Exploring the Impact of Department Policy on TASER-Proximate Arrest Related Deaths

by

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ABSTRACT

The controversy over law enforcement use of TASER devices and the potential for the devices to cause death has proliferated in recent years. In 2005 the Police Executive Research Forum (PERF) and International Association of Chiefs of Police (IACP) published national-level policy guidelines for the use of TASER devices, with one of the goals being to reduce the occurrence of deaths proximal to their use. What remains unknown in regard to these guidelines is whether or not departments that adhere to these guidelines are experiencing fewer TASER-proximate arrest related deaths (ARDs) than departments who are not. This study seeks to determine preliminary answers to this question by conducting a comparison of the policies of departments with three or more TASER-proximate ARDs to a matched sample of police departments that deploy the TASER, but have no or one to two TASER-proximate ARDs. The departments were matched on the number of full time sworn officers, geography (region, division, or state), and department type. Once matched, all department policies were coded based on how closely they adhered to the following areas of PERF and IACP guidelines: use of force against vulnerable/at risk populations, policies governing the TASER device deployment, training, reporting, and post-exposure requirements.

Study departments when compared to matched departments had a greater number of policies with higher failure to comply rates. The same was true when looking at the category totals, as well as the overall totals, with the difference in failure to comply rates being larger for PERF than IACP. These findings show an association between departments with three or more TASER-proximate ARDs and higher failure to comply rates with national policies. Additionally, it appears that many departments are failing to heed research findings or advice from outside their department. Based on this, future research may want to address the ways in which greater compliance with national policies can be obtained nationwide.

TABLE OF CONTENTS

LIST OF TABLES

Chapter 1

Introduction

Problem

In the seven-year period between January 2003 and December 2009 the Bureau of Justice Statistics reported 4,700 arrest related deaths (ARDs) (BJS, 2011). The controversy and devastating effects of police citizen encounters that result in death are not a new phenomenon and have been documented in prior research (see White et al, 2012). These deaths have traditionally and predominately been the result of firearms; in fact, of the 4,700 ARDs reported during that time, 2,684 (57%) involved an officer killing a citizen with a firearm (BJS, 2011). However, with changing and advancing technology there has been a rise in ARDs that involve the use of Conducted Electrical Weapons (CEW), in particular the TASER device (White et al 2012). For example, during an eight-year period from January 2001 through December 2008, White et al. 2012 identified 392 ARDs that involved the use of a TASER (White et al., 2012). Importantly, the annual number of TASER-proximate[1] ARDs increased substantially during that time. In 2001 there were only three TASER-proximate ARDs, in 2002 there were 14, in 2003 there were 17. The years of 2004 through 2006 showed the most dramatic increases; in 2004 there were 50 TASER-proximate ARDs, 74 in 2005, and 87 in 2006. These numbers then decreased slightly in 2007 and 2008 (76 and 71, respectively).

Prior research on TASER-proximate ARDs has focused on the incident and suspect characteristics of the ARD and has not sufficiently explored the role of department level characteristics (White et al, 2012; White & Ready, 2009). White and Ready (2009) looked at both death and non-death cases where the TASER was used

[1] *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.

during a police incident. They found several significant predictors of death, including: resistance after TASER device use, as well as mental illness and drug use (White & Ready, 2009). Additionally, Thomas, Collins, and Lovrich (2010 and 2011), Alpert and Dunham (2010), and Alpert, Smith, Kaminski, Fridell, MacDonald, and Kubu (2011) have explored departmental policies regarding TASER use generally, but prior research has not sufficiently addressed the impact of departmental policies on TASER-proximate ARDs. In 2005 PERF and IACP published national-level policy guidelines for the use of TASER devices, with one of the goals being to reduce the occurrence of deaths proximal to their deployment. What remains unknown in regard to these guidelines is whether or not departments that adhere to these guidelines are experiencing fewer TASER-proximate ARDs than departments who are not. This study seeks preliminary answers to this question by conducting a comparison of the policies of departments that have experienced multiple TASER-proximate ARDs to the policies of departments who have not experienced such events.

By understanding the effect that administrative policies have on the manner and circumstances in which a TASER is deployed, departments may be able to develop their policies in such a way as to reduce the chances of TASER-proximate ARDs occurring. For example, if findings show that departments with policies limiting multiple deployments of the device against a suspect are more likely to have no TASER-proximate ARDs and departments without this limitation in their policy have more TASER-proximate ARDs, this would provide support for the inclusion of guidelines limiting the number of deployments in departmental policies.

Current Study

Between January 2001 and December 2008, there were 297 departments in the United States that experienced at least one TASER-proximate ARD (White et al., 2012). Of the 297 departments who experienced at least one TASER-proximate ARD, 17

experienced three or more TASER-proximate ARDs, accounting for a total of 66, deaths or 22 percent of the total number of TASER-proximate ARDs. The disparity in number of TASER-proximate ARDs over the eight-year period for departments across America lead the author to question why some departments have three or more TASER-proximate ARDs while other departments of like size and geography have no TASER-proximate ARDs or only one to two.

In order to determine whether policy differences exist between departments, as well as their association on TASER-proximate ARDs, I will compare the policies of departments with 3 or more TASER-proximate ARDs to a matched sample of police departments that deploy the TASER, but have zero to two TASER-proximate ARDs.[2] All departments will also be compared to PERF and IACP model policy guidelines. The departments will be matched on the number of full time sworn officers, as well as the geography down to the lowest measure of aggregation possible (region, division, state), and department type (sheriff or local police). This matching of departments based on department size, geography, and department type allows for reasonable comparisons to be made among similarly situated departments. Additionally, by controlling for department size, the methodology will roughly account for important departmental features such as budget, training capacity, and resources.

[2] There are three cases where the only suitable matched department experienced two TASER-proximate ARDs. In two of these cases their study department experienced six TASER-proximate ARDs, and in the last case the study department experienced five TASER-proximate ARDs. In these cases there were no other suitable machetes due to the size of the department.

Research Questions

The two research questions examined in this study are as follows:

1. Is there an association between the prevalence of TASER-proximate ARDs experienced by police departments and the degree to which agencies adhere to national guidelines articulated by PERF and IACP?
2. Amongst the 16 study law enforcement agencies with 3 or more TASER-proximate ARDs, are there policy changes that could potentially alter the nature of suspect-officer interactions that involve the use of a TASER device, and reduce the likelihood for TASER-proximate ARDs?

Implications

By comparing policy differences between matched departments with no (or one to two) TASER ARDs and those with multiple TASER ARDs departments, I intend to explore whether administrative policies have the potential to minimize the risk of TASER-proximate ARDs. The assessment of administrative policies will be conducted by comparing the policies of the departments with 3 or more TASER-proximate ARDs with their matched departments, with specific attention being paid to how each department's policy differs from national-level model policies delineated by PERF and the IACP. The policy areas that will be explored include: use of force against vulnerable/at risk populations (children, elderly, medically infirm, pregnant, etc.), policies governing the TASER device deployment (necessary suspect resistance level, device mode, number of activations, and length of deployment, when and where not to use), training, reporting, and post-exposure requirements (restraint and medical attention). An understanding of how administrative policy can influence the nature and frequency of TASER-proximate ARDs may enable departments to make more informed policy decisions and minimize the potential for these TASER-proximate ARDs to occur. This knowledge base will become increasingly important as the use of this device grows.

Chapter 2

Prior Research

The literature involving TASER devices[3] — also referred to as conducted electrical weapons (CEWs) or electronic control devices (ECDs) more generally — has proliferated since the mid-2000s as the technology became increasingly popular and also came under strong scrutiny from Amnesty International regarding its safety (see Amnesty International, 2004). In order to understand the controversy surrounding the TASER device and the policy guidelines that have been developed to increase the safe implementation of the device, the literature that follows will be broken down into several key areas. The first section will briefly discuss the importance of use of force in police citizen interactions, as well as the prevalence of force used by law enforcement. The second section will include a brief history of the TASER, followed by a description of how the device functions, as well as available evidence on how frequently TASER-proximate ARDs occur. The third section will review three general areas that have generated controversy surrounding TASER deployment: questions involving use (when, against who, and for how long the device is used); questions involving the effectiveness of the device; and questions involving the physiological risks of the device. The last section describes the national policy guidelines published by the Police Executive Research Forum (PERF) and the International Association of Chiefs of Police (IACP); the literature on the impact of administrative policy on other areas of police field behavior; and the available evidence on administrative policies regulating TASER use.

General Use of Force

[3] The terms CEW and ECD are used interchangeably with TASER, as TASER International is the industry leader.

The importance of the use of force was articulated by Bittner (1970), where he states that in order to be perceived in the proper manner by the public during police-citizen encounters, the police need to be able to project the need for, threat of, and actual use of force in order to achieve their objectives. In short, Bittner states that the authority to use force is the core of the police role. However, the overall prevalence of instances where force is used is relatively low (see Travis et al., 1999). In 2008 there were roughly 40 million police citizen encounters; of those approximately 1.4 percent involved the use-of-force or threats of force (Bureau of Justice Statistics, 2011). Because of the volume of encounters, 1.4 percent translates into 28,571,429 applications of force per year and 78,278 per day. It is important to note that police use of force typically occurs at the lower end of the force continuum (i.e. "grabbing, pushing, or shoving"), when a subject is resisting an arrest, and with suspects who are under the influence of drugs or alcohol, or who are mentally ill (Travis et al., 1999: 4). Alpert and Dunham (2010) note that injuries to officers in use of force cases occurred in 10 to 38 percent of the incidents under examination in their research.

While use of force can be seen as a relatively rare occurrence, arrest related deaths are even more rare. Between January 2003 and December 2009, BJS reports a total of 4,813 arrest related deaths; in 45 percent of these cases the suspect was engaged in assaultive behavior immediately prior to or during the arrest (BJS, 2011). Causes of death during these arrests included: homicides (by law enforcement and other persons), intoxication, accidental injuries, suicides, and natural causes (BJS, 2011).

The Emergence of the TASER

History. CEWs had their genesis when Jack Cover, an aerospace engineer, designed a nonlethal CEW to incapacitate airline "skyjackers" in the 1970s as an alternative to the .38 caliber revolver (Meyer, 2009). The problem for law enforcement agencies has been a bit different; they have been faced with individuals who are under

the influence of drugs—such as cocaine, methamphetamine, or PCP— and these individuals are often extremely difficult to subdue while under the influence of such drugs. Police have been left with essentially two methods to deal with these suspects. Traditionally, they either used potentially lethal force with a firearm and kept their distance from the subject, or they used weapons such as batons, neck restraints, and handcuffs all of which place the officer in close contact with the subject and leave them vulnerable to injuries (Meyer, 2009).

