TASERS IN THE MEDIA

# Examining fatal and nonfatal incidents involving the TASER

## Identifying predictors of suspect death reported in the media

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**Research Summary**

*According to TASER International, nearly 10,000 police departments in the United States have deployed the TASER as a less lethal force alternative in some capacity. Despite the TASER's increasing popularity, serious questions have been raised about the device's physiological side effects; in particular, Amnesty International has reported that more than 300 people have died after being subjected to the TASER. Although a growing body of research has examined the physiological effects of the TASER on animals and healthy human volunteers in laboratory settings, there has been virtually no empirical analysis of "real-world" fatal and nonfatal TASER cases simultaneously. This article examines all media reports of TASER incidents from 2002 to 2006 through a comprehensive review of LexisNexis and New York Times archives. We compare TASER incidents in which a fatality occurred to TASER incidents in which a fatality did not occur and then employ multivariate analyses to identify the incident and suspect characteristics that are predictive of articles describing TASER-proximate deaths.*

**Policy Implications**

*Several suspect factors were significantly associated with the reporting of a fatal TASER incident, including drug use (but not alcohol), mental illness, and continued resistance. Multiple deployments of the TASER against a suspect was also associated with the likelihood of the article describing a fatality—especially if the suspect was emotionally disturbed—which raises the possibility that the risk of multiple shocks might not be uniform for all suspects. More research is needed to explore the relationship between mental illness, drug use (illicit or therapeutic), continued resistance, and increased risk of death. In the meantime, police departments should develop specific policies and training governing the use of*

*multiple TASER shocks against individuals who could be in these vulnerable physiological and psychological states.*

**Keywords**
*TASER, conducted energy device, police use of force, less lethal weapons, media*

In testimony before the U.S. Department of Justice inquiry into "deaths in custody following electro-muscular disruption," representatives from Amnesty International (2007: 4) stated:

> AI has collected data on more than 290 cases of individuals in the United States and Canada who since 2001 have died after being struck by police Tasers. While in most cases medical examiners have attributed death to other factors…AI has identified at least 20 cases where coroners have found the TASER served a causal or contributory factor in the death and other cases where the TASER was cited as a possible factor in autopsy reports.

In July 2008, a grand jury in Louisiana indicted a police officer on a manslaughter charge involving the death of a suspect who was shocked nine times with a TASER. During the grand jury proceeding, the District Attorney said, "It is our intention to show at trial that Mr. Nugent [the officer] caused the death of Baron Pikes by Tasing him multiple times, unnecessarily and in violation of Louisiana law" ("Officer charged in death of Tasered man," 2008). Alternatively, at the conclusion of the Department of Justice inquiry on deaths after electromuscular disruption, the National Institute of Justice published a special report stating that "there is no conclusive medical evidence within the state of current research that indicates a high risk of serious injury or death from the direct effects of CED [TASER] exposure" (National Institute of Justice, 2008: 3).[1]

These recent events illustrate the ongoing controversy surrounding the physiological effect of the TASER. Although available evidence suggests that deaths after TASER deployment (i.e., TASER-proximate deaths) are rare, there is little understanding of why fatalities occur in a small number of cases and how—if at all—the TASER contributed to those deaths.[2] Unfortunately, researchers' ability to explore causes of TASER-proximate deaths has been constrained by two data limitations. First, this emerging technology is not used in a vacuum and laboratory studies on the physiological effects of the device cannot control for circumstances that develop in

1. Conducted energy device (CED) is the general term used to describe the TASER and other versions of the device. Even though TASER dominates the CED market with approximately 95% of sales in the United States, competitors include Stinger Systems and Law Enforcement Associates. Stinger Systems has sold 12,000 weapons since 2000. Law Enforcement Associates introduced their CED in March 2005.

2. "TASER-proximate" death is the term the authors use to describe an incident where the suspect was struck with a TASER and subsequently died, but no definitive evidence exists to identify the TASER as the cause of death.

a natural setting, such as the presence of drugs and alcohol, poor health of suspects, physical confrontations, the use of handcuffs and other less lethal weapons, and elevated levels of adrenaline and physical exertion. Amnesty International (2007: 4) recognized the contributing role of these real-world circumstances, explaining "most of the individuals who died were agitated, disturbed and under the influence of drugs, and/or had underlying health problems such as heart disease."[3] The degree to which the TASER—when combined with one or more of these circumstances—increases the risk of death remains unknown.

Second, empirical research to date has failed to study fatal and nonfatal TASER incidents simultaneously. Although studies involving coroners' reports examined only those cases in which suspects died, laboratory research and studies using police use-of-force data focused on deployments in which most suspects survived. Neither approach can produce variation in the outcome that is required to develop predictive models with advanced statistical methods—that is, to identify predictors of suspect death. As a result of these two limitations, critical questions about fatal and nonfatal incidents remain unanswered. For example: Do TASER incidents that result in death differ in notable ways from nonfatal incidents? If so, what are the distinguishing characteristics of TASER deployments that result in death? And how do specific risk factors alone—or in combination with other circumstances—increase the likelihood of suspect death? These questions are cause for concern in communities and police departments across the United States because the TASER has replaced chemical sprays and impact weapons as the preferred less lethal alternative for U.S. police.

This article explores these questions by analyzing data collected from all media reports describing police use of the TASER from 2002 to 2006 ($N$ = 521), which were generated through a broad search of LexisNexis and the *New York Times*. We used media reports because they are the only data source that provides information about the circumstances surrounding fatal and nonfatal TASER deployments. First, we used bivariate analyses to compare news reports that described fatal deployments ($n$ = 188) with articles describing nonfatal deployments ($n$ = 333). Then we used multivariate analyses, including logistic regression and CHAID (a form of segmentation modeling) to identify suspect and incident characteristics that are significant predictors of news reports involving TASER deaths. The article concludes with a discussion of implications for police policy, training, and practice, as well as the ongoing debate about police use of the TASER.

## Prior Research

### *The Context: Police and the Use of Force*

Police officers have legal authority to use force in a wide range of situations, including empty hand or physical force, less lethal weapons (i.e., baton, pepper spray, or CED) and, as a last resort, the use of a firearm (Walker and Katz, 2002). Despite its central role in policing (e.g., Bittner,

3. In the Louisiana case cited above, the coroner's report found that Pikes was handcuffed and lying on the ground when the police deployed the TASER. He was also physically exhausted after running from the police and had a history of cocaine involvement.

1970), research indicates that police use of force is statistically rare, occurring in approximately 1% of police–citizen encounters (Bureau of Justice Statistics, 1999).[4] That said, because there are approximately 43 million police–citizen encounters in a given year, an estimated 421,000 use-of-force incidents occur annually, which translates into approximately 1,100 incidents in a typical day.

The application of physical force may potentially have devastating consequences, not only for the suspect and the officer but also for the law-enforcement agency, the community, and police–community relations (Fyfe, 1988; Geller and Scott, 1992). For example, the National Advisory Commission on Civil Disorders (1968) concluded that the police were a cause of many riots occurring during the 1960s. More recent examples of police–citizen encounters that triggered social turbulence include the L.A. riots after the acquittal of the four officers who were videotaped beating Rodney King in 1991, the strained community relations in New York City after the shooting of Amadou Diallo in 1999, and the civil unrest after the Sean Bell incident in 2006.

Because of the physical and social harms—as well as the political fallout that may result from abuses of force—police agencies have expanded their alternatives to firearms. The President's Commission on Law Enforcement and the Administration of Justice made this central to the national policing agenda in 1965 when it proposed developing a range of less lethal weapons. Throughout several decades, advances in technology have led to the development of force alternatives such as oleoresin capsicum (OC; i.e., pepper) spray, impact weapons, foams, ballistic rounds, nets and, most recently, conducted energy devices (CEDs; Wrobeleski and Hess, 2003). This expanding arsenal is intended to provide officers with a broader range of options when a situation requires the application of force but has not escalated to the point when deadly force is necessary, which therefore reduces the likelihood of serious injury and death to officers and suspects.

During the 1990s, OC spray became popular among police agencies in the United States, and this trend serves as the backdrop for the current work on CEDs because many of the same issues and concerns have been raised (Smith and Alpert, 2000). Specifically, controversies surrounding police use of OC spray have centered upon its use on passive resisters, disproportionate use on racial minorities, and potential health risks (Kaminski, Edwards, and Johnson, 1999). Several studies have examined the effectiveness of OC spray and concluded that the weapon effectively incapacitates the suspect in most deployments, results in fewer officer injuries, and reduces police reliance on other types of force (Gauvin, 1994; Kaminski, Edwards, and Johnson, 1998; Lumb and Friday, 1997; Nowicki, 1993).

