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An Incident-Level Profile of TASER Device Deployments in Arrest-Related Deaths

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Abstract

While a considerable body of research has investigated the physiological risks associated with the TASER device, much less research attention has been devoted to examining the nearly 400 police–citizen encounters in which a suspect has died after the device was used. As a result, there are numerous unanswered questions regarding officer, suspect, and incident-level characteristics of these arrest-related deaths (ARDs), as well as the extent to which patterns in these characteristics may have changed over time. The current study seeks to inform the discourse surrounding these death cases through a descriptive analysis of the near-universe of ARDs involving a TASER device deployment from 2001-2008 ($n = 392$). Using a unique data triangulation methodology that captures both media ($n = 392$) and medical examiner reports ($n = 213$), the authors characterize the geographic distribution of ARDs and find parallels between that distribution, state population, the number of officers per state, crime levels per state, and TASER device sales patterns. Also, an incident-level analysis shows that these ARDs were dynamic encounters between suspects who were frequently intoxicated and who actively and aggressively resisted police, and officers who were drawing deeply into their arsenal of force options in an attempt to control and arrest them. Cause of death was most commonly identified as drugs, heart problems, or Excited Delirium Syndrome. Last, longitudinal analysis showed

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consistency in most incident, suspect and officer characteristics, though key aspects of suspect resistance, including level of aggression and persistence after TASER device exposure, changed notably over time. The article concludes with a discussion of implications for policy and practice with regard to these rare but fatal police–citizen encounters.

Keywords

TASER, CEW, arrest-related death

Introduction

Citizen deaths that occur during encounters with police are highly controversial and can have devastating, long-term effects for the police, the community, and the relationship between them (e.g., see the National Advisory Commission on Civil Disorders, 1968). Though much of the controversy surrounding arrest-related deaths (ARDs) of citizens has involved officer-involved shootings (e.g., in St. Petersburg, Florida in 1996 and Cincinnati in 2001), the dialogue over ARDs has broadened to include deaths following deployment of Conducted Electrical Weapons (CEWs, most commonly the TASER device). The attention on TASER-proximate ARDs is primarily a result of two factors.[1] First, emergence of the TASER device into the law enforcement landscape has been widespread. More than 16,000 police departments have purchased the device worldwide (in 107 different countries), including departments in 29 of the 33 largest cities in the United States (http://www.taser.com; National Institute of Justice [NIJ], 2011). Moreover, *TASER International, Inc.* estimates that there have been more than 1.52 million deployments of the TASER device in the field by police officers (as of December 31, 2011).[2] Second, activist and civil rights groups have scrutinized police use of the TASER device on several fronts, including tactical aspects of deployment (e.g., multiple activations, use in the drive-stun mode), its use against vulnerable populations (e.g., children and the mentally ill), and the potential for an increased risk of death (see *Amnesty International*, 2008).

Concern over the health risks associated with CEWs has led to an abundance of empirical research, and importantly, this body of work has not established a definitive causal link between TASER device exposure and death (see Bozeman et al., 2009; NIJ, 2011). While the cause of death question is critical and warrants research attention, the near-singular focus on this issue has left unanswered other important questions regarding TASER device deployments in ARDs. For example, only a handful of studies have sought to offer a detailed profile of TASER device deployments in these cases, and much of that work has been limited in both scope and design (e.g., small n; data limitations). As a result, there are unanswered questions regarding officer, suspect, and incident-level characteristics of these death cases, as well as the extent to which patterns in these characteristics may have changed over time. This lack of understanding is particularly troubling given both the polarizing effect of ARDs more generally and the specific controversies involving police use of the TASER device.

This article seeks to inform the discourse surrounding these issues through a descriptive analysis of 392 TASER-proximate ARDs from 2001-2008.[3] The authors employ a unique data triangulation method that merges two independent information sources: Print media archives and actual Medical Examiner (ME) reports. TASER-proximate ARDs were first identified through a web-based media search service (http://www.webclipping.com; $n = 392$). Authors then made Freedom of Information Act (FOIA) requests for ME reports in all identified death cases, resulting in a combined dataset (containing both media and ME reports) of 213 cases. The data were examined descriptively for the entire study period (2001-2008) as well as over 2- and 3-year periods to assess longitudinal trends. Overall, the article seeks to enhance our understanding of TASER device use in ARDs by combining multiple data sources to explore the nature, characteristics, and circumstances of these rare but fatal police–citizen encounters.

Prior Research

Police Use of Force and Efforts to Capture the Phenomenon

While the authority to use coercive force is a central component of the police function (Bittner, 1970; Klockars, 1985), research has consistently indicated that police use of force is a statistically rare event, occurring in about 1.4% of all police–citizen encounters (BJS, 2011).[4] Moreover, research shows that the vast majority of use of force incidents involve lesser forms of force including grabbing and control holds—with weapons use being much less common (Alpert et al., 2011; Hickman, Piquero, & Garner, 2008). The Bureau of Justice Statistics (BJS; 2001), for example, examined national data on police shootings from 1976-1998 and concluded that the number of fatal shootings averaged just 400 per year, and that the number had not changed significantly during that time despite large increases in the U.S. population and the number of sworn police officers.[5] More recently, BJS published a special report on ARDs that described 2,002 incidents from 2003-2005 (Mumola, 2007). Though the BJS report included all deaths (e.g., suicides, accidental), more than half of the ARDs involved homicide by law enforcement (1,095), indicating that an average of 365 citizens were killed by police annually (Mumola, 2007).

Scholars have noted for several years, however, that there is no national level system for measuring police use of force—deadly or otherwise—and, in fact, commonly used data sources for measuring the phenomenon, especially the Federal Bureau of Investigation (FBI)'s Supplemental Homicide Report (SHR), have substantial limitations. For example, Sherman and Langworthy (1979) compared justifiable homicide counts from the National Center for Health Statistics (NCHS) and alternative data sources for 36 jurisdictions for various years from 1966-1976, and concluded that police homicide may be underreported by as much as 50% (see also Mumola, 2007).[6] Klinger (2008, p. 615) offered strong criticisms of the FBI's SHR:

> That the SHR data on justifiable homicides by police officers have undeservedly become reified as a valid representation of police killings in wide sectors

of the criminological community should serve as an object lesson that we should not embrace measures of police coercion without fully exploring their liabilities.

Efforts to implement a national reporting system began to gather steam during the 1990s and culminated in 2000, when Congress passed the Death in Custody Reporting Act (DCRP, Public Law 106-297). The BJS was assigned responsibility for the DCRP, and data collection on arrest-related events began in 2003 (see Mumola, 2007).[7] While the DCRP represents an important step forward, the program suffers from a number of limitations. Ho and colleagues (2009) noted that the DCRP is not publicly available; it represents an incomplete record of ARDs given variability across states in reporting; and it typically does not include autopsy findings on cause of death. Klinger (2008, p. 609) compared SHR and DCRP data from 2003-2005 and found considerable inconsistency in the number of ARDs across data sources, leading him to conclude that "it should be abundantly clear that neither academics nor those who toil in the public policy arena should take either the DCRP or the SHR data at face value." Consequently, accurate data on the prevalence and nature of ARDs is still quite limited. As a result, in the current study the authors employ a data triangulation methodology that uses multiple data sources.