TASER, which stands for Thomas A Swift Electric Rifle, was incorporated in September 1993. However, in 1981 the LAPD first began using the original 7-watt TASER developed by Cover (Stratbucker, 2009). This weapon was later found to be ineffective against some suspects (Meyer, 2009). In December of 1999 TASER International released the first neuromuscular incapacitation device (the M-series), and in May 2003 the X26 model was launched (TASER, 2012). The two latter devices have proven to be effective in subduing highly resistant subjects and have become extremely popular among law enforcement agencies in the United States.[4]

How the TASER Works. The TASER has a physical form that is quite similar to a handgun. There are two modes that the TASER can be used in, probe mode and drive stun, with the former being far more common. When used in probe mode the device uses compressed nitrogen to deploy two probes that are attached to wire leads. The range of the devices is anywhere from 15 to 35 feet, depending on the cartridge being used. When the trigger is pulled deploying the probes, the device emits a high voltage (5,000+ V) low current of electricity for five seconds (see TASER, 2012). The weapon causes the incapacitation of the subject through "intense involuntary contractions of

[4] Two other models have been released after the study period that is used in this analysis, the X3 in July of 2009 and the X2 in April of 2011 (TASER, 2012).

skeletal muscle, causing subjects to lose the ability to directly control the actions of their voluntary muscles" (Vilke and Chan, 2007, p 349). When used in the probe mode the device is designed to incapacitate a subject regardless of their "mental focus, training, size, or drug intoxication state" by overriding their central nervous system (Vilke and Chan, 2007: 349); whereas the drive stun mode on the TASER device is used for pain compliance. In the drive stun mode the device is pressed directly onto the subject and emits a localized current of electricity, at the same voltage as in probe mode. The incapacitation effects from a TASER device vary depending on the mode, duration of use and the placement of the probes. For example, the greater the distance between the probes the farther the current travels through the subject's body. Fish and Geddes (2001) report that the effects from the device can outlast the duration; as the subject may be left feeling dazed and weak for a few minutes following the deployment. Vilke and Chan (2007: 349) argue to the contrary, stating that subjects should be able to function at "their physical baseline" once the deployment ceases.

Current Statistics on Police Department TASER Usage. Figures from TASER International (2011) show that roughly 559,000 TASER CEWs have been sold to over 16,300 law enforcement, private security, and military agencies in 107 countries, with 7,000 agencies issuing the device to all of their patrol officers. Within the United States there are 15,500 departments that have purchased a TASER device and 370,000 devices have been issued to officers nationwide (TASER International, 2011). As of August 2011, TASER International reports that worldwide, there have been approximately 1.4 million field deployments of their device on a suspect. According to BJS, the number of police citizen encounters involving a TASER device in 2008 was 9,700; however, they state this number needs to be interpreted with caution (BJS, 2011). Brewer and Kroll (2009) found a total of 22,160 field deployments across 118 agencies from 1986 to 2008. They also found that those agencies with fewer authorized

users had higher usage rates per device, with an average of one deployment per device every two years (Brewer and Kroll, 2009). These numbers differ greatly as, with the exception of the numbers from TASER International, the various studies are looking at different select populations over specific time frames.

The Controversies Surrounding TASER Devices

The use of the TASER has generated some controversy. In particular, Amnesty International (2004) called for a moratorium on the use of TASERs and like devices, citing concerns over their use and safety. White and Ready (2007, 2010) have identified three separate areas of controversy involving police use of the TASER. Each is described below.

Controversy #1: Policy Questions on Use.

Passive resistance. Amnesty International (2004) questions whether or not the device is being used appropriately (i.e. an appropriate response to the level or resistance presented), and these concerns are echoed by Alpert and Dunham (2010). Amnesty International (2007) found that of the 291 death cases they reviewed, the subjects were only armed in 25 of the cases, and none were armed with firearms. Alpert and Dunham (2010) find there is no consistency with the placement of the devices on the use of force continuum, (see also GAO, 2005). Specifically, Alpert and Dunham (2010) found that twenty-four percent placed the device as a low-level force option; sixty-four percent as a mid-level force option; and ten percent as a high-level force option; whereas Thomas et al. (2010) found that most departments placed it as a mid-range force option.

Misuse of the TASER. Amnesty International (2007) raised concerns about the potential abuse of TASER devices when used in the drive stun mode as a method of pain compliance, particularly when suspects are already in custody. Alpert and Dunham (2010) find that the ease of use that TASERs provide places them at a higher risk for abuse; they also note that this can be combatted by implementing policies that clearly

dictate when and how the device can and cannot be used. Specifically, they argue that the device should only be used against active resisters, and that officers should take into account the entire situation and characteristics of the subject before deploying the device (Alpert and Dunham, 2010).

Vulnerable populations. Amnesty International (2004), as well as PERF (2005), cite concerns regarding use of the device against individuals who were on drugs or experiencing excited delirium. They also raise concerns about positional asphyxiation; heart disease, and pregnancy (with IACP (2010) also citing concern over the latter two). Amnesty International (2007), PERF (2005), and IACP (2010) also raised concern with the device being used on children and the elderly. NIJ (2011) has also expressed concerns about the device being used on people with pacemakers and those who are in a state of excited delirium. In regard to dealing with vulnerable populations, Alpert and Dunham (2010) find that training should address methods other than the use of CEWs on vulnerable populations due to their increased risk of adverse effects, which are outlined below.

Children and elderly. Children and the elderly are considered part of the vulnerable population mainly due to their weight, because their bodies are frailer, and in the case of the elderly, the higher likelihood of having heart related problems. McDaniel et al (2005), have found that weight can play a role in the likelihood of ventricular fibrillation (VF), with those who are smaller being at a higher risk. Additionally, Vilke and Chan (2007) reported those with pacemakers or other forms of heart disease might be at risk of serious side effects.

Drugs. Medical studies have addressed the role of drugs in cases where a TASER was used. Specifically they have experimented on animals to look at the effects this combination has on the heart. Research using swine has been one of the most common methods in studying the effects of the TASER and drug use. Chan and Vilke (2009) state

that physiological makeup of pigs is such that they should be more sensitive to extreme electrical currents than humans and dogs. However, Webster (2009) states that caution should be taken when analyzing results from swine studies because the swine are typically anesthetized, which may alter the effects of the CEW. Additionally Vilke and Chan (2009) note that studies on animals typically involve small samples, thus limiting their statistical power and generalizability.

In a study designed to replicate police citizen encounters involving suspects on drugs Lakkireddy et al. (2006) injected swine with cocaine; they concluded that cocaine actually provided a protective factor from the occurrence of ventricular fibrillation (VF). What makes this finding so interesting is that cocaine is a common factor seen in TASER-proximate ARDs (see White et al, 2012; White and Ready, 2009; Kornblum and Reddy, 1991; and Strote and Hutson 2008). In another study, methamphetamine was given to sixteen sheep, and the sheep were then exposed to a CED four times for up to 45 seconds each exposure. Again, no VF was observed (Ho, Dawes, Cole et al, 2009).

Excited delirium. Excited delirium in the early stages manifests itself through becoming hypothermic, psychotic, and agitated, with varying degrees of violence (Ross, 1998). Excited delirium can also be "broadly characterized by agitation, excitability, paranoia, aggression, great strength, and unresponsiveness to pain" (NIJ, 2011, p 21). PERF (2005) specifically states that officers should be aware of the increased risk of death in those who are on drugs or in a state of excited delirium. IACP (2010) also addresses excited delirium, by stating EMS should respond to the scene and transport subjects to a medical facility when they are in a state of excited delirium.

Pregnancy. Mehl (1992) reported on a woman who was struck by a probe in the abdomen and one in the leg, followed by a reported miscarriage seven days later. One additional case of a miscarriage occurred in 2001 when a woman was subjected to a TASER. Amnesty International alleged that the lawyers in the case found "a likely causal

connection between the fetal death and the electro-shock" (2007, p 60). While no medical research has been conducted in this area, TASER International warns that the device should not be used on pregnant women due to the fall risk (see also Amnesty International, 2004).

Mental illness. IACP (2010) states that mental illness can increase pain tolerance, thus reducing the effectiveness of the CEW and should be taken into consideration before using the device. PERF (2005) only states mental health personnel should be aware of CEWs. Medical research has yet to addressed the link between mental illness and TASER devices.

Controversy #2: Effectiveness and Injuries.

Overall effectiveness. Questions have also arisen regarding the effectiveness the TASER device in terms of subduing resistant suspects. White and Ready (2007) found the effectiveness to be around 86 percent and TASER (2006) found the rate to be between 80 and 94 percent. In their study, White and Ready (2007) found that in 31.4 percent of the cases, resistance continued at some point after the TASER devices was used. In 17 percent of these cases the resistance occurred after the officer was able to gain control of the suspect; in 14.4 percent of the cases, the device was ineffective and the suspect was not incapacitated (White and Ready, 2007). Additionally, White and Ready (2007) found that the highest effectiveness rate (90%) occurred in cases that had the greatest potential for injury or death. Lastly, White and Ready (2007) found that in 80 percent of the cases officers were satisfied with how the device performed.

Effectiveness against the drug intoxicated and mentally ill. NIJ (2011) states that suspects involved in police use of force incidents are typically on drugs or mentally ill and are at a higher risk for complications and even death when compared to healthy human populations. NIJ (2011) goes on to state that individuals who are mentally ill or under the influence of drugs are likely to be more resistant to the effects

of the TASER, even multiple discharges. While findings are mixed, the prevalence of drug intoxication in cases of those who are subjected to a TASER device has been well documented (see Kornblum and Reddy, 1991; NIJ, 2011; O'Halloran and Lewman, 1993; Strote and Hutson, 2006; White and Ready, 2009; White et al., 2012); with a few also noting the prevalence of mental illness (see White and Ready, 2009 and White et al., 2012).

Injury reduction. In regard to injury reduction, Oleoresin Capsicum (OC) spray has been found to reduce suspect injury by 70 percent, but it has increased officer injury by 21 to 39 percent; alternatively, CEW use is linked to a 60 percent decrease in suspect injuries (Alpert et al., 2011). NIJ (2011) reports that CEWs, when used in accordance with proper policies, produce a decrease in suspect and officer injuries, and appear to have a lower risk for injury than other use of force methods. Alpert and Dunham (2010) find that nearly 70 percent of officer injuries occur as a result of hands-on control tactics. MacDonald, Kaminski, and Smith (2009) and Smith, Kaminski, Rojek, Alpert, and Mathis (2007) also reported reductions in officer injuries when CEWs were used, prompting the recommendation that agencies should consider using other less lethal weapons in place of hands on tactics (see also NIJ, 2011). Meyer (2009) pointed out additional benefits of less than lethal weapons; that in standoff situations the early use of less lethal weapons might prevent the situation from escalating and requiring greater levels of force.

Alpert et al. (2011) found that injury rates varied depending on the department in their study. Specifically, they found that injury rates to officers were between 10 and 20 percent, and injury rates to suspects ranged from 17 to 64 percent (Alpert et al, 2011). NIJ (2011) found moderate injury rates to be low, and that significant injury rates have been found in less than 0.5 percent of exposures. Alpert and Dunham (2010) cite injury reductions for suspects as being between 40 and 79 percent, and reductions for officers being between 3 and 93 percent; with the reductions for both suspect and officer

varying depending upon the methodology used in the various studies. Bozeman et al. (2009) found that of the 1,201 subjects observed in their study, 99.75% suffered no significant injuries from the TASER use. Strote et al. (2010) studied 1,101 subjects exposed to a CEW over six years, and they found only 26.8 percent were seen by an emergency room or medical provider. In one study that was inconsistent with the above findings, Terrill and Paoline (2012) question the safety of CEWs in regard to citizen injuries; they find there was an increased risk of injury to citizens. They suggest more research is needed before any decision can be made as to whether CEWs or another use of force would be most appropriate.