4. This estimate becomes much greater when handcuffing and verbal commands are included as use of force.

### *The TASER*

CEDs are becoming a visible component of U.S. policing and media depictions of police behavior. The most popular CED is the TASER (manufactured by TASER International, Scottsdale, AZ), and recent estimates indicate that more than 10,000 law-enforcement agencies have purchased and deployed TASERs in some capacity (most commonly, the M26 and X26 models). The TASER fires two probes at a rate of 180 feet per second, and when striking the subject, delivers a 50,000-volt shock during a 5-second cycle (Vilke and Chan, 2007). Although the technology has the capacity to cause acute discomfort, it is not designed to be a pain compliance weapon:

> CEDs work by incapacitating volitional control of the body. These weapons create intense involuntary contractions of skeletal muscle, causing subjects to lose the ability to directly control the actions of their voluntary muscles. CEDs directly stimulate motor nerve and muscle tissue, overriding the central nervous system control and causing incapacitation regardless.… This effect terminates as soon as the electrical discharge is halted. Immediately after the TASER shock, subjects are usually able to perform at their physical baseline (Vilke and Chan, 2007: 349).

Researchers have not kept pace with the rapid growth of this technology and, until recently, most of the available information about the TASER came from the CED industry, internal police reports, and publications from civil and human rights organizations such as Amnesty International and the American Civil Liberties Union. As adoption of the technology has spread, however, questions have emerged in three general areas: (1) policy (When and against whom is it appropriate to use the TASER?), (2) effectiveness (Does the device work as intended?), and (3) physiological impact (Does the TASER increase the risk of injury or death?). These issues are discussed below, but greater emphasis is placed on physiological effect because it is the focus of this article.

***When is it appropriate to use the TASER?*** Police agencies provide guidance to officers on the appropriate use of force through a force continuum that describes the verbal and physical actions a police officer can take in response to different levels of suspect resistance and behavior. Police departments have varied considerably in terms of where they place the TASER on the force continuum, particularly in the earlier years when the device first became available. A central issue is whether the TASER should be used on suspects who are not following verbal commands or who are passively resisting police efforts. This issue became highly controversial when the media captured images of two separate incidents in which the police used the TASER on a college student who was being passively resistant. The first incident occurred in a University of California at Los Angeles library in November 2006 and the second took place during a press conference for Senator John Kerry at the University of Florida in 2007. Other questionable police practices spotlighted in the media include use of the device on vulnerable populations, such as the physically and mentally disabled, pregnant women, children, and the elderly. The

Police Executive Research Forum (PERF, 2005) and the International Association of Chiefs of Police (IACP, 2005) have issued policy recommendations to offer guidance to agencies in their use of CEDs. Both the IACP and PERF suggest that CEDs be used against only those who are actively resisting, that they not be used against minors or the elderly except in emergency situations, and that each deployment be closely supervised.

***Does the TASER work effectively?*** Research examining the effectiveness of the device in the field has focused on two questions: (1) Does the TASER have the intended physiological effect, thereby terminating suspect resistance; and more generally, (2) does use of the device reduce suspect and officer injuries? Unfortunately, limited empirical research is available to answer these questions. With regard to suspect resistance, field data analyzed by TASER International (2006) and internal evaluations by police agencies (Seattle Police Department, 2004) place the effectiveness rate of the TASER somewhere between 80% and 94%. White and Ready (2007) analyzed TASER deployment records from the New York City Police Department and found that suspects stopped resisting and were successfully incapacitated in 86% of incidents occurring during a 4-year period. In a follow-up study, White and Ready (2009) found that the effect of the device on suspect resistance was mitigated by several factors, including suspect weight, intoxication, and the distance between the suspect and the officer.

Several police agencies that have implemented CEDs on a broad scale have later reported reductions in injuries sustained during police–citizen contacts. Police departments in Austin, Texas; Putnam County, Florida; and Cincinnati, Ohio, reported reductions in injuries to suspects and officers after adopting the TASER (Jenkinson, Neeson, and Bleetman, 2006; TASER International, 2006). Smith, Kaminski, Rojek, Alpert, and Mathis (2007) examined injuries to suspects and officers in two departments and concluded that use of CEDs was associated with reduced odds of injury in one department but not the other. The authors noted that "not every agency's experience will be the same regarding CED use and injuries" (Smith et al., 2007: 439).

***Does the TASER increase the likelihood of suspect death?*** Amnesty International has spearheaded efforts to raise awareness of the potentially harmful physiological effects of the TASER. Concern about the possible health risks associated with CEDs has prompted a growing body of research involving reviews of coroner reports in death cases, comprehensive reviews of empirical research, and biomedical research using animals and healthy human volunteers. Kornblum and Reddy (1991) examined 16 deaths after TASER deployments and determined that drug overdose was the cause of death in most incidents.[5] Ordog, Wasserberger, Schlater, and Balasubramanium (1987) examined 218 emergency room cases that involved suspects who were shocked with a TASER; three suspects died and all had PCP in their systems. Strote, Campbell, Pease, Hamman, and Hutson (2006) examined autopsy reports in 28 TASER-related deaths and found that the device was not identified as the direct cause of death in any of the

5. In one of the cases, the authors concluded that the TASER could have contributed to the suspect's death because he had a history of cardiac disease, although the suspect also had lethal levels of PCP in his system (see also Vilke and Chan, 2007).

cases; however, the authors noted that it was listed as a potential contributing factor in 21% of the fatalities (see also Canadian Police Research Centre, 2005; Joint Non-Lethal Weapons Human Effects Center of Excellence, 2005).

Several studies have examined the physiological impact of the TASER on animals (e.g., pigs and dogs) and healthy human volunteers, focusing specifically on cardiac rhythm disturbances such as ventricular fibrillation (e.g., McDaniel, Stratbucker, and Smith, 2000; McDaniel, Stratbucker, Nerheim, and Brewer, 2005; Roy and Podgorski, 1989; Stratbucker, Roeder, and Nerheim, 2003). For instance, both Levine, Sloane, Chan, Vilke, and Dunford (2005) and Ho et al. (2006) monitored heart function in human volunteers who were subjected to the TASER and found no evidence of changes in heart rhythm or functioning. In their review of this research, Vilke and Chan (2007: 353) concluded the following:

> The potential for life-threatening cardiac dysrhythmias or cardiac muscle damage to occur as a result of the electrical discharge from current TASER devices appears to be low based on the available studies. However, there may be theoretical risks to patients with pacemakers or underlying cardiac disease, and the effect of recurrent or prolonged TASER discharges remains unclear.

Vilke and Chan (2007: 353) noted that existing research has yet to investigate "non-cardiac effects" of the TASER, including the device's effect on metabolism (i.e., potassium, sodium, and pH levels in the blood) and respiration (i.e., carbon dioxide elimination and respiratory rate).

Laboratory studies using animals and healthy human volunteers represent an important step in understanding the physiological effect of the TASER, but the implications of this research may be limited by fundamental differences between the test subjects and those individuals most likely to experience the TASER in a real-world setting. That is, suspects who are typically shocked by the TASER during police–citizen encounters are less likely to be healthy, they are not voluntary participants, they are frequently under the influence of drugs or alcohol, they often have preexisting physical or mental conditions, and many are physically resistant during the TASER deployment. Any of these conditions occurring in a natural setting can lead to an increased risk of physiological harm. In October 2007, Wake Forest University Medical Center released their findings from a large-scale evaluation that involved physician reviews of 1,000 real-world TASER deployments, thereby avoiding many limitations associated with laboratory research using animals and human volunteers. The Wake Forest research team coordinated with six law-enforcement agencies. When an officer in one of those agencies deployed the TASER, the suspect was transported to a hospital for evaluation by a research team doctor. The study found that 99.7% of suspects had minor or no injuries.[6] William Bozeman, the study's lead investigator, reported:

> The injury rate is low and most injuries appear to be minor. These results support the safety of the devices (Wake Forest University Baptist Medical Center, 2007).