Police Use of CEWs and the Current Controversies

Police leaders have continually sought to expand force options for their officers to increase control over suspects and to reduce the prevalence and seriousness of injuries (Alpert et al., 2011). Though oleoresin capsicum (OC) spray emerged as a less-lethal option during the 1990s (see Kaminski & Adang, 2010; Kaminski, Edwards, & Johnson, 1998; Kaminski, Edwards, & Johnson, 1999; Lumb & Friday, 1997), more recently the TASER device has become among the most popular less-lethal weapon in many police departments. For example, by December 2011 more than 7,100 police departments had issued the TASER device to all of their line personnel, and nearly 576,000 devices have been issued to police officers worldwide (http://www.taser.com). However, a number of concerns have emerged involving police use of the TASER device. One area of controversy has centered on when, against whom, and under what conditions the device should be used, including its use against passive resisters and vulnerable persons (e.g., children, elderly), repeated activations against a single person, and use of the device in the "drive stun" mode (*Amnesty International,* 2007; Morrison, 2009). Despite guidelines from national police leadership organizations (i.e., Police Executive Research Forum [PERF] and International Association of Chiefs of Police), Alpert and Dunham (2010) noted that substantial variation in departments' placement of the CEW on the force continuum—and officer use of the device—persists.[8]

A second area of contention involves the effectiveness of the device, measured as stopping suspect resistance and decreased prevalence of injuries. White and Ready's

(2007, 2010) research on suspect resistance has identified conditions and characteristics that mitigate the effectiveness of the device (e.g., distance, suspect weight), and has highlighted the importance of distinguishing resistance that occurs immediately after TASER exposure (i.e., the device failed to incapacitate the suspect) from resistance that occurs later in the encounter (i.e., suspect was temporarily incapacitated but began resisting again). Several police agencies have reported reductions in officer and suspect injuries after TASER adoption (Jenkinson, Neeson, & Bleetman, 2006; PERF, 2009; Smith, Kaminski, Rojek, Alpert, & Mathis, 2007). Alpert et al. (2011) examined 25,000 use-of-force incidents across 12 departments and found that CEW use was unrelated to officer injury, but it decreased the odds of suspect injury by 70% (see also MacDonald, Kaminski, & Smith, 2009; Smith et al., 2009).[9] NIJ (2011, p. 31) concluded that "CED use is associated with a significantly lower risk of injury than physical force, so it should be considered as an alternative in situations that would otherwise result in the application of physical force" (but see Lin & Jones, 2010; Terrill & Paoline, 2012).[10]

The third area of contention involves the physiological effects of the TASER device, most notably whether it poses an increased risk of death. A large body of research has explored the effects of CEWs on healthy human volunteers in laboratory settings, focusing primarily on cardiac rhythm disturbances, breathing, metabolic effects, and stress (Ho et al., 2006; Levine, Sloane, Chan, Vilke, & Dunford, 2005; McDaniel, Stratbucker, Nerheim, & Brewer, 2005; McDaniel, Stratbucker, & Smith, 2000; Stratbucker, Roeder, & Nerheim, 2003; Vilke & Chan, 2007).[11] This research has consistently concluded that the TASER device poses low risk among healthy adults (see Pasquier, Carron, Vallotton, & Yersin, 2011; Vilke, Bozeman, & Chan, 2011 for thorough reviews of this research).

Research has also examined various aspects of TASER device use in ARDs. Several studies have examined ARDs more generally and sought to determine the percentage of those cases that have involved a CEW. For example, Stratton, Rogers, Brickett, and Gruzinski (2001) examined excited delirium (ExDS) cases in Los Angeles County from 1992-1998, and of the 18 deaths that occurred, five involved a CEW (either alone or with pepper spray; see also Ross, 1998). More recently, Ho et al. (2009) identified 162 ARDs from May 2004 to April 2005, and approximately one-third involved CEWs.[12]

There have also been a handful of studies that have examined TASER device exposures in the field. Bozeman et al. (2009) conducted physician reviews of 1,000 real-world CEW incidents and found that 99.75% of suspects had minor or no injuries. Eastman et al. (2008) examined 426 TASER device activations in Dallas (TX) and reported similar findings. The authors also concluded that in 5.4% of the incidents, the TASER device "prevented the use of lethal force by the arresting officer(s) (Eastman et al., 2008, p. 1570)." Strote, Walsh, Angelidis, Basta, & Hutson (2010, p. 1239) examined more than 1,100 CEW cases in Seattle and concluded that "significant injuries related to 6 years of law enforcement CEW use in one city were rare." Moreover, there have been a few studies that have sought to assess the impact of CEW adoption

by a police department on the number of ARDs over time (i.e., prepost examinations of ARD counts). PERF (2009) compared nine different safety outcomes among seven law enforcement agencies that deploy the TASER device and a matched sample of six agencies that do not. PERF (2009) found that CEW sites had improved safety outcomes across six of the nine measures, though sites did not differ on the number of ARDs (see also Lee et al., 2009).

Last, a few studies have sought to examine the incident-level characteristics of TASER-proximate ARDs. Strote and Hutson (2008) examined 75 ARDs and presented descriptions of both decedent demographics (all male, 35 years old, 49% White, 40% Black) as well as the factors related to death. None of the cases listed the TASER device as the cause of death (though it was listed as a possible contributing factor in one quarter of the cases), and the majority cited drugs (78%), ExDS (75%) and preexisting cardiac disease (54%) as contributing factors (see also DiMaio & DiMaio, 2006; Stratton et al., 2001; Swerdlow, Fishbein, Chaman, Lakkireddy, & Tchou, 2009).[13] Vilke, Johnson, Castillo, Sloane, and Chan (2009) examined data on 77 TASER-proximate ARDs and described both suspect and incident-level characteristics. One quarter of suspects were armed with a weapon, about half had a previous history of violence, and the level of suspect resistance was most commonly nondeadly physical aggression (Vilke et al., 2009). Information on cause of death, suspect drug use and other medical information were not reported. Importantly, NIJ recently convened a steering group of experts to conduct mortality reviews of nearly 300 death cases and they reported:

> There is no conclusive medical evidence in the current body of research literature that indicates a high risk of serious injury or death to humans from the direct or indirect cardiovascular or metabolic effects of short-term CED exposure in healthy, normal, nonstressed, nonintoxicated persons. Field experience with CED use indicates that short-term exposure is safe in the vast majority of cases. The risk of death in a CED-related use-of-force incident is less than 0.25 percent, and it is reasonable to conclude that CEDs do not cause or contribute to death in the large majority of those cases. (NIJ, 2011, p. viii)

Summary

The previous discussion highlights three important points regarding police use of force, CEWs and ARDs. First, though data suggest that police use of force is statistically rare, hundreds of citizens die each year during encounters with the police in the United States. Second, conventional efforts to collect data on use of force, especially those incidents that result in death, have several limitations and offer an incomplete picture of the phenomenon. Third, while a large body of research has sought to answer questions regarding the physiological risks associated with the TASER device, there has been much less attention devoted to the nature and characteristics of TASER-proximate

ARDs. As a result, our understanding of these important incidents remains incomplete. The current study seeks to address this knowledge gap through an incident-level profile of TASER device deployments in 392 ARDs occurring from 2001 to 2008.