Effects of extended duration and multiple exposures. In a study by Vilke et al. (2007) using 32 healthy law enforcement personnel, no clinically significant changes were observed in the personnel after a standard 5-second discharge. Additionally, Swerdlow, Fishbeing, Chaman, Lakkireddy, and Tchou (2009) failed to identify a link between TASER exposure and electrically induced VF. When looking at the effects of multiple and prolonged discharges from a TASER device, Vilke and Chan found that the effects were unclear (2007). In a review of several animal based studies, Kaminski (2009) found that VF only occurred when there were 15-20 discharges of the device, with fatalities rarely occurring. In a review of healthy human subject studies, Kaminski (2009) cites that VF was not induced when there were two to three five-second exposures, or in ten-second exposures where the probes were placed directly over the heart. White and Ready (2009) also found no relationship between number of exposures and fatalities.

Several studies however seem to contradict these findings of VF not occurring. NIJ (2008) found that repeated or multiple exposures occurred in several TASER-proximate ARD cases (NIJ, 2008). NIJ has stated that the risk of VF differs depending on how close to the heart the probes are located; i.e., the closer they are the more likely VF

can occur (2011). NIJ cautions that if an individual who is exposed to a CEW falls face first, the pressure to the chest may actually cause further penetration of the probes (NIJ, 2011). They have also stated that the subject may appear to be fine after having been exposed to the TASER with VF occurring after a short delay (from minutes to hours) (NIJ, 2011). NIJ also cites a study conducted by Denis et al., (2007) where prolonged exposure to CEWs led to rapid ventricular pacing and death in swine; thus prompting NIJ to conclude that prolonged discharges in humans may not be safe (NIJ, 2011).

Finally, in regard to multiple discharges Alpert and Dunham (2010) recommend a limit on total discharges to 3 standard cycles totaling 15 seconds. They state that the officer should stop and evaluate the situation after each standard cycle to determine if the resistance is continuing (Alpert and Dunham, 2010). They argue that if resistance continues after one cycle that multiple cycles are not likely to produce different results, thus officers should be trained in transitioning to different force methods in order to restrain the subject (Alpert and Dunham, 2010). NIJ (2008) reiterated these findings, stating that repeated or continuous exposures to an actively resisting subject may not provide compliance, especially if they are on drugs or experiencing excited delirium.

Secondary or indirect effects. Injuries proximal to TASER deployment may be secondary or indirectly related to the use of the TASER. For example, the use of the device in the presence of flammable materials may actually cause a fire due to the spark from the device; the risk of the subject falling from a steep slope or elevated surface may result in severe injuries; and the use of the device when a subject is in a body of water could result in drowning (NIJ, 2011). NIJ (2008) lists additional concerns that may place a subject at higher risk; they include, when the subject is in control of a moving vehicle, and when the subject is placed in restraints (i.e. handcuffs).

Controversy #3: TASER-Proximate Arrest Related Deaths.

TASER as a cause of death. White et al. (2012) examined 392 TASER-proximate ARD cases, using both media data and medical examiner reports. They also

found that the TASER was implicated as the cause of death or a contributing factor in 45 cases based on media reports and was the cause of death in two cases and contributing cause in 16 cases based on medical examiner reports (White et al, 2012). Strote and Hutson (2006) found the TASER was a possible or contributing cause of death in 27% of the cases examined. Ho et al. (2006) conducted a study using 66 human volunteers to determine what if any detrimental effects a standard 5-second discharge would have and found no link between the TASER device and sudden death.

The role of drugs, excited delirium, restraint, and the heart. Drugs, excited delirium, restraint, and heart problems are often seen occurring in TASER-proximate arrest related death cases. Ross (1998) believes the co-occurrence of drugs, excited delirium and restraint may be due to the effect of cocaine on the body's dopamine receptors, which can cause an increased risk of death in excited delirium cases. O'Halloran and Lewman (1993) looked at eleven cases where the subject was in a state of excited delirium when they were restrained. In seven of the cases the subject was under the influence of drugs, and in the remaining four the subject was mentally ill. The authors believe the actual mechanism for death was either fatal cardiac dysrhythmia or respiratory arrest, which came about as a result of an increase in oxygen demands and a decrease in ability to obtain the needed oxygen (O'Halloran and Lewman, 1993).

White et al. (2012) found that drugs (most commonly cocaine and methamphetamine) were most cited as a primary or contributing cause of death (58%), followed by heart problems (41%), and excited delirium (28%). White and Ready (2009) also found that death was more likely if the suspect was under the influence of drugs; was emotionally disturbed or mentally ill; or was in custody or handcuffed. Additionally, drug usage was echoed in the findings of Kornblum and Reddy (1991) when they found the cause of death to be a drug overdose in 11 of 16 cases they examined.

Strote and Hutson (2008) conducted a similar study in 2006 where they identified 75 cases, from January 2001 to 2005, and obtained 37 autopsy reports. In short, they found the cause of death to be heart problems (54.1%); illegal substances (78.4%); and excited delirium (75.7%).

In their report from November 2004, Amnesty International reported finding 65 deaths in the United States since June 2001. They found drug intoxication; positional asphyxiation, as well as impairment from use of pepper spray; and multiple and prolonged TASER deployments were commonly occurring in TASER-proximate ARDs (Amnesty International, 2004). In five cases the coroners reported that the TASER directly contributed to the deaths, and this was in conjunction with other factors, such as "heart disease, restraint, and/or drug intoxication" (Amnesty International, 2004: 43).

In regard to restraint, O'Halloran and Frank (2000) discussed twenty-one cases where the cause of death was ruled as positional asphyxiation. Of their twenty-one cases, all were restrained in the prone position with eighteen being handcuffed and the remaining three having their arms manually restrained (O'Halloran and Frank, 2000). With regard to method of restraint, PERF (2005) states that the method of restraint should not impair breathing.

Hick, Smith, and Lynch (1999) discuss how metabolic acidosis has frequently been found in conjunction with drug use, especially cocaine, but has not been linked to restraint alone. They found that metabolic acidosis was associated with cardiac collapse after exertion and being restrained. Stratton, Rogers, Brickett, and Gruzinski (2001) found there to be several common factors that contribute to death while being restrained for excited delirium. These include stimulant drug toxicity, restraint asphyxiation, and death that was secondary to underlying heart problems or other chronic disease (Stratton, et al, 2001).

In September 2007, Amnesty International reported on 290 deaths in the United States and Canada (Amnesty International, 2007). This 2007 report reiterated much of their 2004 paper; additionally though, they did acknowledge that many of the commonly occurring factors in these cases have been seen in other sudden in-custody deaths where a TASER device was not used. Finally, they raised the fact that in a few cases the subject did not have underlying health issues and was not on drugs, but did collapse suddenly at the scene, and that this brings to light additional questions regarding the risks of CEWs (Amnesty International, 2007).

Administrative Policy in Controlling Police Use of Force

National Guidelines for TASER Use. In 2005 both the Police Executive Research Forum (PERF) and the International Association of Chiefs of Police (IACP) released policy guidelines describing training, policy and use of Controlled Electronic Weapons (CEWs). IACP released an update in 2010. These guidelines were released as a response to the growing number of departments that were utilizing these devices and to provide guidance on their usage. Cronin and Ederheimer (2006) found that prior to the release of guidelines by PERF, law enforcement agencies had little guidance in regard to policy and operational decision-making involving the use of the TASER and other CEDs. Additionally, many concerns have been raised by advocacy groups regarding the potential to misuse and overuse these devices, as well as the potential harm they pose to subjects (Cronin & Ederheimer, 2006).

PERF. PERF conducted a study in early 2005 addressing the policies that were implemented by 74 different agencies (Cronin & Ederheimer, 2006). They also looked at 118 deaths that occurred proximally to a CED deployment, as well as a comparison group of non-death cases (Cronin & Ederheimer, 2006). PERF used the results from this research, along with consultation from subject matter experts, to develop their guidelines.

Policy Recommendations. With regard to deployment, PERF (2005) states that caution should be taken when dealing with those who appear to be on drugs or in a state of excited delirium, as they are at a higher risk for sudden death. They caution against multiple cycles and state that after one cycle the officer should stop and evaluate the situation. They warn against multiple officers using the device on the same subject at once and encourage training to emphasize switching to other force options when the device is not providing results as expected. They state that the device should be used on active resisters or those exhibiting physical aggression. They note that the device should not be used against pregnant women, elderly or young, and the visibly frail, absent exigent circumstances. They also warn that the device should not be used on those who are handcuffed; when someone may fall from a height that would cause serious injury or death; that the device should not be fired at a subject's head, neck or genitals; that it should not be used near flammable substances, including alcohol-based OC spray; or when someone is in control of a moving vehicle (PERF, 2005).

After the device has been deployed, PERF states that the method of restraint must not impair the subject's breathing, that all subjects should receive medical attention, and that subjects should be regularly monitored even after they have had medical attention. After the incident, PERF recommends that a supervisor should conduct an interview of the officer. They also state a use of force report should be completed and policy should articulate the required content of that report. They also note that consideration should be given to investigating outside the chain of command in death cases, and statistics should be kept on all incidents in which the TASER is deployed (PERF, 2005). See Appendix A for a complete copy of the PERF (2005) guidelines.

IACP. The IACP released their original guidelines for TASERs and other CEWs in 2005, followed by a revision in 2010. Their 2010 guidelines were released along with a revised Concepts and Issues Paper (IACP, 2010). As with the PERF policies, IACP's policy

was developed after an extensive review of the literature on TASER and other CEWs. Below are details on their 2010 policy. See Appendix B for a complete copy of the IACP (2010) guidelines.

2010 Policy Recommendations. The IACP specifically advises prohibiting the use of the devices on passive resisters and cautions against use of the device on those who are very young, pregnant, elderly have a pacemaker, and those of small stature (IACP, 2010). They also discourage the use of the device on those who are handcuffed or secured, unless they are exhibiting dangerous behaviors that cannot be controlled by another method. Regarding to additional deployment concerns, the IACP specifically states, "No policy or guideline can anticipate every situation that officers might face. (2010, p. 4)." Cases involving the use of a TASER, and in particular the death cases, are not routine police citizen interactions (see White et al. 2012, and White and Ready, 2009). Thus IACP presents a list of concerns that should be considered if possible before deploying a CEW. These include: determining if the subject needs to be immediately incapacitated; whether or not the subject is mentally ill or under the influence of drugs or alcohol; whether the subject is in an area that poses a fall risk or is near flammable materials; whether officers can safely move within the required distance to deploy their CEW properly; whether more than one CEW will be deployed; and whether the subject is part of a vulnerable population (IACP, 2010).

Training requirements are another key aspect that is addressed by IACP. They argue that training should be consistent with manufacturer recommendations as well as agency policy. They also list specific areas to be addressed, many of which revolve around the carrying, storage, operation of the device, post deployment actions regarding to evidence, and medical evaluation (IACP, 2010). IACP also recommends role-play scenarios in order to test the officer's decision-making capabilities. IACP states that re-certification should take place annually and address the same aspects as the initial

training (2010). Finally, IACP states that a use of force report should be filed, and the department should clearly articulate what should be included in the report (IACP, 2010).

In relation to medical attention, the IACP lists circumstances under which a subject should be transported to an emergency medical facility. These include: when a subject has been hit in a sensitive area (i.e. face, head, female breasts, or genitalia); when the officers experience difficulty removing the probes; when the suspect does not appear to be completely recovered within ten minutes post deployment; and with any subject who requests medical attention (e.g. officers should always ask subjects if they would like medical attention; IACP, 2010).