6. Two suspects died, but neither death occurred as a result of the TASER.

*Summary*

Although police frequently rely on the TASER when they experience resistance from crime suspects and disorderly individuals, many questions are unanswered concerning the physiological effects of the device when deployed in a natural setting. Given the absence of a causal link to suspect fatalities, why do deaths occur in a small number of incidents? Also, are there identifiable risk factors involving the behavior of the suspect or the circumstances of the encounter that increase the likelihood of death? If so, what are the implications of those risk factors for police policy and training? The following analysis begins to explore these issues using national media data describing fatal and nonfatal TASER incidents.

## Methodology

We conducted a broad search of media reports via LexisNexis and *New York Times Select* using keyword searches to identify all articles involving the TASER from January 2002 through December 2006.[7] We relied on media data because such data are the only viable data source with detailed information on fatal and nonfatal cases. After the universe of news reports was identified ($N$ = 691), we recorded information for 68 variables relating to the content of the articles and the circumstances under which police used the TASER, placing special emphasis on characteristics of the suspect, officer, and events leading to the deployment.[8] Several categories of cases were excluded from the analysis. First, our study focused only on cases where a police officer deployed the TASER. Two types of news stories did not satisfy this criterion: business reports for TASER International (i.e., stock reports) and articles describing general trends or research relating to police use of the TASER. Additionally, a small number of news reports (approximately 30; 5.4%) were eliminated because of missing information. These stories were typically one or two sentences long and provided little detail about the incident. The authors set aside these reports because their inclusion added little value to the descriptive or multivariate analyses that are the central focus of the article. Finally, duplicate cases were excluded to prevent certain incidents from being overrepresented in the analysis. Duplicate cases were defined as any news report that contained the same information as another report that described a specific incident in which police used the TASER on a suspect (often published on the same date).[9] In all, 170 articles were excluded from the analysis.

The content analysis was based on 521 nonduplicate articles, each of which described an incident in which police used the TASER on a suspect. The dependent variable in this study

7. We used a range of keywords to conduct the database searches. These terms included "TASER," "CED," and "electronic stun device."

8. We developed our coding instrument based on a TASER deployment reporting form used by a major metropolitan police department. Also, the instrument was focused on types of information typically included in articles about the TASER. Unfortunately, certain types of information such as the race, height, and weight of the suspects; the distance to the suspect; and many officer characteristics could not be included in the final analysis because a large proportion of the news reports did not contain this information.

9. The duplicate cases were identified by cross-referencing the articles using the date of the incident, city, suspect's name, and the newspaper in which the article was published.

was whether the article described a TASER incident resulting in death—yes or no. In all, 36% of the articles ($n$ = 188) described an incident in which the suspect died after being shocked with a TASER and the remaining 64% ($n$ = 333) of the articles describe nonfatal TASER incidents. Articles that described TASER-proximate deaths were overrepresented in the data, as research indicates that deaths after TASER use are rare (Wake Forest University Baptist Medical Center, 2007).

***Limitations and Considerations of the Data Source***

Three types of potential bias are associated with use of media data on TASER events, and each warrants some discussion. The first potential bias stems from differences in the "newsworthiness" of fatal and nonfatal incidents involving the TASER. That is, nonfatal incidents are less likely to be reported in the news because they lack the inherent "drama" associated with fatal incidents. Although the extent of this bias remains unknown, two issues might mitigate its impact in this study. First, given the high level of interest and debate surrounding the device, it could be that nearly all TASER incidents—even nonfatal cases—have the same likelihood of being reported in the media and therefore being captured in our data.[10] Second, media reporting of nonfatal incidents could be most likely when some other interesting characteristic is associated with the event, such as repeated use of the device against a suspect or use against vulnerable populations (e.g., the mentally ill and elderly). In effect, our data-collection approach likely captured similar types of TASER events—those with newsworthy characteristics—that had different outcomes—fatality or no fatality. In short, these nonfatal-though-newsworthy events may actually represent the best comparison for fatal TASER incidents.

The second potential bias concerns how the measures were operationalized and the quality of information recorded from the media reports. We recognized this limitation from the outset and attempted to address it in several ways. First, police reports and interviews of police officers are the primary source of information used by news reporters for most crime and justice issues, and use of the TASER is no exception. In this sense, concerns regarding quality in media data mirror concerns with official police data and other data sources. Second, we examined the extent of missing data across fatal and nonfatal articles and found notable consistencies, especially among some of the key variables. For example, the number of times the TASER was deployed during the incident was reported in nearly all news stories (i.e., this information was missing in 4% of nonfatal incidents and 3% of fatal incidents). Alternatively, officer and suspect race were almost never reported, regardless of incident outcome (i.e., in 1% in both types of articles). Articles that described fatal and nonfatal incidents were also similar in their reporting of suspect mental illness (missing in 22% and 28%, respectively) and drug use (missing in 27% and 33%, respectively). At a minimum, similarities in missing data suggest some degree of consistency in data quality across article type (fatal and nonfatal incidents).

10. Although the extent of news coverage may vary based on the outcome (fatal or nonfatal), our data collection approach captures all those media-reported incidents.

Last, each question in the content analysis instrument was designed so that the coder recorded whether a specific piece of information was reported in the article. The coders were not allowed to speculate about any characteristics of the police-citizen encounters.[11] Moreover, in cases in which multiple articles were published about the same event, we compared stories to corroborate "facts" and identify discrepancies.[12] As a result, the main source of error was missing information that could result in a false negative—such as when a coder correctly indicated that an article did not report that the suspect was mentally ill when in fact he was. We attempted to minimize this type of error by focusing the data collection and analyses on items that were expected to yield reasonably accurate data.[13]

The third potential concern is source bias; that is, media representations of police use of the TASER could differ from actual TASER use. Some circumstances could mitigate concern over this bias. First, currently little research is available on police use of the TASER, particularly studies comparing fatal and nonfatal incidents (although the NIJ funded a six-site study in 2008–2009 and other studies are likely underway). Second, although an extensive body of literature has documented media bias in depicting police practices (Chermak, 1995; Surette, 1998), research also suggests that the police are much less effective in "controlling the media message" when the use of force is involved (Chermak, McGarrell, and Gruenewald, 2006; Tuch and Weitzer, 1997). Third, Ready, White, and Fisher (2008: 27) compared news reports with police records on TASER deployments and found "noteworthy consistencies across data sources with regard to many suspect and incident-related characteristics."

In short, this study reflects an effort to identify predictors of TASER-related deaths as reported in the news media. Although the actual influences of the biases described above is unknown, we believe that the article makes a substantive contribution to this underdeveloped area of research.[14]

### *Analysis*

We first compared articles describing fatal and nonfatal TASER incidents on the bivariate level across various suspect and incident characteristics. We then used two multivariate approaches—logistic regression and CHAID (a form of segmentation modeling) to identify significant predictors of whether an article describes a TASER-related death. Binary logistic regression was

11. The content analysis was completed by us and six graduate students from the John Jay College of Criminal Justice. For example, one item in the instrument asks whether the article described the suspect as mentally ill or emotionally disturbed (yes/no). The question did not measure whether it seemed that the suspect was mentally ill based on the narrative describing the encounter. The researchers were instructed to only check "yes" if the article explicitly described the subject as possessing this trait. Thus, the unit of analysis is the article itself, rather than the encounter.

12. In cases where two articles provided inconsistency or contradictory information (which was infrequent), the authors coded information from the article that provided the most detail.

13. The authors also compared these items with available data on the TASER from one police department as a measure of convergent validity.

14. The authors are grateful to Senior Editor Steve Chermak for assistance in delineating the strengths and weaknesses of the data source.

employed because the dependent variable is dichotomous with a "yes" or "no" response. Similar to logistic regression, CHAID predicts the probability of an event occurring, but the method relies on different assumptions and properties and uses segmentation modeling to achieve the task. CHAID divides a population into increasingly homogenous segments that differ based on the dependent variable—in this case, whether the article describes a TASER-proximate death (Jones, Harris, Fader, and Grubstein 2001). The resulting segments are mutually exclusive and exhaustive. As the analysis proceeds, the best predictor is selected among a particular subgroup of cases based on chi-square analyses.

CHAID analysis was employed in this study because it offers several practical advantages. First, CHAID is useful for identifying different sets of predictors for subsets of a population (Jones et al., 2001). For example, predictors of a fatal outcome may be different for intoxicated and sober suspects, and CHAID facilitates the identification and exploration of these interactions. Second, the use of multiple methods allows researchers to "triangulate" their findings or to identify inconsistencies across techniques. Third, CHAID has been used in the study of police practices previously, including the use of force and arrest decisions (Kane, 1999; White, 2002, 2006, 2008). Finally, an added benefit of CHAID is the user-friendly visual representation of complex analyses and relationships for practitioners and policymakers.