Method and Data

The data for this study were generated from two independent sources: Media reports and Medical Examiner (or autopsy) reports. The media reports were identified through a search of open source, national[14] data via a web-based media search service, using a series of relevant search terms (http://www.webclipping.com). [15] This service covers over 20,000 online news sources and 1.5 billion web pages each day. Articles that were flagged by the search terms were then reviewed to determine their appropriateness for the study. The authors included only those articles that described a police–citizen encounter where an officer used a TASER device (or other CEW), and the person subsequently died. If multiple articles were found describing a single incident, the new stories were used collectively to gather the relevant information for that one event. Deaths that occurred more than 48 hours after the initial police contact were examined closely to determine whether the death was tied to the arrest process and to use of force during the encounter.[16] Once the articles were filtered, authors used a data collection instrument developed by White and Ready (2009) to code relevant information on each remaining article. The instrument records information for 68 variables relating to the content of the articles, placing special emphasis on characteristics of the suspect (e.g., demographics, drug and alcohol use, mental illness, level of resistance, etc.) officer (demographics, assignment type, other force types used, etc.), and aspects of TASER device deployment (number of activations, location, etc.).

After each ARD event was identified, authors then made a FOIA request to the appropriate agency in the incident jurisdiction to obtain a copy of the ME report. The authors sought to access ME reports in order to capture more detailed and accurate information on circumstances surrounding the death, the decedent's behavior before, during, and after the incident, the presence of drugs and alcohol in the decedent's system, and the official cause of death. In many cases, authors were unable to obtain ME reports for ARDs that met the study criteria because of ongoing criminal investigations, pending litigation, or because of state law requirements involving permission from next-of-kin. Altogether, the authors obtained ME reports for 213 TASER-proximate ARDs, 54% of the total number of ARDs identified in the study. The 213 reports varied considerably in terms of the content, level of detail, and relevancy of information. As a result, the authors identified 11 common variables—including aspects of TASER device deployment (number of activations and location), injury, toxicology results (drugs and alcohol), body temperature, and cause of death (primary and contributing factors)—and coded that information across the reports. The ME and media data were then merged at the individual case level and subjected to descriptive analysis both overall and by time.

Considerations and Limitations

The current study suffers from several limitations, and each warrants some discussion. First, this article focuses only on police–citizen encounters where a TASER device was deployed and the suspect subsequently died. This category of cases represents a very small (though very important) portion of the more than 1.51 million incidents in which a TASER has been used. The 392 cases examined here, however, do represent nearly all ARDs involving the TASER device during this time period. Second, FOIA requests were made for all cases but the authors obtained ME reports in only 54% of ARDs included in the study ($n = 213$). We tested for significant differences among the two groups of cases (those with and without a ME report) along all available variables coded from the media data, and three differences were identified. Cases where the authors obtained ME reports were more likely to involve passive resistance by the suspect, the TASER device as the only force option used, and a greater number of TASER device activations—compared to cases where the authors did not obtain a ME report.[17] The reasons for these differences and their potential influence on the study findings remain unclear. Third, there are concerns over the completeness of media data. Though ARDs in general, especially those that involve a TASER device, are typically seen as newsworthy, there is the potential for some incidents to go unreported.[18] There are also concerns over the quality or accuracy of information in the media reports. The authors recognize this limitation though researchers have increasingly relied on media data to study police practices (e.g., Ready, White, & Fisher, 2008; White & Ready, 2009). Moreover, although an extensive body of literature has documented media bias in depicting police practices (Chermak, 1995; Surette, 1998), research also suggests that this bias is less prevalent when use of force is involved (Chermak, McGarrell, & Gruenewald, 2006; Ready et al. 2008; Tuch & Weitzer, 1997).

Last, each question on the media data collection instrument was designed so that the coder recorded whether or not a specific piece of information was reported in the article. The coders were not allowed to speculate about any circumstances of the police–citizen encounters. As a result, the main source of error is missing information that may result in a false negative—such as when a coder correctly indicates that an article does not state the suspect is mentally ill when in fact he is. The authors attempted to minimize this type of error by focusing both the data collection and analysis on items that are expected to yield reasonably accurate data. Last, the objectives of the current study are descriptive and do not involve any comparisons with other types of TASER device incidents (e.g., nonfatal), or other types of ARDs (e.g., shootings).

Results

Incident-Level Characteristics

Figure 1 shows the geographic distribution of all identified TASER-proximate ARD cases across the United States from 2001-2008 ($n = 392$). Thirty-seven states experienced

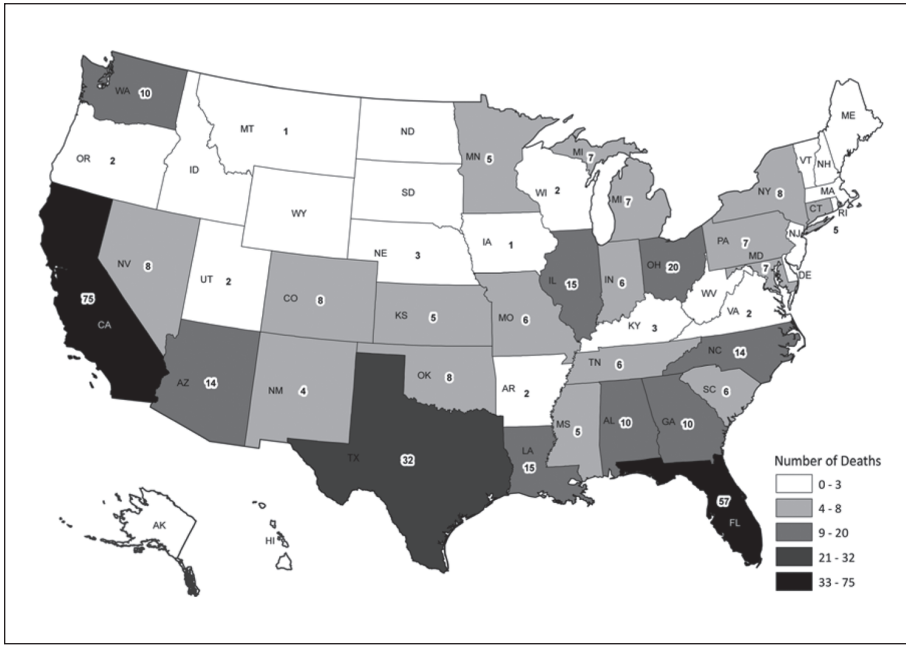

Figure 1. Geographic distribution of TASER-proximate arrest-related deaths, 2001-2008