See appendix A for a policy summary table showing when the PERF and IACP policies have similar criteria and when one policy has specific criteria the other does not. The policies are broken down into five categories: awareness and training, deployment, post deployment, medical issues, and reporting. PERF has a greater number of guidelines and also tends to be more specific in their criteria for each guideline. IACP, however, provides greater detail with regard to force reporting and medical issues. For details and specifics on PERF guidelines see PERF (2005), and for IACP see IACP (2010).

The importance of policy and use of force. There is a large body of literature documenting the effectiveness of administrative policy in controlling police field behavior. This literature provides an important backdrop for the current study. Walker (2006) highlights the importance of accountability and guidelines in law enforcement, and specifically that this can be achieved through administrative policies. Many studies have addressed the importance of administrative policy and their impact on the use of force, both lethal force and less lethal force. Alpert and Smith (1994) find that police policies are divided into categories based on their frequency and risk, with many incidents involving the use of deadly force and falling into the category of low-frequency, high-risk. They state that incidents that fall into this category require specific policies,

procedures, and rules (Alpert and Smith, 1994). Other incidents, such as responding to misdemeanor domestic violence incidents cannot have strict policies applied to them, as the officer needs to be able to use their discretion when responding to such incidents (Alpert and Smith, 1994). In short, Alpert and Smith (1994) argue that the type of policy (strict versus guidance) needs to be based on the associated frequency and risk of the specific incidents.

Use of deadly force. Prior to the Supreme Court ruling in 1985 in *Tennessee v Garner,* police were given great discretion in the use of lethal force to apprehend fleeing felons (Fyfe, 1988). In examining prior incidents Fyfe (1988) concluded that without clear guidelines on how to proceed in incidents where a firearm can be used, officers are left to decide on their own and the outcomes of such decisions can be unfavorable. Earlier, Fyfe (1979) found that by implementing clear guidelines and procedures for the review of officer discretion in shootings, the New York Police Department experienced a substantial reduction in fleeing felon shootings and the use of warning shots. White (2001) noted that administrative policies could control the discretion taken by officers. White (2001) also found that in the case of elective use of lethal force encounters formal administrative policies could be overruled by the personal beliefs of the police chief and the informal culture of the department. Walker (2003) argues that discretion is controllable; specifically, he found that policies regarding use of deadly force have been able to reduce the number of officer shootings, and have bridged the gap between the number of blacks and whites that are shot and killed by officers.

Less lethal encounters. Citing the work of Alpert and MacDonald (2001), Walker (2006) states that departments that require a supervisor to complete a use of force report have lower rates of use of force. Terrill (2003) examined the relationship between police use of force and suspect resistance; he found that in 12 percent of the cases suspects resisted in some form. He also found that the force used by officers and

resistance of suspects tended to be at the lower end of the spectrum, with verbal force by officers occurring in nearly 60 percent of all cases (Terrill, 2003). Additionally Terrill (2003) found that when an encounter began with force, suspects tended to be more resistant and additional force was used later during the incident. Terrill (2003) argues that these findings lead to the questioning of the take-charge mentality during an encounter. This highlights the importance of policies regarding what the appropriate method of force is to be applied during a situation.

Canine. The use of canines as a method of force to apprehend suspects poses some interesting issues. In order to understand how policies play a role in the use of canines, it is important to first understand the two methods in which canines are used by police officers. The first method is the "bite and hold," where the dog is sent after a suspect and bites and holds them until their handler arrives (Mesloh, 2006). The second method of "bark and hold," is where the dog is sent by the handler to seek out the suspect and keep them from fleeing until their handler arrives (Mesloh, 2006). Mesloh (2006) cites findings from the DOJ and IACP highlighting bark and hold as the preferred method since it results in fewer injuries.

Hot pursuits. Hot pursuits have been considered a use of force, as officers are making a discretionary decision that can result in injury or death, for both officers and citizens (Walker, 2006). An analysis of hot pursuits conducted by Alpert and Dunham (1989) found that police policies regarding hot pursuits tend to fall into one of three categories: judgmental, where officers are allowed to make all major decisions regarding the pursuit; restrictive, where there are certain restrictions placed on the decisions officers can make; and discouragement, where the pursuits are discouraged with the exception of extreme cases. Based on an analysis of cases from the Metro-Dade Police Department, they find that a strong policy can reduce pursuit related problems. Walker

(2006) states that policies that are more restrictive tend to reduce the pursuits prevalence in general as well as the potential for injuries, accidents, and deaths.

Policies governing TASER usage. With the advancements in technology regarding less lethal weapons it becomes important that their policies advance as well. TASERs and other CEWs provide the potential to take suspects into custody without reliance on potentially deadly force, where prior to their existence in many situations deadly force may have been the only option. While these devices clearly provide benefits, they also provide the potential for misuse and abuse (see Amnesty International; Alpert and Dunham, 2010). Perhaps McEwen stated it best "The development and use of LTL (less than lethal) weapons must be held to an equally high standard, since virtually any weapon has the potential to inflict serious bodily injury if used inappropriately" (1997: 39, "less than lethal" not in original). McEwen (1997) argues that a lack of clear policies may place departments at risk for injuries and death due to the inappropriate use of force.

Having a policy alone is not enough; in order to reduce the risk of misuse the policies need to be understood by those that it applies to. McEwen (1997) states that the policy should be part of the initial training and annual training programs, as well as procedures regarding disciplinary action when needed. Alpert and Dunham (2010) provide training and policy recommendations with the purpose of reducing the misuse of CEWs. In regard to where the TASER should be placed on the use of force continuum, they suggest that in order to reduce injury it should only be used on actively resisting subjects (Alpert and Dunham, 2010). They also find that training that teaches officers to examine the entire situation is important (i.e. their ability to take a suspect into custody based on the situation and the capabilities and attributes of the suspect); this is argued as a rather important aspect because prior research has shown TASERs have been used against vulnerable populations with negative outcomes (Alpert and Dunham, 2010).

Two key themes have arisen from the work of Alpert and Dunham (2010), Alpert et al. (2011), and Thomas, Collins, and Lovrich (2010) as they apply to TASER policy: placement on the use of force continuum and the importance of training. Alpert and Dunham (2010) conducted a national study on CED policies and training where they found no consensus across departments as to its placement on the continuum (Alpert and Dunham, 2010). As noted earlier, they found that 26% of agencies listed the device as a low level use of force, 64% as a mid-level option and 10% as a high level force option (Alpert and Dunham, 2010). Of the more than 500 agencies that participated in their study, Alpert et al. (2011) found that most agencies did have a use of force continuum, but the placement of the CED varied considerably as to when it was allowed.

Thomas et al. (2010) asked departments to report on a scale of 1 to 10 where they placed TASERs on their use of force continuum. Their results indicate a mean of 5.6 with a standard deviation of 1.5 (Thomas et al., 2010). While this method does provide standardization across departments, one must question what is lost in the translation from a department's original use of force continuum to the 1 to 10 scale. Additionally, the authors note that research has shown a trend towards a more situation-based response system as opposed to the more traditional continuum (Thomas et al., 2010).

Perhaps one of the most concerning findings regarding training came from Morrison (2009), who reported that training is not a common part of state authorized programs for small and medium departments. Thomas et al. (2010) reported similar findings; specifically, they found that the required initial training hours ranged from 2 hours up to 24 hours, with a mean of 7.1 hours and a standard deviation of 2.6. Alpert and Dunham (2010) found an even greater range in initial training hours, from zero to 40 hours, with most departments having either four hours (28.8%) or eight hours (46.6%). Thomas et al. (2010) did identify an association between reductions in the use of lethal force and greater training hours, as well as reductions for departments who placed the

device higher on the use of force continuum. The authors do note, however, that the content of the training may be of greater importance than the number of actual hours in training (Thomas et al., 2010).

Thomas, Collins, and Lovrich (2011) conducted an extensive study comparing the policies of 124 different municipal police departments to the PERF (2005) policy guidelines for use of CEWs. They found that departments were generally not following the PERF guidelines. They also note that data collection occurred between 2008 and 2009, nearly 3 years after the PERF guidelines were published (e.g., giving departments more than an adequate amount of time to amend their policies). Specifically regarding pre-deployment guidelines they found that 53.69% of the guidelines addressed the policy aspects identified by PERF, 45.3% addressed PERF's peri-deployment guidelines, and 78.23% addressed the post-deployment guidelines of PERF (Thomas et al., 2011). Thomas et al. (2011) conclude that all departments should have written policies that address the concerns surrounding CEWs, and that these policies should model those put forth by PERF. The conclusions from Alpert and Dunham (2010) and Alpert et al. (2011) are also consistent with many of PERF's (2005) recommendations, specifically those regarding the target population, situational risk factors, number of activations, and medical evaluation.

Conclusion

Over the past decade, TASERs have become increasingly popular among law enforcement, with this trend being accompanied by substantial controversy. The controversy surrounding TASER devices has been ongoing for the past several years, with issues revolving around their proper use and the potential for fatal outcomes. Prior research strongly suggests that administrative policy can successfully control police field behavior and reduce negative outcomes. Current research on policies regulating the TASER shows substantial variation in several key areas. However, research has not sufficiently explored whether the larger literature on the effectiveness of administrative

policy extends to the TASER, and more specifically, whether the prevalence of cases resulting in death can be reduced through adherence to national model guidelines on TASER use.

Chapter 3

Data And Methodology

Study Sample

This study examines departments that have experienced three or more TASER-proximate ARDs and compares them to matched departments with two or fewer TASER-proximate ARDs.[5] Nationwide, there were a total of 17 departments that experienced three or more TASER-proximate ARDs between January 2001 and December 2008. They include: Phoenix Police, AZ; Harris County Sheriff, TX; Las Vegas Metro Police, NV; San Jose Police, CA; Chicago Police, IL; Jefferson Parish Sheriff, LA; Miami-Dade, FL; Orange County Sheriff, FL; Sacramento County Sheriff, CA; Birmingham, AL; Fort Worth Police, TX; Gwinnett County Sheriff, GA; Indianapolis Police, IN; New York Police, NY; Oklahoma City Police, OK; Sonoma County Sheriff, CA; and Los Angeles Police, CA.

These 17 departments are not evenly distributed geographically across the country at the state level. Of the nine divisions that the US census uses, only seven divisions had departments with three or more TASER-proximate ARDs occurring within them. They include four in the Pacific, two in the Mountain, four in the West South Central, one in the East South Central, three in the South Atlantic, two in the East North Central, and one in the Mid-Atlantic; none occurred in New England or in the West North Central. More generally, there is a concentration of departments with 3 or more TASER-proximate ARDs in the southern and western parts of the United States. Roughly two-thirds of the incidents occurred with local police departments and the remaining third

[5] The cutoff point of three or more TASER-proximate ARDs was chosen based on the mean number of TASER-proximate ARDs for the departments identified in White et al.'s (2012) paper (1.32, with a standard deviation is .802). Departments with ARDs from .518 to 2.12 are within "normal" range (based on the population average).

with sheriffs departments. The number of full-time sworn officers for these agencies ranges from 218 to 13,466, with the exclusion of the New York Police Department which has 40,435 full-time sworn officers (numbers based according to BJS, 2008).