## Findings

Table 1 provides a frequency distribution for the basic content of all LexisNexis and *New York Times* articles about the TASER from January 2002 through December 2006. LexisNexis articles account for 84.8% ($n$ = 586) of the cases, whereas the remaining 15.2% ($n$ = 105) of the cases were derived from the *New York Times*. Overall, 75.4% of the news reports describe a specific incident in which the police used the TASER on a suspect. The volume of news publications about the TASER increased from 24 (3.5%) in 2002 to 179 (25.9%) in 2004, and then peaked at 338 articles (48.9%) in 2006. The regions of the country that were the source of the most articles are the Southeast ($n$ = 248) and the West ($n$ = 190). The Northeast has produced the fewest articles relating to the TASER, accounting for 8.4% ($n$ = 58) of cases.[15] As a whole, the news reports offered considerable detail about the circumstances under which officers used the device in the field, the events leading up to the deployment, and the behavior and characteristics of the suspects and officers. However, a relatively small proportion of the articles also discussed when it is appropriate for police officers to use the weapon (17.4%) and the physiological effects (or effectiveness) of the TASER (18.0%).

**TABLE 1**

15. Many articles published in the New York Times were not counted in the Northeast because they duplicated LexisNexis articles that originated in other regions of the country. The states that generated the most news coverage of the TASER are Florida (n = 122), California (n = 77), and Colorado (n = 60; not shown in Table 1). Altogether, these three states accounted for 37.5% of non-duplicate news reports about the TASER during the study period.

**Content Analysis of LexisNexis and *New York Times* Articles about the TASER, 2002–2006**

| Variable | Percent | Valid Cases |
|---|---|---|
| *Source of the article* | | |
| LexisNexis | 84.8 | 586 |
| New York Times | 15.2 | 105 |
| Total | 100.0 | 691 |
| *Type of Story* | | |
| Duplicate case or not a TASER deployment* | 24.6 | 170 |
| Total | 100.0 | 691 |
| *Did the TASER deployment result in death?* | | |
| Yes | 36.1 | 188 |
| No | 63.9 | 333 |
| Total | 100.0 | 521 |
| *Did the article discuss when it is appropriate for police to use the TASER?* | | |
| Yes | 17.4 | 120 |
| No | 82.6 | 571 |
| Total | 100.0 | 691 |
| *Did the article discuss the physiological effects (or effectiveness) of the TASER?* | | |
| Yes | 18.0 | 124 |
| No | 82.0 | 567 |
| Total | 100.0 | 691 |
| *Year of publication* | | |
| 2002 | 3.5 | 24 |
| 2003 | 6.4 | 44 |
| 2004 | 25.9 | 179 |
| 2005 | 15.3 | 106 |
| 2006 | 48.9 | 338 |
| Total | 100.0 | 691 |
| *Region of country* | | |
| Northeast | 8.4 | 58 |
| Southeast | 35.9 | 248 |
| Midwest | 18.8 | 130 |
| West | 27.5 | 190 |
| Not in United States/Not applicable | 9.4 | 65 |
| Total | 100.0 | 691 |

### *Comparative Findings*

Table 2 provides a comparison of news reports describing fatal and nonfatal TASER deployments during the 5-year study period (2002–2006). The variables in the analysis were separated into two categories: incident and suspect characteristics. Several differences are noteworthy. The articles describing TASER incidents that resulted in death were more likely to involve situations in which the police officer used the weapon more than once on the same suspect (50.8% vs. 23.3% for nonfatal cases), suspect resistance continued after TASER deployment (38.8% vs. 22.7% for nonfatal), the suspect was handcuffed (i.e., in custody) when the TASER was deployed (22.3% vs. 6.1% for nonfatal cases), and the suspect was transported to the hospital

(58.6% vs. 29.8% for nonfatal cases).[16] Table 3 shows the relationship between the number of times the TASER is used on the same suspect and a fatal outcome in the news media. Approximately one fourth of the articles that describe incidents where the TASER was used once resulted in suspect death. In the articles where the TASER was used repeatedly on the same suspect, fatal outcomes increased considerably (50–55% for 2 or 3 deployments; 60% for 4 or more deployments).

**TABLE 2**

**Content Analysis of News Reports Describing Police TASER use: A Comparison of Fatal and Nonfatal TASER Deployments, 2002–2006**

| | Nonfatal | | Fatal | |
|---|---|---|---|---|
| **Variables** | **Percentage** | **Valid Cases** | **Percentage** | **Valid Cases** |
| *Incident characteristics (i.e., circumstances)* | | | | |
| Officer used TASER more than once | 23.3% | 322 | 50.8% | 181 |
| Suspect continued to resist | 22.7% | 326 | 38.8% | 178 |
| Other less lethal weapon used before | 16.2% | 327 | 22.5% | 182 |
| Other less lethal weapon used after | 26.1% | 326 | 31.0% | 184 |
| Suspect in custody when TASER used | 6.1% | 330 | 22.3% | 188 |
| Suspect taken to hospital | 29.8% | 332 | 58.6% | 186 |
| Backup officer(s) present at the scene | 71.9% | 331 | 72.2% | 180 |
| *Suspect characteristics* | | | | |
| Minor or senior citizen | 9.6% | 332 | 4.3% | 188 |
| Male suspect | 91.9% | 332 | 97.9% | 188 |
| Intoxicated from alcohol | 10.5% | 333 | 8.0% | 187 |
| Under influence of drugs | 6.3% | 332 | 23.7% | 186 |
| Emotionally disturbed or mentally ill | 22.9% | 332 | 36.2% | 188 |
| Armed with weapon | 37.0% | 332 | 16.5% | 188 |
| Assaulted an officer | 29.7% | 330 | 37.1% | 186 |
| Verbal or passive resistance | 26.3% | 327 | 22.2% | 185 |

News reports describing fatal and nonfatal TASER incidents also differed in terms of the characteristics of suspects (see Table 2).[17] Suspects in articles that described fatal incidents were more often under the influence of drugs (23.7% vs. 6.3%) and mentally ill or emotionally disturbed (36.2% vs. 22.9%), but they were less likely to be armed with a weapon (16.5% vs. 37.0%). A word of caution is warranted regarding the drug and mental illness variables. Police reports and police officer statements are the primary source of information used by newspaper reporters to document these suspect characteristics. As a result, these variables likely reflect the police officer's assessment of the suspect at the time of the incident based on his or her per-

16. Although approximately one third of the articles mentioned that the suspect had attacked the officer, whether or not the officer was injured (and the extent of that injury) rarely was described.

17. Nine percent of the articles identified the suspect's race or ethnicity (n = 51). Of those 51 articles, 16 involved black suspects, 21 involved Hispanic suspects, and 13 involved white suspects. The failure to report race and ethnicity did not extend to other demographic characteristics, as three quarters of the articles identified the suspect's gender and more than 60% discussed the suspect's age.

sonal observations and on information collected at the scene (e.g., from family members and witnesses).[18] This information is not based on more definitive tests such as a urinalysis, blood or hair analysis, or clinical assessments, and the reader should bear this in mind. The next section explores whether these incident and suspect characteristics were significant predictors of TASER fatalities in the media when controlling for other factors through multivariate analysis.

**TABLE 3**

**Content Analysis of LexisNexis and *New York Times* Articles, 2002–2006: Number of Times Police Used the TASER by Suspect Death (Number of Valid Cases in Parentheses)**

| Number of Times Police Used the TASER on a Suspect (i.e., number of cycles) | Suspect Death | |
|---|---|---|
| | No | Yes |
| Once | 73.5% (247) | 26.5% (89) |
| Twice | 45.4% (44) | 54.6% (53) |
| Three times | 50.0% (15) | 50.0% (15) |
| Four or more times | 40.0% (16) | 60.0% (24) |
| Total | 64.0% (322) | 36.0% (181) |

18. Interestingly, a large portion of the articles did mention the type of drug the suspect was abusing, typically cocaine or methamphetamine.

### *Multivariate Findings*

Table 4 displays the results from a logistic regression model predicting TASER-related deaths in the news media using suspect and incident circumstances as covariates. The likelihood ratio test for the analysis was significant and the estimate for Nagelkerke *R*-squared indicates that the model accounts for 33.7% of the variation in the outcome variable.