at least one TASER-proximate ARD during the study period, with California (75), Florida (57), Texas (32), and Ohio (20) showing the highest numbers. In fact, approximately 20% of all study cases occurred in California, and nearly 50% occurred in these four states. The 13 states without a TASER-proximate ARD are Alaska, Delaware, Hawaii, Idaho, Maine, Massachusetts, New Hampshire, New Jersey, North Dakota, South Dakota, Vermont, West Virginia, and Wyoming. This distribution makes intuitive sense when considering state-level variation in the number of sworn officers, population, crime levels, and TASER device sales. For example, three of the four states with the most ARDs are also the states with the largest number of sworn officers (state and local): California (79,431 officers), Florida (46,105 officers), and Texas (59,219 officers).[19] Ohio, with 20 ARDs, has 25,992 officers (http://bjs.ojp.usdoj.gov/content/pub/pdf/csllea08.pdf.). Alternatively, among the 13 states with no TASER-proximate ARDs, all but two have fewer than 3,500 sworn officers (New Jersey, 33,704 officers; Massachusetts, 18,342 officers).[20]

The three top generators of TASER-proximate ARDs are also among the most populous states in the nation (California, 36.9 million; Florida, 18.5 million; Texas, 24.8 million), and according to FBI UCR data for 2009, they also experienced the largest number of Part I violent crimes (California, 174,459; Florida, 113,541; Texas, 121,668; http://www2.fbi.gov/ucr/cius2009/data/table_05.html). There is less consistency

when examining violent crime rates per 100,000 residents, as there are 11 states that show crime rates per 100,000 higher than California (472), Florida (612) and Texas (491). These include some states with small populations such as Delaware, New Mexico, and Alaska (637, 619, and 633 per 100,000 respectively). Also, Ohio (fourth in ARDs) is ranked seventh both in terms of population (11.5 million) and overall violent crimes in 2009 (38,332), but there are 20 other states with higher violent crime rates per 100,000 residents than Ohio (332).

The four states with the most TASER-proximate ARDs are also the biggest customers for TASER device cartridges and X26 devices.[21] For example, from 2004-2008 *TASER International, Inc.* sold a total of 3,778,526 cartridges in the United States, and approximately one third of those cartridges were sold to agencies in California (459,695), Florida (339,321), Texas (263,241), and Ohio (151,456). Taken together, *TASER International, Inc.* sold only 87,800 cartridges to agencies in the 13 states without an ARD. The pattern is similar with X26 devices. From 2004-2008, agencies in California, Florida, Texas, and Ohio purchased more than 82,000 X26 TASER devices (30,503; 24,659; 18,873; 8,299, respectively). *TASER International, Inc.* sold, on average, just 622 X26 devices to agencies in the 13 states without an ARD (from a low of 28 in Vermont to a high of 1,837 in Maine). In sum, results suggest that geographic patterns in ARDs are likely tied to the volume of police–citizen encounters. States with the largest populations also have the largest number of police officers, have purchased the largest number of TASER devices, and presumably have experienced the greatest number of police–citizen encounters.[22]

We also collected data on the law enforcement agency involved, and approximately 280 different agencies experienced at least one TASER-proximate ARD. Fifty-nine agencies experienced two or more ARDs during the study period. The Harris County Sheriff's Department (Houston, TX area) and the Phoenix Police Department experienced the largest number of ARDs (six), followed by the San Jose and Las Vegas Police Departments (five each). All of these agencies are large departments (1,000+ officers) in populous jurisdictions, and they are also among the largest purchasers of TASER X26 devices and cartridges in the United States.

Table 1 shows incident-level characteristics using a combination of the media and ME data. Media reports indicate that the suspect was already in custody before the TASER device was used in about 14% of cases, and there were multiple officers at the scene in the majority of cases (82.9%; mean 1.9 officers). Other citizens were present in about 41% of the incidents. In just over one third of the cases (36.5%) there was only one TASER device activation. Two activations occurred in 26.0% of cases, and three to five occurred in another one quarter of cases. There were six or more activations in 10% of the cases ($n = 39$), and the average number of activations across all incidents was 2.91. For those cases where duration of exposure was available (missing in 58% of ME reports), the length of the activation was typically more than 5 sec (in 57 of 89 cases). These findings are consistent with Vilke et al. (2009), who reported an average duration of 17 sec to 25 sec in the 77 deaths they analyzed.[23]

Table 1. Incident Characteristics

	%	*N*
Incident characteristics		
Suspect in custody when TASER device used (media)	14.3	385
Other officers present* (media)	82.9	385
Other citizens present (media)	40.8	385
Number of TASER activations** (media)		
Once	36.5	140
2 times	26.0	100
3-5 times	27.3	105
6 or more times	10.2	39
Duration of exposure (ME)		
5 seconds or less	15.0	32
6-15 seconds	21.1	45
16-30 seconds	3.8	8
More than 30seconds	1.9	4
Not reported	58.2	124
Mode of TASER device use (ME)		
Darts only	81.2	173
Drive stun (alone or with darts)	15.5	33
Not reported	3.3	7
Location of contact (ME)		
Chest only	13.6	29
Abdomen/arms/legs	10.8	23
Back/buttocks/legs	23.0	49
Multiple locations (front)	16.9	36
Multiple locations (front and back)	9.9	21
Not reported	25.8	55
Level of force used by police (media)		
TASER device only	37.2	142
Other force/TASER device	34.8	133
TASER device/other force	13.1	50
Other force/TASER device/other force	12.3	47
Multiple force types, unknown combination	2.6	10

*Mean number of officers is 1.9.
**Mean number of activations is 2.91.

Table 1 presents additional data from autopsy reports, including the number of dart contacts and location of contact. Recall that the authors obtained autopsy reports from only 213 of the 392 ARDs in the study (54%), so these data should be examined with

caution. The dart contacts mode was used in the majority of cases (81.2% of the total; 3% missing), and the device was used in the drive-stun mode (either alone or in combination with dart mode) in the remaining 15.5% of cases. In cases where the location of device contact was noted (25.8% missing), the most common locations included back/buttocks/legs (23.0%), multiple locations on the front of the suspect's body (16.9%), and the chest only (13.6%).