Matched Sample

The study departments were matched to other law enforcement agencies based on the number of full-time sworn officers in the department (within 20 percent when possible); the geographic location (at the state level when possible, then census division or region); and the type of department, (i.e. police or sheriff). Matching based on these criteria was carried out in order to best account for important departmental features such as budget, training capacity, and resources (as well as population served). The data on the departments and their number of full time officers were obtained through LEMAS: 2000 Sample Survey of Law Enforcement Agencies (BJS, 2008). Lastly, only departments who utilize the TASER were selected. Every effort was made to determine the year of TASER adoption to ensure that each study department and its matched agency have been using the device for a similar amount of time. For those departments where the adoption years were determined, the adoption time periods matched up to within one year.

Matching

Of the 17 study departments, suitable matches were found for 14. The following departments did not have a reasonable match: Chicago, Los Angeles, and New York City Police Departments. Chicago and Los Angeles police did not have suitable matches because their most obvious matches—Detroit and San Francisco Police Departments, respectively—do not utilize the TASER or other CEWs. The New York Police Department did not have a suitable match due to the size of the department and the fact that only officers in the Emergency Service Unit are issued the TASER device (White and Ready, 2010). The administrative policy for the Birmingham Police Department (another study

department) could not be obtained. With this being the case, Chicago, Los Angeles, New York City Police Department, and Birmingham Police Departments were excluded from the study.

When matching the departments, there were six cases where the best or only suitable match had TASER-proximate ARDs. For two departments the matched department had four fewer TASER-proximate ARDs than its corresponding study department, two departments had three fewer, and two departments had only two fewer. Table 2 shows the study and matched departments.

Coding

The author contacted each of the study and matched departments by phone and email to obtain their use of force and TASER policies. In order to compare the policies of the study departments to those of the matched departments a baseline needed to be established for comparison. Thomas et al. (2011) compared the policies of metropolitan police departments on 23 aspects of the PERF (2005) policy recommendations. In their study, they used dichotomous variables to indicate whether or not the department's policies matched PERF's policy (Thomas et al, 2011). This study took a similar approach; however, departmental policies were compared to both PERF and IACP policy guidelines, and the author used a more nuanced ordinal ranking of 0, did not match at all; 1, partially matched; and 2, was a strong match to the policy guidelines.

By using an ordinal ranking system of 0, 1, or 2, the author was able to capture the "middle ground" of policies that mentioned or dealt with a specific issue, but did provide as detailed treatment as the national policy (PERF or IACP). An example will help illustrate. PERF has a guideline that states the device should be activated once, and then the officer should stop and evaluate the situation. If subsequent cycles are necessary, they should be restricted to the minimum necessary to take the subject into custody. In this example a score of zero would be given if neither criteria were met (stop and

evaluate, and limit the subsequent cycles). A score of one would be given if only one aspect of the criteria was met. A score of two would be given when both aspects of this guideline were met.

IACP medical guidelines presented a more complex matter when assigning a ranking. The IACP guidelines give certain circumstances under which an EMT response or transport to a medical facility is needed, such as subjects who are part of a vulnerable population, are hit in a sensitive area, do not recover in reasonable time, are exposed to multiple discharges, or experience excited delirium. For example, policies that stated all subjects exposed to a device are to be treated by EMT or at a medical facility were given a score of two. When policies mentioned any of the above situations under which one should receive EMT response or transport to a medical facility, but did not specifically mention how medical attention would be given, a score of one was given. Finally, those that made no mention of medical treatment received a score of zero.

Analysis

A descriptive comparative analysis has been used for this study, as the goal is to determine whether policy differences may exist between departments with three or more TASER-proximate ARDs, and matched departments with few or no TASER-proximate ARDs.[6] The policy of each study and matched department was compared to the IACP and PERF policies. Additionally a comparison of each matched set of departments was conducted to determine if any characteristics such as department type, number of full-time sworn officers, or geographical location were related to the prevalence of TASER-proximate ARDs.

[6] Every effort was made to place as wide a variation as possible between the numbers of TASER-proximate ARDs for study and matched departments.

Considerations and Limitations

The first limitation to this study relates to the years from which the current policies of departments were created. In several cases, departments could not offer a definitive answer with regard to when the current policy went into effect. The possibility exists that the policies of some departments were from years after the study period of 2001 to 2008, and that the policy examined here may not have been in effect during the study period. Policy years were known for twelve of the twenty-six departments used in the study. For the policy years that were known, nine policies were from 2009 and later, one from 2008, and two were from 2007. Every effort was made to determine what changes occurred to policies in their revisions; however, in some cases departments were unable to provide specific answers. Those with policies from 2007 were Phoenix and Indianapolis. In the case of Phoenix there were two TASER-proximate ARDs that occurred in 2007 and Indianapolis had one TASER-proximate ARD in 2008. With the exception of these six cases there is the possibility that departments may have altered their policies in a response to previous TASER-proximate ARDs, to more closely reflect the model policies of PERF or IACP, in order to prevent future TASER-proximate ARDs. If changes such as that occurred in any study department policies, they may not accurately reflect the policies that were in place during the times of TASER-proximate ARDs. Nonetheless, the policies examined here do reflect the most up-to-date information publicly available for each of the study agencies.

A second limitation involves the response rates and the information that was obtainable from the study and matched departments. As noted previously, the policy for one of the study departments was unobtainable. Nearly every department contacted provided a copy of their policy; however when asked specific questions such as the year of their policy, the number of training hours, when they first began using the TASER, and where on the use of force continuum the TASER was placed; many would either not

respond, or said they did not know, or would state the information could not be disclosed. The lack of information regarding training hours and placement on the use of force continuum hindered the ability to make conclusions regarding the impact of training hours and placement of the TASER on the use of force continuum. It is important to note that the lack of response to these additional questions was evenly dispersed across the study and matched departments.

The third limitation in this study is that departments may have experienced a TASER-proximate ARD that was not captured in this study. In White et al.'s (2012) dataset there are a total of seven cases where the name of the department in which the TASER-proximate ARD occurred is unknown. Four of these instances occurred in California, two in Texas, and one in Illinois. This leaves open the possibility that matched departments in California and Texas may have more TASER-proximate ARDs than was originally thought. Additionally, it is possible that a department may have experienced a TASER-proximate ARD that was not captured in the White et al. (2012) study, though the authors of that study indicate that this is unlikely, given media coverage of ARDs, especially those involving the TASER.

The final limitation to this study is the small N, this places a limitation on the statistical power of the study. While chi-square p-statistics have been calculated for the study, the generalizability of these results should be taken with caution as they are based on a sample size of 13 for the study departments and 13 for the matched departments.

Chapter 4

Results

The results from this study are broken down into three sections; key individual guidelines and total scores, category scores, and department comparisons. A compliance rate was calculated based on whether or not the PERF or IACP model guideline is covered in an individual department's policy[7]. For each guideline there are a total of thirteen study and thirteen matched departments reporting, for a total of thirteen points distributed between the following categories: full compliance, partial compliance, and failure to comply. The number for each compliance category was then divided by thirteen to create the "compliance rate" for each guideline, which is presented in percentage form. For example, if ten study departments fell into the no category and three fell into the yes category, they would have a 77 percent failure to comply rate. When calculating the compliance rates for policy categories, the sum of compliance categories for each guideline in the category is taken, and the percent for each compliance category is calculated based on the number of guidelines within the category. For example, if there were four guidelines in one category, for a total of 52, and the total for no in the study department was 37, there would be a 71 percent failure to comply rate, as 37 divided by 52 is 71; for the same category if the total for yes was 11, there would be a 21 percent compliance rate, with the remaining four or eight percent being partial compliance. The same method is used for calculating the overall total and the department totals; however, with department totals only the failure to comply rate (not partial or full compliance rate) is shown for simplicity sake.

[7] It is important to emphasize compliance here is not in terms of whether or not officers comply with the guidelines, rather that departments themselves are complying by adhering to the guidelines.

Key Individual Scores and Total Scores

Key Individual PERF scores. Table 3 shows individual guidelines from the PERF policy separated into five categories (awareness and training, deployment, post-deployment, medical, and reporting). The first column shows the rate at which study departments correspond to the PERF guidelines (% and n) and the second column shows the same for the matched departments, with the last column reporting the chi-square p-value. For the sake of simplicity, differences of 20 percent or more have been highlighted. For example, when looking at the optimum range of 15' as a guideline in department policies there was an 85 percent failure to comply rate for the study departments; whereas matched departments were more likely to mention this PERF guideline in their policy, with a 54 percent failure to comply rate, a p-value of .089 showed marginal statistical significance. Recognizing the limitations of the CEW and transitioning to another force method showed a 77 percent failure to comply rate for study departments, compared to a far lower 46 percent failure to comply rate for matched departments, with a p-value of .024 indicating statistical significance. No deployment against those of a vulnerable population showed a 38 percent failure to comply rate for study departments and again a lower failure to comply rate of 15 percent for the matched departments; this was not found to be statistically significant with a p-value of .363. The guideline regarding not using the device on those who are handcuffed showed there was a 46 percent failure to comply rate for study departments and a 23 percent failure to comply rate for the matched departments, again showing matched departments with lower failure to comply rates, but no statistical significance (p=.223). Lastly, the guideline stating the primary mode of the device should be the probe mode showed a 69 percent failure to comply rate for study departments and a 31 percent failure to comply rate for matched departments. This was the largest

difference between study and match departments, and marginally statistically significant (p=.093).

PERF Total Scores. The total failure to comply rate to the PERF guidelines for the study departments was 54 percent compared to 49 percent for the matched departments, shown at the bottom of Table 3. This is in the expected direction of the study departments scoring higher than the matched departments in the no category, of failing to comply with the policy guidelines; that is, they are less likely to include PERF guidelines in their own policies. Alternatively, the study departments again scored lower overall in the yes category, with a 35 percent compliance rate and the matched departments scoring a 37 percent compliance rate. Departments that have experienced three or more TASER-proximate ARDs are less likely than their matched counterparts to cover PERF's model policy in their own policies. While these numbers show an association between adherence to PERF's model guidelines and a lower number of TASER-proximate ARDs, a p-value of .240 indicates they are not statistically significant and that the association could be due to random variation.

Key Individual IACP scores. Table 4 mirrors Table 3 in format, however it shows the findings for IACP's model policy guidelines. Many of the findings from PERF were also found with IACP. For example, the probe mode being the primary method of deployment showed a 69 percent failure to comply rate for the study departments, compared to a far lower 31 percent failure to comply rate for the matched departments, and a p-value of .093 showing it was marginally statistically significant. The guideline outlining the concerns of using a CEW on those considered to be part of the vulnerable population showed a 46 percent failure to comply rate compared to a 23 percent failure to comply rate for the matched departments, and was not found to be statistically significant. The guideline regarding officer's consideration for transitioning to another use of force when the CEW does not show expected results showed a 77 percent failure to

comply rate for study departments compared to again a far lower 46 percent failure to comply rate for the matched departments, and a p-value of .107. And finally, the guideline regarding the necessity of EMT response or transportation to the hospital when subjects failed to recover in a reasonable time showed study departments failing to comply 54 percent of the time and matched departments failing to comply 31 percent of the time; however, this was not statistically significant.