**TABLE 4**

**Logistic Regression Model Predicting Police TASER Deployments Resulting in Suspect Death**

| Variables | B | S.E. | Exp(B) |
|---|---|---|---|
| *Incident characteristics* | | | |
| Number of times TASER used | 0.018 | .038 | 1.018 |
| Suspect continued to resist after TASER | 0.820 | .274 | 2.270** |
| Other less lethal weapon used before | –0.028 | .320 | 0.972 |
| Other less lethal weapon used after | 0.139 | .271 | 1.149 |
| Suspect in custody when TASER used | 1.195 | .358 | 3.302** |
| Suspect taken to hospital | 1.217 | .250 | 3.379*** |
| Backup officer(s) present at the scene | –0.429 | .272 | 0.651 |
| *Suspect characteristics* | | | |
| Age of suspect (minor or senior citizen) | –0.491 | .484 | 0.612 |
| Gender of suspect | 1.679 | .698 | 5.361* |
| Intoxicated from alcohol | –0.892 | .433 | 0.410* |
| Under influence of drugs | 1.414 | .351 | 4.112*** |
| Emotionally disturbed or mentally ill | 0.562 | .261 | 1.754* |
| Armed with a weapon | –1.083 | .323 | 0.338*** |
| Level of resistance before TASER (none or verbal) | | | |
| Passive physical resistance | 0.134 | .347 | 1.143 |
| Active physical | –0.306 | .318 | 0.736 |
| Active potentially lethal | –0.458 | .442 | 0.632 |
| Constant | –2.740 | .740 | 0.065 |
| Log likelihood | 477.423 | | |
| $R^2$ (Nagelkerke) | .337 | | |
| Chi square | 131.794 | | |
| d.f. | 16.000 | | |
| Significance | .000 | | |
| *N* | 470.000 | | |

Notes. S.E. = standard error.
*$p < .05$. **$p < .01$. ***$p < .001$.

Predictors of articles describing TASER deployments resulting in suspect death include the following:

- Suspect resistance after the weapon was deployed (the likelihood of death was two times greater)
- Suspect was handcuffed (i.e., in custody) when the weapon was deployed (suspect death was more than three times as likely)
- Suspect was transported to the hospital after the TASER was deployed (the likelihood of death was more than three times greater)
- Suspect was under the influence of drugs (suspect death was four times more likely)
- Suspect was emotionally disturbed or mentally ill (suspect death was nearly twice as likely)[19]

Two factors were associated with a *reduced* likelihood of the article describing an incident resulting in death: the suspect being under the influence of alcohol and the suspect being armed with a weapon (in more than half of those articles, the weapon was a knife or other cutting instrument; 23% were armed with a gun, however). Several variables that were not statistically significant are noteworthy, including the number of times the TASER was used on the suspect, the use of other less lethal weapons, the suspect's age, and the level of resistance before the TASER was deployed.

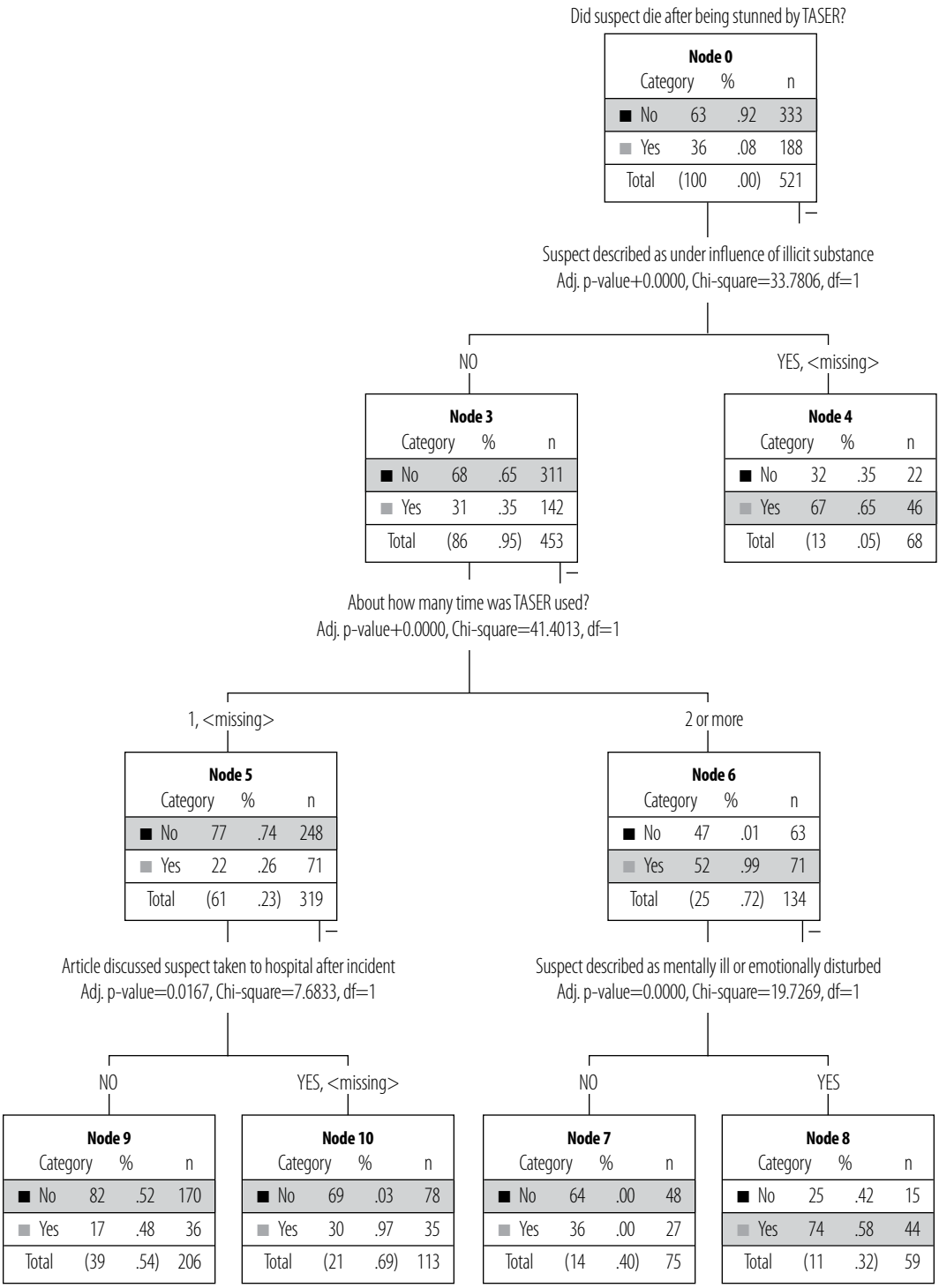
The CHAID findings are displayed in Figure 1. The top cell (or root node) in the CHAID tree includes all 521 articles and highlights the 36.1% in which the suspect died after being shocked with the TASER. The initial split was made based on whether the suspect described in the article was under the influence of drugs (hereafter referred to as "high"; this classification does not include alcohol), thus separating the 521 TASER articles into two cells as follows: those in which the suspect was not high ($n$ = 453; 86.9% of the total) and those in which the suspect was high ($n$ = 68; 13.1% of the total). The splits in CHAID are made according to differences in the dependent variable: In articles with high suspects, death occurred 67.7% of the time, compared with death occurring 31.4% of the time in articles with suspects who were not high. Another split was made from the not-high cell based on the number of times the TASER was used on a suspect: In articles in which the suspect was not high and the TASER was deployed repeatedly, death occurred 52.9% of the time; compared with suspect death occurring in 22.3% of the articles in which the TASER was deployed once on suspects who were not high.

The next split was made from the cell indicating that the TASER was used more than once. This split is based on whether the suspect was mentally ill or emotionally disturbed: In articles in which the suspect was not high during the encounter but was emotionally disturbed, and in which the TASER was used more than once, suspect fatalities occurred 74.6% of the time, compared with suspect death occurring in 36.0% of the articles in which the suspect was not emotionally disturbed or high (and the TASER was used more than once). The final split is made

19. Suspect gender was statistically significant ($p > .05$), but there were 31 articles describing a female suspect, and 4 involved a TASER-proximate death. We also ran the model without the suspect gender variable and the results were unchanged.