Table 1 also shows the types and combinations of force used during these encounters, captured from the media data. In just over one third of the ARDs (37.2%), police used the TASER device only against the suspect. In the remaining two thirds of cases, police used the TASER device in addition to other force. In approximately one third of ARDs, the officer(s) started with another force option, then moved on to the TASER device presumably because the first method was ineffective. In these 133 cases, officers most commonly used physical force (in 76 cases), OC spray (28 cases), or handcuffing (11 cases) first, before resorting to the TASER device.[24] In an additional 50 cases (13.1%), the officers deployed the TASER device first but then subsequently applied another force method. Officers applied physical force in the majority of these cases (33 of the 50 cases). Last, in nearly one fifth of the study cases ($n = 68$) police used three or more force options, most commonly involving physical force both before and after the TASER device, as well as a variety of other less-lethal options (e.g., baton, OC spray).[25]

Suspect Characteristics

Table 2 shows suspect characteristics (primarily obtained from media data), indicating that the vast majority were male and between the ages of 21 and 40 (mean age 35.9).[26] This is consistent with prior research on TASER-proximate ARDs (Ho et al., 2009; Swerdlow et al., 2009; Vilke et al., 2009). Though only about 20% of suspects were described as mentally ill, drug and alcohol use was common (53.5% were intoxicated or high during the police encounter). Of those reports indicating drug use, the most commonly cited drugs were cocaine (in two thirds of cases) and methamphetamine (18%). The authors also coded drug use from the ME reports, and nearly 90% indicated either illicit drugs in the decedent's body or evidence of chronic drug use. This is again consistent with prior research (e.g., Ho et al., 2009; Swerdlow et al., 2009). While most suspects were not armed with a weapon (only 14% armed), the vast majority were engaged in some form of active resistance against the officer(s) during the encounter (81.3% active, nonlethal; 7.1% active, potentially lethal).[27] Similarly, nearly 60% of suspects continued to resist after the TASER device exposure, with the vast majority continuing their resistance immediately after exposure (e.g., the device did not incapacitate the suspect). Prior research on nonfatal cases indicates that the TASER device stops suspect resistance in 80% to 90% of incidents (e.g., White & Ready, 2010). This disparity suggests that suspects who died were much more likely to continue resistance, compared to suspects in nonfatal TASER device cases.

Table 2. Suspect Characteristics

	%	N
Suspect male (media)	97.4	385
Suspect age[a] (media)		
20 or younger	2.6	10
21 to 30	28.2	107
31 to 40	37.7	143
41 to 50	24.8	94
50 to 65	6.6	25
Suspect described as mentally ill (media)	19.7	385
Suspect under influence of drugs/alcohol (media)	53.5	385
Chronic drug use indicated (ME)[b]	87.0	193
Suspect armed with a weapon (media)	14.0	385
Suspect resistance level (media)		
Passive physical	11.3	43
Active nonlethal	81.3	309
Active potentially lethal	7.1	27
Resistance continued after TASER device (media)		
No	41.6	156
Yes, immediately after exposure	52.5	197
Yes, at some point later	5.9	22

[a]Suspect mean age is 35.9.
[b]Taken from Medical Examiner data; information is missing is 20 ME reports.

Cause of Death

Table 3 shows information related to cause of death drawn from both data sources. Sixty percent of the media reports mentioned a cause of death, and the most commonly cited causes were drugs (24%; primarily cocaine), heart-related problems (11.2%), ExDS (11.2%), or some combination of those three factors (21.9%). Forty-five of the articles (19.3%) mentioned the TASER device as either the cause of death ($n = 5$) or a contributing factor ($n = 40$). However, none of the articles described the TASER device as the sole cause of death.[28] Table 3 also shows cause of death using ME data, which provided greater detail and allowed for differentiation between primary cause of death and contributing factors. There is notable consistency across data sources, however, as drugs (21.4%, cocaine in 36 of the 45 cases), heart-related problems (30.5%) and ExDS (23.8%) were cited as the primary cause of death in 75% of the ME reports. The TASER device was listed as primary cause of death in two cases.[29]

Among contributing factors, the findings are similar. While more than one third of cases did not list a contributing factor, the most commonly cited contributing factors

Table 3. Primary and Contributing Cause of Death Using Media and ME Data

	%	N
Cause of death mentioned in article		
No	39.5	152
Yes	60.5	233
Cause of death (Media)		
Cocaine or other drug	24.0	56
Heart attack/heart-related	11.2	26
Excited delirium (ExDS)	11.2	26
Drugs/heart/ExDS combined	21.9	51
Other	8.6	20
Asphyxiation/suffocation	3.9	9
TASER device (cause or contributing) and other	19.3	45
Cause of death (ME)[a]		
Cocaine or other drug	21.4	45
Heart attack/heart-related	30.5	64
Excited delirium (ExDS)	23.8	50
Other	18.6	39
Asphyxiation/suffocation	4.8	10
TASER (cause)	1.0	2
Contributing factors to death (ME)		
None listed	36.2	77
Cocaine or other drug	29.1	62
Heart attack/heart-related	12.2	26
Excited delirium	3.3	7
Other	10.8	23
Asphyxiation/suffocation	0.9	2
TASER device	7.5	16

[a]Cause of death in ME reports was much more specific than what is found in the media data. For the sake of consistency, we use the same general categories. Note that any mention of heart or cardiac problems was collapsed into the "heart attack/heart-related" category.

were again drugs (29.1%) and heart problems (12.2%).[30] The TASER device was listed as a contributing factor in 16 cases. Altogether in the ME data, illicit drugs are listed as a primary or contributing cause of death in 58% of the cases. Heart problems are listed as a primary or contributing cause in 41% of cases, and ExDS is cited in 28% of cases. In fact, there are only 30 cases (14%) that do not list at least one of these three factors as a primary or contributing cause of death.

Comparing Cases by Use of Force and Resistance Levels

There are two interesting dichotomies among these ARD cases. The first involves whether the suspect continued resistance after the TASER device exposure

Table 4. Case Comparison by Force Used and Suspect Resistance

	Resistance continued		Force used	
	No	Yes	TASER only	TASER + other force
Incident characteristics				
Suspect in custody when TASER used	14.1	14.2	6.3**	19.2
Other officers present	85.3	83.6	74.6**	88.3
Mean number of TASER activations	1.93**	3.64	2.73	3.05
TASER use in drive-stun mode	23.1	17.2	8.2**	27.9
Duration of TASER exposure[a]				
5 sec or less	32.4	35.4	23.7	43.5
6 to 15 sec	52.9	52.1	65.8	41.3
16 to 30 sec	8.8	8.3	7.9	8.7
31 to 60 sec	2.9	2.1	2.6	2.2
1 min or more	2.9	2.1	0.0	4.3
Types of force used				
TASER + other force used	50.6**	72.1	x	x
Suspect characteristics				
Mentally ill	18.6	20.5	16.2	22.1
Under influence of drugs/alcohol	47.4*	58.0	49.3	56.7
Resistance level				
Passive	x	x	21.6**	5.4
Active nonlethal	x	x	71.2	87.1
Active potentially lethal	x	x	7.2	7.1
Resistance continued after TASER	x	x	44.2**	66.7
Cause of death (media)				
Cocaine or other drug	30.9	20.9	33.3*	18.8
Heart attack/heart-related	9.9	12.2	9.5	12.1
Excited Delirium	6.2	14.2	4.8	14.8
Drugs/heart/Excited Delirium combined	21.0	20.3	17.9	24.2
Other	13.6	6.1	9.5	8.1
Asphyxiation/suffocation	1.2	5.4	1.2	5.4
TASER (cause or contributing)	17.3	20.9	23.8	16.8

[a]The number of cases for each of these categories is small: resistance continued (no = 34; yes = 48), force used (TASER device only = 38; TASER device + = 46).
*$p > .05$; **$p > .001$; Authors employed chi square and independent samples *t* tests to determine statistical significance.

