fatalencounters.org/spreadsheets.
3. Deadspin database can be accessed from https://docs.google.com/spreadsheets/d/1cEGQ3eAFKpFBVq1k2mZly5mBPxC6nBTJHzuSWtZQSVw/edit?pref=2&pli=1#gid=1144428085
4. Their database can be accessed from https://www.washingtonpost.com/graphics/national/police-shootings/
5. http://www.star-telegram.com/latest-news/article3824254.html
6. https://groups.google.com/forum/#!msg/alt.thebird.copwatch/dWHVewqUujs/iA9WESAy3W8J. https://groups.google.com/forum/#!topic/alt.true-crime/yyjojV5LoE0.
7. We matched 'no bill' in DOD with 'no bill' and 'justified' in FE. We further matched 'pending' in DOD with 'pending' in FE and 'not available' in DOD with 'unreported' in FE. DOD contained 'true bill' (i.e., an indictment against the officer), but FE contained no such indicator. This, then, was the source of the large percentage of mismatched cases.
8. It bears repeating that these comparisons were made as of March 3, 2016. After that date, some incidents may have been changed by some users, or new information could have been added into datasets, particularly FE.
9. DOD information used by FE users was not over 25%. As we acknowledge this as a potential issue, since our comparison is based on the similarity between civilian efforts (crowdsourced) and official data resources, this would not assumed to be an obstacle for this study's goal.

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No potential conflict of interest was reported by the authors.

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