**FIGURE 1**

**CHAID Analysis with TASER Articles**



from the cell indicating that the TASER was used only once, based on whether the suspect was transported to the hospital or not. In articles in which the suspect was not high and was shocked by the TASER once but was taken to the hospital, suspect death occurred 30.9% of the time, compared with death occurring in 17.5% of the articles in which the suspect was not high, the TASER was deployed only once, and the suspect was not transported to the hospital.

Table 5 provides a summary of the termination cells for the CHAID tree, which features the predictors, cell size, percentage of the total cases, and percentage of the dependent variable. Five termination cells are listed, with the percentage of articles describing suspect death ranging from 17.5% to 74.6%. The CHAID termination cells call attention to a relatively large group of articles (40% of the total) with infrequent suspect deaths (17.5% describing a death), a similar-sized group in which death occurred in one third of the articles (the second and third subgroup combined), and two groups of articles in which suspect death is very common, occurring in 68–75% of the articles. The high-risk groups of articles are characterized by suspects who were under the influence of drugs or emotionally disturbed, and they were subjected to more than one TASER deployment.

**TABLE 5**

**Summary of CHAID Analysis Termination Groups**

| Article describing a TASER-proximate death indicates… | Number of Articles | % of Total | % Describing Death |
|---|---|---|---|
| 1. Suspect not under influence of illicit drug; TASER deployed once; suspect not taken to hospital | 206 | 39.5% | 17.5% |
| 2. Suspect not under influence of illicit drug; TASER deployed once; suspect taken to hospital | 113 | 21.7% | 31.0% |
| 3. Suspect not under influence of illicit drug; TASER deployed more than once; suspect not emotionally disturbed | 75 | 14.4% | 36.0% |
| 4. Suspect under the influence of illicit substance | 68 | 13.1% | 67.6% |
| 5. Suspect not under influence of illicit drug; TASER deployed more than once; suspect is emotionally disturbed | 59 | 11.3% | 74.6% |

## Discussion

### *Notable Nonsignificant Characteristics*

It might be useful to explore the implications of the findings by first considering several presumably important characteristics that did not emerge as statistically significant.[20] One controversy surrounding the TASER involves use of the device on vulnerable populations, notably the young and the elderly. Arguably, the physiological makeup of both the young and elderly could elevate the risk of potential negative health effects following TASER deployment. That is, the elderly are more likely to suffer from physical ailments—particularly heart problems—whereas

20. These characteristics are notable either because of prior research on TASER use or because conventional wisdom suggests they might be important.

increased risks for minors often stem from their low body weight and immature physical development. The findings indicate, however, that the suspect's age—measured many different ways—was not predictive of an article describing a TASER-related death. This finding may be a result of the small number of cases that involve those vulnerable populations because only 40 articles described an incident involving a minor or elderly person, and approximately 4% of the TASER-proximate death articles involved such an individual.

Second, some attention has focused on whether the risk of suspect death increases when the TASER is used in conjunction with other less lethal alternatives, such as pepper spray or the baton, often because one of the devices was ineffective in subduing the suspect. The use of other less lethal devices was included as three separate dichotomous variables (run independently), and although nearly 40% of the news reports described the use of another less lethal device, none of the variables was statistically significant. Last, there has been some disagreement about the appropriate placement of the TASER on the force continuum and, more specifically, whether the device should be used in response to passive resistance by a suspect. Approximately one quarter of the news reports described a case that involved a suspect who gave only verbal or passive resistance, but the variable was not predictive of an article describing a fatality.

***Significant Predictors***

The most important predictor of an article describing a TASER-proximate death was the suspect being the under the influence of drugs. In the logistic regression, when the suspect was high, the article was four times as likely to describe a fatality. In the CHAID model, the "suspect high" variable served as the first split and isolated an end group in which more than two thirds of the articles involved TASER-proximate deaths. This finding is consistent with prior research examining coroners' reports that has documented a link between drug use, TASER deployments, and increased risk of death. Several possible explanations for this relationship are given here. First, despite its recurrent theme in the research, it is conceivable that the relationship between drug use and suspect death is spurious. In many cases, a suspect under the influence of illegal drugs is shocked with the TASER by police and death does not occur. It is possible that some other intervening variable, that often coincides with drug use, increases the risk of death.

Second, the relationship between drug use and increased risk of death could be related to the individual's behavior following the TASER deployment. Continued resistance by the suspect after TASER deployment also emerged as a significant predictor of articles describing fatalities. Suspects who are high might be more likely to continue resisting after the TASER is deployed. This continued physical exertion, which is a result of impaired judgment, could place enough stress on the body that—when combined with the effects of the drug—induces severe physiological responses such as excited delirium. Excited delirium (ED) syndrome is defined as:

> The sudden death of an individual, during or following an episode of excited delirium, in which an autopsy fails to reveal evidence of sufficient trauma or natural disease to explain the death. In virtually all such cases, the episode of excited delirium

> [defined as a transient disturbance in consciousness or cognition involving violent behavior] is terminated by a struggle with police or medical personnel, and the use of physical restraint (DiMaio and DiMaio, 2006 :1).

Since 1984, more than 130 cases of fatal, cocaine-associated ED have been reported in the medical and forensic literature, and nearly all have involved use of force (usually by police, although some involve medical staff at psychiatric hospitals; Sztajnkrycer and Baez, 2008). DiMaio and DiMaio (2006: 4) explained that most deaths attributed to ED involve cocaine or methamphetamine abuse and that death is not caused by police use of force; rather, death is likely a product of, "normal physiological reactions of the body to stress gone awry, and to the use of stimulants." In their review of 74 TASER-proximate death cases, DiMaio and DiMaio (2006: 42) concluded that these deaths "almost invariably describe individuals in excited delirium, high on illegal stimulants who die not at the time they are 'Tasered' but sometime after."

A third possible explanation for the drug-use finding involves the combined effect of the illicit drugs and the TASER shock to the suspect's system. Illegal drugs have a wide range of potentially harmful effects on the human body, which include the functioning of major organs such as the brain and heart, the central nervous system, respiration, circulation, and metabolism. These negative effects—which by themselves can be fatal—might become more lethal when combined with the effects of one or more shocks from the TASER. Also, the combined effect of the TASER and an illicit drug may vary by the type of drug used. For example, results from this study suggest that alcohol intoxication has an inverse relationship with the probability of an article describing a TASER-proximate death. Perhaps the risk of death is greater with stimulants, such as methamphetamines and cocaine (by far, the most common type of drugs described in the news reports), than with depressants such as alcohol.

Mental or emotional distress was also a significant predictor in the multivariate models. When the suspect was described as being mentally ill and in crisis, there was a greater probability that the article involved a TASER-proximate death. In particular, the CHAID analysis isolated a small group of articles ($n$ = 59; 10% of the articles examined) in which the suspect was emotionally disturbed or mentally ill and the officers used the TASER more than once. Three quarters of these articles involved a TASER-proximate death. Much like suspects who are under the influence of drugs, those who are mentally ill and in crisis might be less likely to acquiesce to police authority (i.e., continued resistance) because of their emotional state.[21] Continued physical resistance might then prompt the police to apply more cycles from the TASER. The number of times the device is used on a suspect has received considerable attention from civil liberties and human rights organizations because of the potential for excessive force (i.e., Amnesty International indicated that the device could be used to torture a suspect) and because of the risk of injury or death. Vilke and Chan (2007: 353) concluded, "the effect of recurrent or prolonged taser discharges remains unclear." The findings here raise the possibility that the impact of multiple shocks might not be consistent for all suspects and that the risk of death

21. Recall that continued resistance by itself was a significant predictor in the logistic regression analysis.

might be greater for certain subgroups, such as those who are mentally ill. Moreover, suspects who are mentally ill could also have psychotropic drugs in their systems, which increases the risk of death. DiMaio and DiMaio (2006) noted that therapeutic drugs, such as antidepressants and antipsychotics often prescribed to the mentally ill, have been linked to ED.