IACP total scores. The findings for the IACP total scores showed the difference between yes (compliance) and no (failure to comply) for both the matched and study departments' totals were quite narrow, particularly with the matched departments; however, unlike PERF, the IACP scores showed marginal statistical significance with a p-value of .073. Specifically, in the yes category the study departments scored lower with a 36 percent compliance rate, where the match departments had a 44 percent compliance rate. With regard to the failure to comply rate, the study departments scored 48 percent, where the matched departments scored 46 percent for the failure to comply rate. This was in the expected direction of the study departments scoring higher failure to comply rates, indicating they more frequently failed to meet IACP guidelines. As with the PERF totals, the IACP totals show those departments with three or more TASER-proximate ARDs are less likely than their matched counterparts to adhere to the IACP policy guidelines in their own policies. This again showed an association (in this case) between adherence to IACP policies and a lower number of TASER-proximate ARDs. With the failure to comply rates falling fairly close together for PERF and even more so with IACP, a look at the findings in terms of categories is warranted and presented below.

Category Scores

The guidelines set forth by PERF and IACP have been broken down into five categories: awareness and training, deployment, post deployment, medical, and reporting; with each category having varying numbers of guidelines within them. Table 5

and Table 6 in the appendix reflect the category findings for the PERF and IACP guidelines respectively.

PERF category scores.

Awareness and training. The awareness and training category of the PERF guidelines is made up of six different guidelines. In this category the study departments complied six percent of the time, compared to a ten percent compliance rate for the matched departments. The study departments failed to comply 80 percent of the time compared to 67 percent for the matched departments. While the matched departments did slightly better than the study departments, overall both groups had high failure to comply rates for PERF's guidelines in the category of awareness and training.

Deployment. The deployment category for the PERF guidelines is made up of twelve different guidelines. While the numbers here are not dramatically different, they do show the matched departments fare better in this category than the study departments. Specifically, the study departments had 47 percent compliance rate, while the matched departments had a 55 percent compliance rate. The study departments had a 40 percent failure to comply rate, where the matched departments had a 31 percent failure to comply rate. The deployment category showed slightly better compliance rates compared to failure to comply rates for the study departments, with the matched departments showing even greater compliance rates than failure to comply rates.

Post-deployment. The post-deployment category has only two guidelines and was the only category showing differences between the study and matched departments of 20 percent or greater. In this category the study departments had a compliance rate of 77 percent, while the matched departments scored a compliance rate of 54 percent. The study departments scored lower with a failure to comply rate of 19 percent, where the failure to comply rate for the matched departments was 31 percent. With the study

departments performing better than the matched departments, the findings in this category are inconsistent with the PERF total scores.

Medical. For the four guidelines in the medical category, the compliance rate for the study departments was 21 percent, with the matched departments scoring 31 percent. The study departments received a failure to comply rate of 71 percent and the matched departments received a 60 percent for their failure to comply rate. This shows overall both groups have not closely followed the PERF guidelines in this area; however, the matched departments did a stronger job of following PERF policies regarding medical than the study departments.

Reporting. In the reporting category there were a total of six guidelines. The compliance rates in this category were 35 percent for the study departments and 26 percent for the matched departments. The study departments scored a 53 percent for the failure to comply rate, and the matched departments received a 63 percent. These numbers went against the total numbers for PERF, showing the study departments tended to more consistently follow the PERF guidelines for reporting compared to the matched departments.

With the exception of the deployment and post-deployment categories, study departments had higher failure to comply rates versus compliance rates, with the failure to comply rates being over 50 percent. There were two categories, post-deployment and reporting, where the study departments did not have higher failure to comply rates compared to the matched departments. Overall, the breakdown of PERF's policy guidelines by category shows an association between departments with three or more TASER-proximate ARDs and higher rates of failing to comply with PERF policy guidelines in their departmental policies; however, it is important to note that none of the categories showed any statistical significance.

IACP category scores.

Awareness and training. There was only one guideline in the awareness and training category for IACP; that was that an initial training course was required for everyone who carries a CEW. There was a 92 percent compliance rate for the study departments and a 77 percent compliance rate for the matched departments. The failure to comply rate for this category was quite low with eight percent for the study departments and 23 percent for the matched departments.

Deployment. For the seven guidelines in the deployment category, there was a 39 percent compliance rate for the study departments and 52 percent for the matched departments. The study departments had higher failure to comply rates at 50 percent compared to 35 percent for the matched departments. Again, these numbers do not differ greatly, however they still show the study departments doing more of a poor job at following the IACP guidelines regarding deployment than their matched counterparts.

Post-deployment. There was only one guideline that fell into the post-deployment category, the removal of the darts. Specifically, the darts may be removed after the subject is restrained following procedures outlined in training. The numbers here were almost exactly even. The study departments received an 85 percent for a compliance rate in this category where the matched departments scored 77 percent in the yes category. The study departments scored an eight percent for their failure to comply rate, where the matched departments scored 15 percent.

Medical. With nine different guidelines regarding when and how someone receives medical attention from either an EMT or at a hospital, the medical category had by far some of the most complex requirements. This complexity is the reason why many departments fell into the partial category. For example, the compliance rate for the study departments was lower at 30 percent compared to 38 percent for the matched departments. Study departments received a score of 27 percent for a partial compliance

rate, where the matched departments received a score of 13 percent. The study departments in this case had a lower failure to comply rate of 43 percent compared to the matched departments 50 percent. The findings here are a result of many departments partially fulfilling the requirements for IACP guidelines. This typically happened when the policies did not specify how one received medical attention or when one received medical attention. This was the only category showing a statistically significant difference, with a p-value of .021. With study departments scoring lower with their failure to comply rates and with their compliance rates compared to the matched departments, no conclusion can really be drawn as to which group of departments has done a better job of following IACP medical guidelines.

Reporting. The last category of IACP guidelines is reporting, which had eight guidelines within it. The compliance rates were very close, 29 percent for the study departments and 30 percent for the matched departments. The study departments scored 64 percent for their failure to comply, where the matched departments scored 62 percent. With the numbers being as close as they were it is hard to say that the matched departments were really any better than the study departments when it came to following the reporting guidelines created by IACP.

With the exception of the awareness and training, and the post-deployment categories, study departments had higher failure to comply rates versus compliance rates, with the failure to comply rates ranging from 43 to 63 percent. There were three categories, awareness and training, post-deployment, and medical, where the study departments did not have higher failure to comply rates compared to the matched departments. As with PERF, the overall breakdown of IACP's policy guidelines by category shows there is an association between departments with three or more TASER-proximate ARDs and higher rates of failing to comply with PERF policy guidelines in their departmental policies.

Study Departments Compared to Matched Departments

PERF guidelines. When comparing individual departments, interesting findings emerged showing how little difference there was overall for the policies between study and matched departments. In four cases the study department scored a lower failure to comply rate on the PERF guidelines than the department they were matched to; they included: Phoenix Police Department, Orange County Sheriff Department (CA), San Jose Police Department, and Orange County Sheriff Department (FL). There were nine study departments that received a higher failure to comply rate than the match department. These departments included Harris County Sheriff Department, Jefferson Parrish Sheriff Department, Miami-Dade Police Department, Sacramento County Sheriff Department, Oklahoma City Police Department, Fort Worth Police Department, Gwinnett County Sheriff Department, Indianapolis Police Department, and Sonoma County Sheriff Department. For simplicity sake, the p-values for department pairs are shown in table 7 and are calculated based on no, partial, and full compliance.

IACP Guidelines. The findings from the IACP guidelines were very similar to those from the PERF guidelines. There were six study departments who scored lower on their failure to comply rate for IACP policy guidelines compared to the departments they were matched to. These departments included: Phoenix Police Department, San Jose Police Department, Miami-Dade Police Department, Orange County Sheriff Department (FL), Fort Worth Police Department, and Sonoma County Sheriff Department. In seven cases the study departments scored higher on the failure to comply rates than the study department they were matched with. These departments included: Harris County Sheriff Department, Las Vegas Metropolitan Police Department, Jefferson Parrish Sheriff Department, Sacramento County Sheriff Department, Oklahoma City Police Department, Gwinnett County Sheriff Department, and Indianapolis Police Department. In two of these cases they scored over 30 percent higher than the study departments on the

scores for following the IACP guidelines. The PERF and IACP findings both show study departments having a greater rate of failing to comply with national policy guidelines, this again leads to the conclusion that there is an association between these departments with multiple TASER-proximate ARDs and adherence to national policy guidelines.

There were no clear patterns in regard to compliance rates with national guidelines across department type (sheriff versus police department), the department size, the geographic location of the departments, the year of CEW adoption by departments, and training hours. Overall the departments with multiple TASER-proximate ARDs had higher rates of failing to comply with PERF and IACP guidelines than their matched departments, while this again shows an association with increased TASER-proximate ARDs and higher rates of failing to meet national policy guidelines, it remains important to note that the statistical significance is rather weak; which may be due to the small sample size.

In short, study and matched departments were most compliant with four PERF guidelines. These included no use on subjects who were handcuffed, no deployment if the subject is at risk for falling, a supervisor should respond to an incident, procedures regarding removal of darts, and the supervisor should conduct an initial interview. Overall study and matched departments failed to comply with four PERF guidelines and three IACP guidelines. The PERF guidelines included recognizing the limitations of CEDs and transitioning to other force methods, optimum range, evaluating after one cycle, fleeing subject not being sole justification for use, and everyone should be monitored even after medical attention. IACP guidelines included medical attention for those exposed to three or more discharges and those exposed to multiple devices, and including in their report if more than three cycles were used. Lastly, there were five PERF guidelines and three IACP guidelines where study departments had at least 20 percent higher failure to comply rates. The PERF guidelines included CED limitations and transitioning to other

force methods, no deployment on those of a vulnerable population, no use on those in handcuffs, probe mode is the primary mode, and all should be monitored even after medical attention. The IACP guidelines included probe mode as the preferred mode, no use on vulnerable population, and medical attention for those who do not recover in a reasonable amount of time.

Chapter 5

DISCUSSION

Summary of Key Findings

The goal of this study was to determine in what areas the departments with three or more TASER-proximate ARDs were less consistent with the national guidelines created by PERF and IACP, when compared to other departments of like size, geographical location, and department type that had one to two or no deaths. Several areas were addressed, including, individual guidelines, five general categories of guidelines, and the overall frequency at which departments followed guidelines.

Study departments had at least twenty percent higher compliance rates than matched departments on four PERF guidelines. The study departments had higher failure to comply rates of twenty percent or more when compared to the matched departments in six different PERF guidelines. In regards to IACP guidelines they had higher failure to comply rates of twenty percent or more on four different guidelines.

When looking at the categories, the study departments had higher compliance rates with PERF policies in the post deployment, and the reporting category. The study departments had higher compliance rates with IACP guidelines in awareness and training, and the post-deployment category. Study departments had higher failure to comply rates in three PERF policy categories including: awareness and training, deployment, and medical when compared to the matched departments. As for IACP guidelines, the study departments had higher failure to comply rates in the deployment and reporting categories when compared to the matched departments.

While there were a few instances where the study departments showed better compliance rates compared to the matched departments, the overall results of this study showed an association between departments with three or more TASER-proximate ARDs and high failure to comply rates with national policies. In the instances where compliance

rates were higher for study departments I speculate that this occurred due to departments revising those aspects of their policies in order to reduce the potential for future TASER-proximate ARDs. Additionally, it is important to note that there was no statistically significant relationship between departments and PERF guidelines and only moderate statistical significance was found with IACP guidelines.