(no/yes) and the second involves whether multiple types of force were used by police (TASER device only vs. TASER device + other force). In Table 4, these cases are compared along a range of suspect, officer and incident-level characteristics.[31] The first two columns compare cases where the suspect's resistance stopped

after TASER device exposure to those where it continued, and three notable findings emerge. In cases where resistance stopped, the mean number of TASER device activations was much lower (just 1.93 compared to 3.64 in continued resistance cases), and officers were much less likely to have to resort to other force (50.6% compared to 72.1%). Also, suspects were less likely to be intoxicated (47.4% compared to 58.0%).

The next two columns compare TASER device-only cases to cases where officers used multiple force types. In TASER device-only cases, it was less common to have multiple officers at the scene, and less likely that the suspect was already in custody. Officers in TASER device-only cases were much less likely to use the device in drive stun mode (8.2% vs. 27.9% in multiple force cases), though they tended to use the device for a longer period of time (76.3% for more than 5 sec, compared to 56.5% for multiple force cases). Moreover, suspects in TASER device-only cases were more likely to have engaged in only passive physical resistance (21.6% compared to 5.4% in TASER device and other force cases), and they were much less likely to continue to resist after TASER exposure (44.2% vs. 66.7% for multiple force cases). Last, there were differences in cause of death, as ExDS was more common in multiple force cases (14.8%, compared to 4.8%), and drugs were more common in TASER device only cases (33.3%, compared to 18.8%). Many of these findings make intuitive sense as suspects' behavior (level and continued resistance) no doubt influenced the types and level of force used by police.

Examining Trends Over Time

Table 5 divides the study cases into three separate time periods (2001-2004, 2005-2006, 2007-2008) to determine whether the characteristics of TASER-proximate ARDs have changed over time.[32] There are several notable changes over time. First, the average number of activations has decreased significantly, from 3.16 in the earlier period to just 2.38 in the later period. Also, recent incidents were more likely to occur outdoors and to have supervisors present. Moreover, there is also a decline in the percentage of incidents where only the TASER device is used.

There were few changes in suspect attributes over time, as demographics, prevalence of mental illness and drug use remained relatively stable (not shown). However, the resistance patterns of suspects changed significantly over time in distinct ways. The level of resistance became increasingly aggressive over time; by 2007-2008, only 5% of cases involved suspects who were passively resistant. At the same time however, the likelihood of suspect resistance continuing after the TASER device exposure dropped substantially, from nearly three quarters of cases in 2001-2004 to just over half of cases in 2007-2008. Last, two attributes relating to cause of death changed over time including its reporting in the media (less common) and the proportion of cases involving heart problems (less common).

Table 5. Examining Trends Over Time in TASER-Proximate ARDs

	2001-2004 (*N* = 83)	2005-2006 (*N* = 163)	2007-2008 (*N* = 146)
Incident characteristics			
Mean number of activations*	3.16	3.27	2.38
Incident occurred outdoors**	57.0	52.9	74.8
Supervisor present	3.7	3.8	8.3
Force used: TASER device only	41.5	38.4	33.3
Suspect characteristics			
Suspect resistance: active (nonlethal/lethal)*	78.0	87.9	95.0
Suspect resistance continued after TASER device activation**	72.5	57.7	51.0
Cause of death			
Cause of death mentioned in the media report**	67.1	71.1	45.1
Cause of death: heart-related (ME)*	41.2	27.3	22.2

*$p > .05$; **$p > .001$; Authors employed chi square and independent samples *t* tests to determine statistical significance.

Discussion

Summary of Key Findings

The current study sought to advance our understanding of TASER device use in ARDs through a descriptive analysis of nearly 400 death cases using both media and ME reports. A number of key findings emerged across incident and suspect characteristics, TASER device deployment patterns, and cause of death. First, the geographic pattern of ARDs is distinct and associated with population size, the number of officers per state and TASER device sales patterns. The state-level finding is essentially one of volume: The most populous states with the largest number of officers and the greatest access to the TASER device likely experienced the largest number of police–citizen encounters, and as a result, were at greatest risk for ARDs. Additional research should explore these state-level patterns.

Second, the typical suspect in these study cases was a middle-aged male who was intoxicated or mentally ill—a finding that is consistent with prior research. In fact, nearly 90% of the ME reports cited drugs in the decedent's body, or indicators of chronic drug use. The prevalence of illicit drug use bears out in the cause of death data as well, as drugs were identified as the primary cause of death in approximately one quarter of cases and a contributing factor in an additional 30% of cases. Moreover, results from longitudinal analysis indicate that drug use and mental illness have remained consistent features of TASER-proximate ARDs over time.

Third, the ARDs in this study were complex, dynamic encounters between suspects who were actively and aggressively resisting police, and officers who were drawing deeply into their arsenal of force options in an attempt to control them. Only 10% of suspects were described as passively resisting police efforts, and suspects' active resistance continued after TASER device exposure in nearly 60% of cases. In response, police officers typically used multiple types of force either before or after the TASER device (most often physical force), and when officers resorted to the device, it was usually deployed more than once. In fact, police used the TASER device by itself (no other force required) with one standard activation in only a handful of cases (55 cases, 14%). Results also showed that the TASER device-only cases and cases where suspect resistance stopped after TASER device exposure were (a) intimately linked and (b) distinctive from other cases in important ways. Though the longitudinal analysis indicated that the prevalence of continued suspect resistance declined over time, it also showed that suspects were increasingly aggressive (less passive). Notably, the types and levels of force used by police have changed little in response to that increased aggression.

Finally, both media and ME reports identified drugs (cocaine), heart problems, and ExDS as the most common causes of death (alone or in combination), though the specific percentages of each varied across data sources. Consistent with recent research (NIJ, 2011), the ME data also show that the TASER device was rarely identified as the cause of death or a contributing factor. Taken together, the prevalence of drug use and mental illness among suspects, the level and persistence of their resistance, and the types of force used in response to that resistance paint a clear picture of the complex, prolonged, physical nature of these encounters.