Several other predictors were associated with a greater likelihood that an article described a fatality. First, if the suspect was transported to the hospital, then there was an increased likelihood that the article described a TASER-proximate death. This finding makes intuitive sense, as suspects who later died would have exhibited symptoms at the scene that led to their transport to the hospital.[22] Second, nearly one quarter of the articles describing a TASER-proximate death involved a suspect in custody. Most of these suspects were handcuffed or being detained in a holding cell. The nature of this relationship is unclear, particularly because in-custody deaths are rare. A recent Bureau of Justice Statistics (2007) study documented a total of 2,002 arrest-related (or in-custody) deaths in the United States from 2003 to 2005. Given that police in the U.S. make approximately 1.3 million arrests each year (Bureau of Justice Statistics, 2005), the number of in-custody deaths during that 3-year period represents less than 0.5% of arrests. Nevertheless, when a suspect dies in police custody, the case generates substantial controversy and often raises questions about excessive force and police brutality. The finding here may simply be a consequence of the "newsworthiness" of in-custody deaths. However, it is worth considering whether use of the device with handcuffed suspects is a health risk in cases in which the suspect's air passages are already restricted (e.g., when the individual is lying on his stomach).

Third, the suspect being armed with a weapon is inversely related to the likelihood that the article describes an incident resulting in death. This finding too may be a consequence of media reporting but in a slightly different way. Although much of the news reporting can be characterized as negative or critical of the TASER, some articles were decidedly more "pro-TASER."[23] In fact, 35 articles describe incidents in which the suspect was armed with a gun (and 79 described suspects armed with knives or other cutting instruments). The emergence of the "suspect armed" variable may be an artifact of this second type of news report, which includes articles that describe "successful" TASER deployments involving armed and dangerous suspects who were thwarted by the less lethal device.

### *Implications for Policing*

The implications of this study for police departments center on four issues. First, substantial variation exists across departments with regard to policy, use, and reporting of TASER deployments. Variation in critical issues—such as when the TASER should be used and who it should be used against—has resulted in controversial incidents and could be related to an increased likelihood of fatal outcomes. Although the limited scope of research on the TASER prohibits

22. Some police departments, such as the New York City Police Department, require that all suspects who are shocked with a TASER be transported to the hospital for examination. The recent guidelines by PERF and IACP make similar recommendations.

23. We make this "anti-TASER" assertion based on the content analysis of more than 500 news articles.

any sort of discussion related to "best practices," the PERF and the International Association of Chiefs of Police (IACP) offer model policy guidelines involving TASER use. In the absence of "best practices," we believe departments would be well advised to consult these guidelines carefully when crafting their own policies. Adherence to PERF/IACP standards regarding suspect resistance level, use against vulnerable persons, multiple deployments, and reporting practices will likely reduce the potential for controversial and inappropriate deployments.

Second, police departments should routinely collect and analyze data on their officers' TASER use, and they should consider making that data publicly available. With regard to the first point, many police departments require that officers file reports when any degree of force is used, but not all departments do. Kane (2007: 775) noted that the primary motivations for collecting data on use of force is to identify problem officers and he explained that to ensure that "police departments that collect data on their practices can identify far better than others policies that work, policies that do not work, and areas of organizational behavior that should be regulated." The second point is more contentious—that police should make those data available to the public. Although police are traditionally reluctant to release data, especially sensitive information such as use-of-force data, there are two reasons for public release of TASER data. First, there is a critical need for transparency in this area. Use of force in general, and use of the TASER specifically, can cause long-term damage to a department's relationship with the community. By releasing data to the community, the department can convey a powerful message of accountability and openness. Moreover, Kane argued that police have *an obligation* to share such data because the public funds and "owns" all information generated by the department:

> Currently, however, police departments operate under a paradigm where the burden of proof rests on the members of the public to justify adequately why they want access to police data. The paradigm should change such that the burden of proof is on police departments to justify why the information should be kept unavailable to the public. Until this paradigm shifts, police accountability in the United States will remain stalled, and members of the public will continue to be harmed unnecessarily by the police (Kane, 2007: 779).

Third, police departments should seek partnerships with local researchers to study use and deployment of the TASER. Departments could continue to explore some of the intuitive and counterintuitive findings from this study. In particular, departments could explore the potential differential effects of the TASER with certain types of drugs. Is the device more or less effective on suspects under the influence of cocaine, methamphetamine, or alcohol? Are injuries or medical emergencies more common with certain types of drugs? And how does physical exertion and active resistance interact with these substances? Partnerships between police and local researchers could also explore tactical issues such as multiple deployments, the use of multiple less-lethal weapons, and the so-called "velcro effect"—where simply showing the device may produce

suspect compliance.[24] Voluntary release of data by police, coupled with analysis by independent researchers, would move knowledge in the field forward and represent a significant step toward transparency with possibly profound implications for police–community relations.

Fourth, police departments should become familiar with the medical research on the effects of the TASER and excited delirium. Officers typically receive training on how to use the TASER in the academy and during in-service "refresher" courses. Information pertaining to medical risks, physiological responses, and high-risk medical situations should be incorporated into these training sessions. In other words, training should move beyond the "tasing" of volunteer police recruits while their fellow classmates look on in amusement—a traditional and still popular method for introducing recruits to the TASER. Clearly, the focus of this training should remain on operational and tactical issues, but trainers should also provide officers with state-of-the-art medical information so that, once on the street, officers are keenly aware of the potential risks and can quickly identify medical emergencies as they occur.

***Research and Policy Implications***

There are also some important next steps for researchers and funding agencies. First, additional studies should explore the value of media data for studying police field behavior, especially use of force. One must be wary of many biases; nevertheless, research has failed to document the actual extent or pervasiveness of bias. If concerns over these biases can be properly addressed, this methodological approach could then be extended to the study of other types of police field behavior where data are traditionally difficult to obtain (e.g., automobile pursuits and deadly force).

Second, researchers and government agencies would benefit from a continued dialogue on the creation of a national use-of-force reporting system, which would include both lethal and less lethal force incidents (e.g., TASER deployments). Hickman, Piquero, and Garner (2008) made important strides in this area by highlighting the shortcomings of the Police–Public Contact Survey, and policy essays by Klinger (2008) and Smith (2008) offered thoughtful guidance on how best to initiate and structure such a system.[25] Clearly, our understanding of physiological, tactical, and policy issues associated with TASER use would expand immeasurably through analysis of incidents in a national reporting system.

Third, the call for more research in this area coincides with the increased availability of funding through the Economic Recovery Act of 2009. Although the NIJ continues to be a viable source of funding for police research (with a track record in supporting TASER research), social scientists should seek opportunities in nontraditional venues, such as the National Science Foundation, National Institutes of Health, and the Centers for Disease Control and Prevention. The study of CEDs generally, and the TASER specifically, has been fragmented often

24. We thank one of the anonymous reviewers for introducing us to this term.

25. Hickman et al. (2008) also noted that other nations such as New Zealand have already developed national use-of-force reporting systems that the United States could model.

with little interaction among the relevant fields. Partnerships among social scientists, physicians (or others in the medical field), pharmacologists, psychiatrists, and police practitioners could broaden this line of research through empirical studies that are both comprehensive and multidisciplinary. Such an approach would be ideal for examining the perceived relationships between mental illness, substance abuse, active resistance, multiple TASER deployments, and an increased risk of death.

## References

Amnesty International. 2007. Amnesty International's concerns about TASER use: Statement to the U.S. Justice Department inquiry into deaths in custody. London, UK: Amnesty International.

Bittner, Egon. 1970. *The functions of police in modern society*. Washington, DC: U.S. Government Printing Office.

Bureau of Justice Statistics. 1999. *Contacts between police and the public: Findings from the 1999 national survey*. Washington, DC: U.S. Department of Justice.

Bureau of Justice Statistics. 2005. *Contacts between police and the public: Findings from the 2002 national survey*. Washington, DC: U.S. Department of Justice.

Bureau of Justice Statistics. 2007. *Arrest-related deaths in the United States, 2003–2005*. Washington, DC: U.S. Department of Justice.

Canadian Police Research Centre. 2005. *Review of conducted energy devices*. Ottawa, Ontario: Author.

Chermak, Steven. 1995. Image control: How police affect the presentation of crime news. *American Journal of Police*, XIV: 21–43.

Chermak, Steven, Edmund McGarrell, and Jeff Gruenewald. 2006. Media coverage of police misconduct and attitudes toward police. *Policing: An International Journal of Police Strategies and Management*, 29: 261–281.

DiMaio, Theresa G. and Vincent J.M. DiMaio. 2006. *Excited delirium syndrome: Cause of death and prevention*. New York: Taylor and Francis.

Fyfe, James J. 1988. Police use of deadly force: Research and reform. *Justice Quarterly*, 5: 165–205.