Common Themes and Implications

Guidelines. Consistency between PERF and IACP guidelines in regards to where study departments fell short was found in three areas: probe mode being the primary mode; the use of the device on vulnerable population; and the use of other restraint methods when the device is proving to be ineffective. These are critical areas that are often tied to abuse of the device. A lack of policy guidance in these areas makes this especially problematic.

For example, by using the device in drive stun mode as opposed to probe mode, officers may be unnecessarily using the device on subjects. This goes hand in hand with not using other methods of restraint when the device is ineffective. If officers are using the device in drive stun mode, or in the probe mode, and not receiving the desired effects, yet continue to subject someone to the device, one can see based on prior research how this places subjects at a greater risk for potential fatalities. Specifically, Amnesty International (2007) raised concerns about the use of CEWs in drive stun mode, as this could lead to an increased potential for abuse of the device. Additionally, Alpert and Dunham (2010) also argued that CEWs are at risk for misuse or abuse due to their ease of use, and found that the only way to combat this potential abuse is through policy.

Along with research on the misuse and or abuse of the device, research has found CEWs are often less effective or ineffective on those who are of a vulnerable population; specifically, those who are on drugs, mentally ill, or in a state of excited

delirium, thus, potentially causing an officer to use the device multiple times when there are no clear policies and training to dictate otherwise. Several studies have shown that these factors were often associated with death in cases involving CEWs; specifically, Kornblum and Reddy (1991); Strote and Hutson (2008); White and Ready (2009); and White et al (2012) all found at least one of the previously listed conditions to be occurring in a substantial portion of the cases they examined. Specifically, White and Ready (2009) suggested departments should adhere to national guidelines; in particular they call out the use the devices against those of a vulnerable population. These findings make it clear that in the years since these articles, departments who have had multiple TASER-proximate ARDs have not changed their policies and heeded advice from researchers.

Study departments also fell short in areas regarding medical treatment. Specifically, the PERF guideline states subjects should be monitored even after medical attention has be given. Monitoring after one has received medical attention should be seen as critical, as NIJ (2011) stated that a subject may appear to be fine for some time after being exposed to a CEW, yet VF could still occur minutes to hours after the exposure.

The IACP guidelines recommend EMT response or hospital transport for those who either request medical attention or appear to be in need of medical attention. A failure to adhere to this guideline is highly problematic, as TASER-proximate ARDs can be seen occurring for multiple reasons, such as a fall causing a fatal head injury, heart attack, drug overdose, and excited delirium. The death of an Iowa man in 2008 may have been prevented had medical attention been given; 15 minutes after his release from jail following an arrest involving a TASER the man was found dead on the sidewalk in front of the jail. His death was apparently due to epilepsy (Des Moines Register, 2008). Of the 392 cases in the White et al (2012) study, there were over fifty where the

subject was not taken to a hospital. By providing proper medical attention in cases such as these there is a possibility that death may have been preventable.

Past research on TASER-proximate deaths and areas frequently associated with these deaths can be easily linked to the four major areas where the administrative policies for study departments have had high failure to comply rates with national policy guidelines. This link clearly demonstrates the need for departments to enhance their administrative policies in such a way that they adhere to national policy guidelines. Departments with three or more TASER-proximate ARDs have an average overall compliance rate of 36 percent. They fail to meet key guidelines anywhere from 38 percent of the time to 77 percent of the time, with an average failure to comply rate of 55 percent; for all polices this rate is 51 percent. These rates are simply unacceptable, and demonstrate an association between failing to comply with national guidelines and increased rates of TASER-proximate ARDs.

Department Findings. The comparisons of the individual study departments to the matched departments showed that study departments had policies that were less consistent with national policies more often than the matched departments. Specifically, San Jose Police Department, a study department, had the highest compliance rates with 50 percent for PERF and 58 percent for IACP, with Phoenix Police Department, another study department, not far behind at 47 percent for PERF and 58 percent for IACP. Jefferson Parrish Sheriff Department, a study department, had the highest failure to comply rates for PERF and ICAP, with 87 and 88 percent respectively.

The study departments were a mix of sheriff and police departments, and are not concentrated in any one area of the country. With the exception of one department, Indianapolis Police Department, the five study departments who failed to comply with PERF and IACP guidelines at least fifty percent of the time were in the Southern region of the country. Two of the three matched departments were also in the southern region.

Departments with high compliance rates tended to be in the southwestern area of the country. Thus, there appears to be an association between area of the country and compliance with national guidelines.

Study departments ranged in size from 218 to 2,626; with department size not appear to play a role in whether or not departments had failure to comply rates over 50 percent. Only three of the ten study departments with over 1,000 officers had failure to comply rates over 50 percent; whereas two of the three study departments with less than 1,000 officers had failure to comply rates over 50 percent. With such small samples it is difficult to say department size is playing a role in these findings. While there is no clear explanation for why some departments are doing a poorer job of following national guidelines, it is clear that overall all departments are doing a poor job, and those with three or more TASER-proximate ARDs are typically doing even worse.

Overall Compliance. Overall, the majority of departments examined in this study did a poor job of following the national guidelines. There was only one study department, San Jose Police Department, and one matched department, Tulsa Police Department, which followed both PERF and IACP guidelines at least 50 percent of the time. The study and matched departments both did better overall following the IACP guidelines as opposed to the PERF guidelines. Specifically, the study and matched departments complied with PERF guidelines 35 and 37 percent of the time, partially complied 11 and 15 percent of the time, and failed to comply 54 and 48 percent of the time, respectively. For IACP the study and match departments complied 36 and 43 percent of the time, partially complied 15 and 11 percent of the time, and failed to comply 48 and 46 percent of the time, respectively. The IACP guidelines as a whole tended to be more general than the PERF guidelines; this is likely why there was a greater consistency with the IACP guidelines over the PERF guidelines, as well as

moderate statistical significance for IACP guidelines and none for PERF. In general, these findings regarding high failure rates are consistent with Thomas et al. (2011).

Implications

The major implications from this study revolve not only around the study departments doing poorly; rather, that all departments overall had a high failure to comply rate for PERF and IACP policy guidelines. Departments nationwide, particularly those who have experienced multiple TASER-proximate ARDs would be wise to adhere to the PERF and IACP guidelines to prevent future deaths. Walker (2006) stated the importance of accountability in law enforcement; specifically, that this can be achieved through administrative policies. White (2001) found that administrative policies could control an officer's discretion in use of force cases. Walker (2003) found policies regarding the use of deadly force successfully reduced the number of officer-involved shootings. Clearly research has shown that policies can be effective in altering the actions taken by officers; thus, it is reasonable to posit that stronger adherence to national policies may reduce the frequency of TASER-proximate ARDs.

Additionally, every department in this study has failed to include in their policies a guideline, such as the one by PERF that states departments should maintain statistics on the use of these devices. Kane (2007) argued that departments should collect comprehensive records of force incidents, and he specifically states that in doing so departments could determine what policies work and do not work. By departments taking such action, they can determine the individual policies and actions within their department that are causing issues. Based on the policies, departments themselves are not keeping track of how the device is used. With this being the case, it again becomes clear that law enforcement is not receiving the message of researchers.

Perhaps the most serious implications revolve around the most obvious issue, that is that these are arrest related deaths from a device that is designed to be less than

lethal. Deaths of this nature can lead to several issues, such as law suits against the departments or individual officers; loss of respect and trust from citizens towards law enforcement; depleted moral in the department; and a general disruption within the community. These ramifications can be rather wide spread and are not likely to disappear overnight; thus, the serious need to reduce these incidents. There is much support showing the implementation of the national policy guidelines across the board can reduce these incidents. Part of the job has already been done, the policies have been written and are based on strong research. History and research has shown policies can alter officer's behavior; all that is left is for departments to adhere to these guidelines.

Future Research and Next Steps

Future Research. This study has laid the foundation for future research in several directions. First, a similar study could be conducted using a broader range of study and matched departments. In the past three years it is quite likely that the number of departments with three or more TASER-proximate ARDs has grown, thus making it feasible to broaden the number of study and matched departments, as well as to only use matched departments that did not have any TASER-proximate ARDs. This would provide greater generalizability and statistical power, as well as true comparison between those with no TASER-proximate ARDs and those with three or more.

Second, an examination of the media reports for all the departments with three or more TASER-proximate ARDs should be conducted to determine exactly what national guidelines were not being followed during these incidents. By doing this one would be able to see exactly what national policy guidelines have been broken and how frequently they were broken. It is also possible that departments may not have always followed their own policies. Thus, an analysis of this kind would provide deeper insight into what, policy wise, was going wrong at the time of these fatal incidents.

Third, expand the study beyond ARD cases, to cases where serious injuries occurred proximal to a TASER arrest. While an ARD is certainly more troubling than injury cases, many of the same issues may arise when a department has multiple incidents involving a TASER that result in serious injury. For instance lawsuits may still be an issue, loss of respect for law enforcement by the community, and depleted moral within the department. All of which again, could be reduced by the implementation of proper policies.

Fourth, examine the enforcement and disciplinary aspects surrounding administrative policy. In some instances, it may be that a department has adhered to the national guidelines regarding CEW usage, yet these guidelines are not being adequately enforced. By examining how departmental policies are enforced and the repercussions of not following guidelines, research may show that the problem does not lie solely with the adherence to policies; rather, the problem is deeper and includes enforcement of administrative policies within the department.

Next Steps. This study has shown that the larger issue may very well be that many law enforcement agencies are not open to or aware of advice that originates outside their department. With national policy guidelines being met roughly half the time at best, and vast amounts of prior research from a variety of disciplines not being heeded, it appears as though the departments are not looking outside their department for advice on how to best operate. While it is clear steps need to be taken to achieve higher compliance rates for departments nationwide, exactly how to do this is unclear.

Should the approach be taken at a national level, where all departments who wish to utilize a TASER must adhere to a specific set of guidelines and undergo specific training? Perhaps, in order to receive POST or CALEA accreditation departments must meet certain guidelines regarding the usage of TASERs. These directions may be more drastic than what is really needed; perhaps, an awareness campaign targeting law

enforcement agencies, combined with regional training events and conferences would be enough. By specifically showing agencies that research has shown the association between weak administrative policies governing TASER usage and higher rates of TASER-proximate ARDs, we may be able to make departments aware of the benefits of following national guidelines regarding the use of TASERs and other CEWs.