Implications

The results from this study have a number of implications for our understanding and the continued study of TASER device deployments in ARDs. The earlier review of current ARD data collection efforts highlighted the limitations of those systems, and the findings here underscore this point. For example, BJS (Mumola, 2007) examined DCRP data on ARDs from 2003-2005 and identified only 36 cases involving TASER devices (or other CEWs): 3 in 2003, 9 in 2004, and 24 in 2005. The methodology employed in the current study identified 141 ARDs involving a TASER device deployment during that same 3-year period (16 in 2003, 51 in 2004, and 74 in 2005), suggesting that the DCRP may have missed as many as 75% of the cases.[33] Clearly, Klinger (2008: 609) was on-target when he cautioned against taking the DCRP "at face value," and much more work needs to be done to improve reporting to the DCRP.

Second, and related to the first point, the results here provide empirical support for the use of media data as a viable source on ARD. Nearly a decade ago, Fyfe (2002) lamented the poor state-of-affairs regarding use of force data and pointed to the media as an alternative, noting that "we still live in a society in which the best data on police use of force comes to us not from the government or from scholars, but from the *Washington Post.*" Though the authors' inability to obtain ME reports in nearly half of

the cases limits the comparisons that can be made between media and ME reports, the results here do suggest consistency across data sources in patterns of TASER device use, other force options, and cause of death. There are clear limitations with media data (see White & Ready, 2009), but we argue that it can serve an important role in capturing and characterizing ARDs, at the very least as an initial screening mechanism that identifies potential cases for further investigation. In fact, by 2007 more than 30 states participating in the DCRP identified the media as a data collection source (Mumola, 2007). Researchers should continue to explore the media as a data source and should consider methodologies that triangulate those media reports with other forms of data.

Last, this study represents one of the most comprehensive, detailed profiles of TASER device deployments in ARDs to date. The key features that have been highlighted—drug use and mental illness, the level and persistence of suspect resistance, and the wide array of force options used by police—demonstrate the complexity of these incidents. Unfortunately, the controversy surrounding CEWs has resulted in these cases being defined by TASER device use. However, the results here demonstrate that this classification is, in many cases, a considerable oversimplification of what transpired during these encounters. As a result, the discourse in public policy, law enforcement and academic circles over TASER device deployments in ARDs should consider the totality of circumstances in these events, and move beyond the tendency to reduce them to simply "TASER cases." Doing so will improve our understanding of both police use of CEWs, and the hundreds of deaths that occur each year during police–citizen encounters.

Declaration of Conflicting Interests

The authors declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Jeffrey D. Ho is the medical director for CEW manufacturer, TASER International, and Donald M. Dawes is a consultant to TASER International. During the writing of the article, Andrew Hinz was the director of Technical Services for TASER International. All three authors are stockholders in TASER International.

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Notes

1. Though the TASER device is one brand of CEW, it is by far the most commonly used device in the United States. As a result, we use the term "TASER" throughout this article. Also, *TASER-proximate* is the term we use to describe arrest-related deaths that occurred following TASER device use. There is no causality implied in this term.
2. *TASER International* also estimates that there have been approximately 1.35 million voluntary or training exposures, for a total of more than 2.86 million uses of their device.

3. For this article, we examine only ARDs that occurred in the United States and involved a TASER device exposure. There are varying estimates on the population of ARDs involving a TASER device during this time period. We believe that the 392 cases examined here represent nearly all such cases.
4. Given the volume of police–citizen encounters in a year (approximately 40 million), there are an estimated 560,000 use of force incidents per year; or more than 1,500 events per day. These estimates increase considerably if force is more broadly defined (e.g., including verbal commands or handcuffing; Garner, Maxwell, & Heraux, 2002; Garner, Schade, Hepburn, & Buchanan, 1995; Terrill, 2001, 2003), or if incidents resulting in arrest are examined separately (Hickman et al., 2008).Though there is little disagreement over definitions of lethal or deadly force, there is much less consensus on how to properly define nonlethal force. Some include verbal commands, pat downs and handcuffing, while others do not. We acknowledge these problems and refer the reader to Hickman et al. (2008) for a more complete discussion.
5. Moreover, the most commonly cited source of information on police officers' use of lethal force—the Federal Bureau of Investigation's Supplemental Homicide Reports (SHR)—also suggests that police killings of citizens is infrequent (see also Fyfe, 1988).
6. The Center for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS) collects mortality data and uses death certificates to classify deaths according to the International Classification of Disease, 10th Revision (ICD-10) codes (Breiding & Wiersema, 2006). The CDC data collections on violent deaths also include the National Violent Death Reporting System (NVDRS), Web-based Injury Statistics Query and Reporting System (WISQARS), and the Wide-ranging Online Data for Epidemiologic Research (WONDER). The extent to which these CDC data represent viable counts of police use of lethal force is unclear, given that some of the data is not publicly available and is not collected from all of the states (Friday, 2006).
7. Participation in the Death in Custody Reporting Program (DCRP) was encouraged through a linkage to funding under the Violent Offender Incarceration and Truth in Sentencing (VO/TIS) grant program. Additional data on police use of force is also collected through BJS's Police Public Contact Survey (PPCS), which is a national level survey of citizens on encounters with police.
8. Alpert and Dunham (2010) found that 27% of departments classified CEWs as a low level force option (appropriate for passive resisters), 62% classified it as a medium force option, and 11% classified it as a high force option (e.g., violent and life-threatening encounters only). Moreover, only 16% of departments restrict the activation length of the TASER device, and just 5% limit the actual number of activations of the device against a single suspect (Alpert & Dunham, 2010).
9. Alpert et al. (2011) also found that pepper spray decreased the odds of suspect injury by 65%. While CEWs were unrelated to officer injury, they found that pepper spray *increased* the odds of officer injury by 21%. MacDonald et al. (2009) carried out time series regression analyses using 108 months of prepost injury data for the Orlando Police Department, and 60 months of prepost data for the Austin Police Department. They reported significant reductions in injuries following CEW adoption in both departments.