Gauvin, Roy. 1994. Oleoresin capsicum spray: A progress report. Portland, OR: Portland Police Department.

Geller, William and Michael S. Scott. 1992. *Deadly force: What we know*. Washington, DC: Police Executive Research Forum.

Hickman, Matthew J., Alex R. Piquero, and Joel H. Garner. 2008. Toward a national estimate of police use of nonlethal force. Criminology & Public Policy, 7: 563–604.

Ho, Jeffrey D., James R. Miner, Dhamunjaya Lakireddy, Laura L. Bultman, Laura Heegaard, and William G. Heegaard. 2006. Cardiovascular and physiologic effects of conducted electrical weapon discharge in resting adults. Academic Emergency Medicine, 6: 239–243.

International Association of Chiefs of Police (IACP). 2005. *Electro-muscular disruption technology (EMDT): A nine-step strategy for effective deployment*. Alexandria, VA: Author.

Jenkinson, Emma, Clara Neeson, and Anthony Bleetman. 2006. The relative risk of police use-of-force options: Evaluating the potential for deployment of electronic weaponry. *Journal of Clinical Forensic Medicine,* 13: 229–241.

Joint Non-Lethal Weapons Human Effects Center of Excellence (HECOE). 2005. *Human effectiveness and risk characterization of the electromuscular incapacitation device—A limited analysis of the TASE*R. Brooks Air Force Base, TX: Air Force Research Laboratory.

Jones, Peter, Phillip Harris, Jamie Fader, and Lorie Grubstein. 2001. Identifying chronic juvenile offenders. *Justice Quarterly*, 18: 479–507.

Kaminksi, Robert J., Steven M. Edwards, and James W. Johnson. 1998. The deterrent effects of oleoresin capsicum on assaults against police: Testing the velcro-effect hypothesis. *Police Quarterly*, 1: 1–20.

Kaminksi, Robert J., Steven M. Edwards, and James W. Johnson. 1999. Assessing the incapacitative effects of pepper spray during resistive encounters with the police. *Policing: An International Journal of Police Strategies and Management*, 22: 7–29.

Kane, Robert J. 1999. Patterns of arrest in domestic violence encounters: Identifying a police decision-making model. *Journal of Criminal Justice,* 27: 65–79.

Kane, Robert J. 2007. Collect and release data on coercive police actions. *Criminology & Public Policy,* 6: 773–780.

Klinger, David A. 2008. On the importance of sound measures of forceful police actions. *Criminology & Public Policy,* 7: 605–617.

Kornblum, Ronald N. and Sara K. Reddy. 1991. Effects of the Taser in fatalities involving police confrontation. *Journal of Forensic Science*, 36: 434–448.

Levine, Saul D., Christian M. Sloane, Theodore C. Chan, Gary M. Vilke, and James V. Dunford. 2005. Cardiac monitoring of subjects exposed to the Taser. *American Emergency Medicine*, 13: S47.

Lumb, Richard C. and Paul C. Friday. 1997. Impact of pepper spray availability on police officer use of force decisions. *Policing: An International Journal of Police Strategies and Management*, 20: 173–185.

McDaniel, Wayne C., Robert A. Stratbucker, Max Nerheim, and James E. Brewer. 2005. Cardiac safety of neuromuscular incapacitating defense devices. *Pacing and Clinical Electrophysiology*, 28: 284–287.

McDaniel, Wayne C., Robert A. Stratbucker, and Rick Smith. 2000. *Surface application of Taser stun guns does not cause ventricular fibrillation in canines*. Proceedings of the Annual International Conference of the IEEE EMBS, Chicago, IL.

National Advisory Commission on Civil Disorder (Kerner Commission). 1968. *Report of the National Advisory Commission on Civil Disorder*. Washington, DC: U.S. Government Printing Office.

National Institute of Justice. 2008. *Study of deaths following electromuscular disruption*: *Interim report.* Washington, DC: Office of Justice Programs, U.S. Department of Justice.

Nowicki, Edward. 1993. Oleoresin capsicum: A non-lethal force alternative. *Law Enforcement Technology*, 20: 24–27.

"Officer charged in death of Tasered man." 2008. *CNN*, August 13. Retrieved December 22, 2008 from cnn.com/2008/CRIME/08/13/la.taser.death/index.htm.

Ordog, Gary, Jonathan Wasserberger, Theodore Schlater, and Subramanium Balasubramanium. 1987. Electronic gun (taser) injuries. *Annals of Emergency Medicine*, 16: 73–78.

Police Executive Research Forum (PERF). 2005. *PERF conducted energy device policy and training guidelines for consideration*. Washington, DC: PERF Center on Force and Accountability.

Ready, Justin, Michael D. White, and Christopher F. Fisher. 2008. Shock value: A comparative analysis of news reports and official police records on TASER deployments. *Policing: An International Journal of Police Strategies and Management*, 31: 148–170.

Roy, O.Z. and Andrew Podgorski. 1989. Tests on a shocking device—The stun gun. *Medical and Biological Engineering and Computing,* 27: 445–448.

Seattle Police Department. 2004. *Seattle Police Department TASER use and deployment fact sheet*. Retrieved November 11, 2008 from taser.com/documents/seattlepduse.pdf.

Smith, Michael R. 2008. Toward a national use-of-force collection system: One small and focused step is better than a giant leap. *Criminology & Public Policy,* 7: 619–627.

Smith, Michael R. and Geoffrey P. Alpert. 2000. Pepper spray: A safe and reasonable response to suspect verbal resistance. *Policing: An International Journal of Police Strategies and Management*, 23: 233–245.

Smith, Michael R., Robert J. Kaminski, Jeffrey Rojek, Geoffrey P. Alpert, and Jason Mathis. 2007. The impact of conducted energy devices and other types of force and resistance on officer and suspect injuries. *Policing: An International Journal of Police Strategies and Management*, 30: 423–446.

Stratbucker, Robert, Richard Roeder, and Max Nerheim. 2003. *Cardiac safety of high voltage Taser X26 waveform*. Proceedings of the 25th Annual International Conference of the IEEE EMBS, Cancun, Mexico.

Strote, Jared, Rich Campbell, John Pease, Shane Hamman, and Range Hutson. 2006. The role of Tasers in police restraint-related deaths. *Annals of Emergency Medicine*, 46: S85.

Surette, Ray. 1998. *Media, crime, and criminal justice: Images and realities*. Belmont, CA: Wadsworth.

Sztajnkrycer, Matthew D. and Amado A. Baez. 2008. *Excited delirium and sudden unexpected death*. Retrieved January 9, 2008 from acep.org.

TASER International. 2006. *TASER non-lethal weapons: Field data as of July 2006*. Retrieved September 23, 2006 from taser.com/facts/documents/Injury_Reduction_Stats_2Q_2006.ppt.

Tuch, Steven A. and Ronald Weitzer. 1997. The polls-trends: Racial differences in attitudes toward the police. *Public Opinion Quarterly*, 61: 642–663.

Vilke, Gary M. and Theodore C. Chan. 2007. Less lethal technology: Medical issues. *Policing: An International Journal of Police Strategies and Management*, 30: 341–357.

Wake Forest University Baptist Medical Center. 2007. *Press release: Nationwide independent Taser study results suggest devices are safe*. Retrieved October 27, 2007 from 1.wfubmc.ed/news/articleID=2165.

Walker, Samuel and Charles M. Katz. 2002. *The police in America: An introduction*. New York: McGraw Hill.

White, Michael D. 2002. Identifying situational predictors of police shootings using multivariate analysis. *Policing: An International Journal of Police Strategies and Management,* 25: 726–751.

White, Michael D. 2006. Hitting the target (or not): Comparing characteristics of fatal, injurious, and non-injurious police shootings. *Police Quarterly*, 9: 303–330.

White, Michael D. 2008. Identifying good cops early: Predicting recruit performance in the academy. *Police Quarterly,* 11: 27–49.

White, Michael D. and Justin Ready. 2007. The TASER as a less-lethal force alternative: Findings on use and effectiveness in a large metropolitan police agency. *Police Quarterly*, 10: 170–191.

White, Michael D. and Justin Ready. 2009. The impact of the TASER on suspect resistance: Identifying predictors of effectiveness. *Crime & Delinquency*. Pre-published in OnlineFirst February 26, 2008 DOI 10.1177/0011128707308099.

Wrobeleski, Henry M. and Karen M. Hess. 2003. *Police operations*. Belmont, CA: Wadsworth.

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