10. Terrill and Paoline (2012) suggest that variation in findings on suspect injury may be a consequence of differences in how injury is defined. For example, some studies have included barb penetration as an injury (Terril & Paoline, 2012), while other studies have not (e.g., MacDonald et al., 2009). At the same time, most studies have only focused on more serious injuries. NIJ (2011) focused on moderate and severe injuries, and puncture wounds were included only if the penetration occurred in a sensitive area (e.g., eyes, genitals). Bozeman et al. (2009) reported mild injuries (83% of which involved barb penetration), but the authors focused their attention on more serious injuries. Readers should keep in mind this definitional variation when examining injury-focused studies.
11. There is also a body of research examining the effects of CEWs on animals, primarily pigs and canines. The findings from animal research are more mixed, though much of this work has used durations not commonly encountered in the field. Kaminski (2009) notes that "animal-based studies found that higher output discharges (15-20 times the standard) or discharges of longer duration (e.g., two 40 sec exposures) could induce VF or increased heart rhythm and in rare instances death in some pigs." (see also, for example, McDaniel et al., 2000).
12. Several other studies have examined small, nonrandom samples of ARDs and determined the proportion of cases that involved a TASER device. For example, Hick, Smith, and Lynch (1999) examined five restraint deaths and none involved a CEW. O'Halloran and Frank (2000) identified 21 restraint deaths from 1992-1996 and only one involved a CEW (see also O'Halloran, 2004; O'Halloran & Lewman, 1993).
13. For earlier studies of CEWs, see also Kornblum and Reddy (1991) and Ordog, Wasserberger, Schlater, and Balasubramanium (1987). *Amnesty International* published a report in 2008 that characterized 334 ARDs that included a TASER deployment. However, *Amnesty* only had ME reports for 98 of those cases. For the other ARDS, they relied on other sources including media reports, and information from family members of the deceased and their attorneys. Given that *Amnesty* in a nonscientific organization, the accuracy of its data collection methods remains uncertain.
14. Search terms that were used individually and in combinations include *TASER, CED, excited delirium, metabolic acidosis, delirium, prehospital death, paramedic death, ambulance death, police, sheriff, custody, dies, death, TASER death, police death, arrest death, acidosis death, police custody dies, law enforcement death, ECD death, CEW death.*
15. There were 22 cases where one or more officers used a TASER device on a suspect, but then subsequently used a firearm. In each of these cases, the suspect died of a gunshot wound. These officer-involved shootings have been excluded from the analysis. We also identified five additional cases where a suspect committed suicide or died accidentally after being exposed to a TASER device. In three cases, the suspect fled into a body of water after the exposure and subsequently drowned. In the two other cases, one suspect escaped police custody after the TASER device exposure and subsequently shot himself; the other hung himself in his jail cell hours after the TASER device exposure. These five cases were also excluded.
16. There were 43 identified ARDs where a TASER device was deployed during the incident, but the death occurred more than 48 hours after the TASER device exposure. The authors

examined data from both the ME report and the media stories to determine whether the suspect experienced medical difficulty at the scene (e.g., time to collapse; problems breathing, elevated body temperature, etc.). If any negative physiological reaction was documented at the scene or shortly after, the case was included in the study. These included five cases where the individual lost consciousness or slipped into a coma at the scene or shortly thereafter, but died later. Nine cases were eliminated because these criteria were not met.

17. For cases where the authors obtained ME reports, passive suspect resistance occurred in 16.1% of cases (compared to 5.7% for other cases), officers used the TASER device only in 41.7% of cases (compared to 31.8% in other cases), and the mean number of TASER device activations was 3.49 (compared to 2.26 in other cases).
18. There are seven cases where the authors obtained a ME report for a case that met the study criteria, but were unable to locate a media report. These cases were identified through litigation against *TASER International, Inc.*
19. New York state has the second largest number of sworn officers (66,472), but more than half of those officers (35,000 or so) are employed by the NYPD, which only issues TASER devices to special units and supervisors.
20. Notably, New Jersey law prohibited police use of TASER devices during the study period. The Attorney General for the state of New Jersey lifted that ban in November 2009.
21. Statewide information on cartridge and X26 sales were provided to the authors by *TASER International, Inc.*
22. These trends in no way suggest a causal link between total number of ARDs and the number of TASER devices in the field. Rather, as CEWs have become more popular there is a greater likelihood that one will be present if an ARD occurs.
23. Interestingly, Bozeman et al. (2009) and Strote et al. (2010) examined nonfatal TASER device exposures and both reported notably fewer number of activations. The differences in number of activations and duration across fatal and nonfatal cases are notable and should be explored further in future research.
24. For this analysis, handcuffing is considered a force type when used before the TASER device, but not after. Given the nature of these incidents, it is safe to assume that all suspects were handcuffed at the end of the encounter (except for the few that were experiencing immediate medical difficulty). As a result, there is no variation in the variable at the end of the encounter. Handcuffing before the TASER device application is handled differently for two reasons. First, there is variation in the variable as it happened in a relatively small percentage of cases (i.e., the suspect is handcuffed but presumably continues to resist that leads to application of additional force, including the TASER device). Second, there are specific concerns and controversy surrounding the use of force (CEW or otherwise) against suspects who are handcuffed. As a result, handcuffing before TASER device use is reported as a force option.
25. These 68 cases include the 47 other force/TASER device/other force cases, in addition to cases involving multiple force types before (12) and after (5) the TASER device. There are 10 cases where multiple force options were employed by police (four cases with three or more options used; six with only two options used), but we were unable to determine the order of those methods (i.e., which option was used first).

26. There were only a handful of cases involving juveniles (three were 17 at the time of the incident) and senior citizens (15 were 55 or older). The suspect's race was missing in more than 90% of the media reports.
27. Our findings are consistent with Vilke et al. (2009). In the 54 cases where the suspect was armed, about one-half involved a knife or cutting instrument; 19 involved a blunt object, and five suspects wielded a firearm. There was one case where the suspect was not engaged in any form of resistance at all. *Passive physical resistance* was defined as resisting officer's physical efforts (e.g., going limp), any physical resistance that did not involve an assault on the officer, or actively fleeing. *Active nonlethal resistance* was defined as active physical aggression against an officer, but the assault was nonlethal and did not involve a weapon. *Active potentially lethal resistance* was defined as active physical aggression against an officer that included a weapon that could be lethal, or high levels of physical force where a lethal outcome was a reasonable expectation.
28. Among the five cases where the TASER device was listed as a cause, the articles also described heart problems ($n = 2$), drugs ($n = 2$), and a seizure ($n = 1$). Nearly all of the 40 articles that listed the TASER device as a contributing cause also mentioned heart problems, drugs, or excited delirium. Also, there were 9 deaths attributed to positional asphyxiation and 20 with other causes (e.g., natural causes, blunt force trauma, and head injuries).
29. In the first case where the TASER device is listed as the primary cause of death, methamphetamine intoxication is listed as a contributing factor. In the other case, there is no contributing factor listed and the report indicates that the decedent was subjected to more than four minutes of TASER device exposure during the incident. Among the 39 cases with other causes, 14 involved hypoxic or anoxic encephalopathy (lack of oxygen to brain) and 10 involved blunt force trauma.
30. However, 73 cases listed two contributing factors and 35 cases listed three contributing factors. For the sake of simplicity and to keep the categories mutually exclusive, Table 3 reports the first contributing factor that was listed. The vast majority of secondary and tertiary contributing factors involved drugs, heart problems, and ExDS. The TASER device was mentioned as a secondary or tertiary contributing factor in an additional 15 cases.
31. All incident, suspect, officer and cause of death data were compared across these cases. Due to space constraints, only significant or notable findings are reported in Table 4.
32. The first period includes four years to increase the number of cases to a reasonable enough size to permit comparison. Recall that the methodology employed here relies on media reporting for case identification. The extent to which changes in media reporting over time explain these patterns remains unknown (e.g., TASER-proximate ARDs became increasingly newsworthy over time). Due to space constraints, only significant or notable findings are presented in Table 5.
33. It is also possible that the DCRP captured at least some of these cases but failed to recognize the use of the TASER device (and as a result, BJS failed to include them in its subanalysis of CEW cases).

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