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APPENDIX A

TABLES

Table 1. Policy Summary

Policy	PERF	IACP
Awareness and Training		
At risk population	X	X
Aware of Excited Delirium	X	
Initial Training		X
Training recertification	X	X
Risk of multi and continuous cycles	X	
CED limitations, transition to other force	X	X
Optimum 15’	X	
Training audit	X	
Deployment		
Deploy only on active resistance	X	X
One officer deployment at time	X	
Evaluate after one standard cycle	X	
Subject may not be able to respond		X
Minimize number of deployments	X	X
Fleeing subject not sole justification	X	
Concerns with use against vulnerable population		X
No Deployment against vulnerable population	X	
No use on handcuff	X	X
No deployment if fall risk	X	X
Avoid sensitive areas	X	
No deployment near flammable material	X	X
Probe mode primary	X	X
No deployment when in moving vehicle	X	
Deployment warning	X	
Post Deployment		
Supervisor should respond to incident	X	
Dart removal	X	X
Medical		
Restraint should not impair breathing	X	
Medical contacted if CED is anticipated	X	
All receive medical	X	
Medical attention under certain criteria		X
All should be monitored even after medical	X	
Reporting		
Supervisor conduct initial review	X	
All incident reported in report	X	X
Investigate outside chain of command	X	
Details on what to include in report	X	X
Stats maintained	X	
Details on what to include in statistics	X	

Table 2. Study and Matched Departments

Study TASER ARD Dept.	# TASER ARDs	Dept. Size	Adopt Year	Matching Departments	# TASER ARDs	Dept. Size	Adopt Year
Phoenix Police, AZ	6	2626		San Diego Police, CA	2	2022	1998
Harris County Sheriff, TX	6	2584		Dallas Police, TX	2	2862	2005
Las Vegas Metro Police, NV	5	2168	2004	Orange County Sheriff, CA	2	1770	
San Jose Police, CA	5	1408		Seattle Police, WA	0	1553	
Jefferson Parish Sheriff, LA	4	681	2003	East Baton Rouge Parish Sheriff, LA	0	712	
Miami-Dade Police, FL	4	3008		Jacksonville Sheriff, FL	0	1530	
Orange County Sheriff, FL	4	1770	2001	Miami Police, FL	1	1110	2002
Sacramento County Sheriff, CA	4	1372	2001	Riverside County Sheriff, CA	1	1286	
Oklahoma City Police, OK	4	1011		Tulsa Police, OK	0	819	
Fort Worth Police, TX	3	1196	2001	Austin Police, TX	1	1144	
Gwinnett County Sheriff, GA	3	275		Greenville County Sheriff, SC	0	327	2001
Indianapolis Police, IN	3	1045	2003	Cincinnati Police, OH	1	1030	2003
Sonoma County Sheriff, CA	3	218		Stanislaus County Sheriff, CA	0	203	1995

Table 3. PERF Individual Policies

PERF	% (N)	Study Department		Matched Department		*p*
Training and Awareness						
Aware of Excited Delirium	No	77	(10)	69	(9)	.824
	Partially	15	(2)	15	(2)	
	Yes	8	(1)	15	(2)	
Training recertification	No	46	(6)	31	(4)	.420
	Partially	54	(7)	69	(9)	
Risk of multi and continuous cycles	No	100	(13)	100	(13)	
CED limitations, transition to other force	No	**77**	**(10)**	46	(6)	.024
	Partially	8	(1)	**54**	**(7)**	
	Yes	15	(2)	0	(0)	
Optimum 15'	No	**85**	**(11)**	54	(7)	.089
	Yes	15	(2)	**46**	**(6)**	
Training audit	No	100	(13)	100	(13)	
Deployment						
Deploy only on active resistance	No	0	(0)	8	(1)	.218
	Partially	15	(2)	0	(0)	
	Yes	85	(11)	92	(12)	
One officer deployment at time	No	69	(9)	62	(8)	.904
	Partially	8	(1)	8	(1)	
	Yes	23	(3)	31	(4)	
Evaluate after one standard cycle	No	55	(7)	38	(5)	.075
	Partially	8	(1)	**46**	**(6)**	
	Yes	**38**	**(5)**	15	(2)	
Fleeing subject not sole justification	No	54	(7)	**77**	**(10)**	.216
	Yes	**46**	**(6)**	23	(3)	
No Deployment against vulnerable population	No	**38**	**(5)**	15	(2)	.363
	Partially	46	(6)	54	(7)	
	Yes	15	(2)	31	(4)	
No use on handcuff	No	**46**	**(6)**	23	(3)	.223
	Partially	8	(1)	0	(0)	
	Yes	46	(6)	**77**	**(10)**	
No deployment if fall risk	No	38	(5)	15	(2)	.204
	Partially	8	(1)	0	(0)	
	Yes	54	(7)	**85**	**(11)**	
Avoid sensitive areas	No	23	(3)	23	(3)	1.00
	Partially	8	(1)	8	(1)	
	Yes	69	(9)	69	(9)	
No deployment in vicinity of flammable material	No	23	(3)	8	(1)	.543
	Partially	15	(2)	15	(2)	
	Yes	62	(8)	77	(10)	
Probe mode primary	No	**69**	**(9)**	31	(4)	.093
	Partially	0	(0)	15	(2)	
	Yes	31	(4)	**54**	**(7)**	

No deployment when in moving vehicle	No	38	(5)	46	(6)	.809
	Partially	15	(2)	8	(1)	
	Yes	46	(6)	48	(6)	
Deployment warning	No	31	(4)	31	(4)	.819
	Partially	15	(2)	8	(1)	
	Yes	54	(7)	62	(8)	
Post Deployment						
Supervisor should respond to incident	No	31	(4)	38	(5)	.258
	Partially	0	(0)	15	(2)	
	Yes	**69**	**(9)**	46	(6)	
Dart removal	No	8	(1)	23	(3)	.405
	Partially	8	(1)	15	(2)	
	Yes	**85**	**(11)**	68	(8)	
Medical						
Restraint should not impair breathing	No	77	(10)	62	(8)	.685
	Partially	8	(1)	15	(2)	
	Yes	15	(2)	23	(3)	
Medical contacted if CED is anticipated	No	92	(12)	92	(12)	.368
	Partially	8	(1)	0	(0)	
	Yes	0	(0)	8	(1)	
All receive medical	No	38	(5)	38	(5)	1.00
	Yes	62	(8)	62	(8)	
All should be monitored even after medical	No	**77**	**(10)**	46	(6)	.223
	Partially	15	(2)	23	(3)	
	Yes	8	(1)	**31**	**(4)**	
Reporting						
Supervisor conduct initial review	No	0	(0)	**46**	**(6)**	.012
	Partially	15	(2)	0	(0)	
	Yes	**85**	**(11)**	54	(7)	
All incident reported in report	No	0	(0)	8	(1)	.308
	Yes	100	(13)	92	(12)	
Investigate outside chain of command	No	85	(11)	100	(13)	.338
	Partially	8	(1)	0	(0)	
	Yes	8	(1)	0	(0)	
Details on what to include in report	No	31	(4)	23	(3)	.696
	Partially	54	(7)	69	(9)	
	Yes	15	(2)	8	(1)	
Stats maintained	No	100	(13)	100	(13)	
Details on what to include in statistics	No	100	(13)	100	(13)	
Total	No	54	(209)	48	(189)	.240
	Partially	11	(44)	15	(57)	
	Yes	35	(137)	37	(144)	

Bold numbers indicate a 20% or greater difference between matched and study department.

Table 4. IACP Individual Policies

IACP		Study Department		Matched Department		*p*
% (N)						
Awareness and Training						
Initial Training	No	8	(1)	23	(3)	.277
	Yes	92	(12)	77	(10)	
Subject Resistance	No	0	(0)	8	(1)	.218
	Partially	15	(2)	0	(0)	
	Yes	85	(11)	92	(12)	
Probe Mode Preferred	No	**69**	**(9)**	31	(4)	.093
	Partially	0	(0)	15	(2)	
	Yes	31	(4)	**54**	**(7)**	
When not to use	No	15	(2)	8	(1)	.694
	Partially	38	(5)	31	(4)	
	Yes	46	(6)	62	(8)	
Use on Vulnerable Population	No	**46**	**(6)**	23	(3)	.465
	Partially	15	(2)	23	(3)	
	Yes	38	(5)	54	(7)	
Deployment Duration	No	38	(5)	38	(5)	.865
	Partially	15	(2)	23	(3)	
	Yes	46	(6)	38	(5)	
Ability to respond	No	100	(13)	92	(12)	.308
	Yes	0	(0)	8	(1)	
Other restraint methods	No	**77**	**(10)**	46	(6)	.107
	Yes	23	(3)	**54**	**(7)**	
Post Deployment						
Dart removal	No	8	(1)	15	(2)	.827
	Partially	8	(1)	8	(1)	
	Yes	85	(11)	77	(10)	
Medical						
Subject Requests medical attention	No	54	(7)	38	(5)	.693
	Partially	15	(2)	15	(2)	
	Yes	31	(4)	46	(6)	
Subject hit in sensitive area	No	8	(1)	15	(2)	.822
	Partially	23	(3)	23	(3)	
	Yes	69	(9)	62	(8)	
Officer has difficulty removing probes	No	38	(5)	46	(6)	.554
	Partially	23	(3)	8	(1)	
	Yes	38	(5)	46	(6)	
No recover in reasonable time	No	**54**	**(7)**	31	(4)	.228
	Partially	31	(4)	23	(3)	
	Yes	15	(2)	**46**	**(6)**	
Part of sensitive population	No	54	(7)	62	(8)	.546
	Partially	23	(3)	8	(1)	
	Yes	23	(3)	31	(4)	

Exposed to 3 or more discharges	**No**	**38**	**(5)**	62	(8)	**.288**
	Partially	**31**	**(4)**	**8**	**(1)**	
	Yes	**31**	**(4)**	**31**	**(4)**	
Exposed to multiple devices	No	46	(6)	**69**	**(9)**	.177
	Partially	38	(5)	8	(1)	
	Yes	15	(2)	23	(3)	
Belief exposed to 15 plus seconds	No	46	(5)	**69**	**(9)**	.149
	Partially	**46**	**(5)**	8	(1)	
	Yes	23	(3)	23	(3)	
Exhibits signs of Excited Delirium	No	54	(7)	54	(7)	.842
	Partially	23	(3)	15	(2)	
	Yes	23	(3)	31	(4)	
Reporting						
Photographs	No	38	(5)	38	(5)	1.00
	Yes	62	(8)	62	(8)	
Evidence	No	31	(4)	38	(5)	.881
	Partially	38	(5)	38	(5)	
	Yes	31	(4)	23	(3)	
Notify Supervisor and complete use of force report	No	0	(0)	8	(1)	.497
	Partially	15	(2)	23	(3)	
	Yes	85	(11)	69	(9)	
Used in drive stun	No	77	(10)	77	(10)	1.00
	Partially	8	(1)	8	(1)	
	Yes	15	(2)	15	(2)	
More than 3 cycles	No	85	(11)	69	(9)	.352
	Yes	15	(2)	**31**	**(4)**	
More then 15 seconds	No	92	(12)	92	(11)	.539
	Yes	8	(1)	8	(2)	
More than one ECW used	No	92	(12)	92	(12)	1.00
	Yes	8	(1)	8	(1)	
Sensitive population	No	92	(12)	85	(11)	.539
	Yes	8	(1)	15	(2)	
Total	No	48	(163)	46	(155)	.073
	Partially	15	(52)	11	(36)	
	Yes	36	(123)	43	(147)	

Bold numbers indicate a 20% or greater difference between matched and study department.

Table 5. PERF Category Scores

PERF	*p*	% (N)	Study Department		Matched Department	
Awareness and Training Total	.133	No	81	(63)	67	(52)
		Partially	13	(10)	23	(18)
		Yes	6	(5)	10	(8)
Deployment Total	.253	No	40	(63)	31	(49)
		Partially	12	(19)	13	(21)
		Yes	47	(74)	55	(86)
Post Deployment Total	.169	No	19	(5)	31	(8)
		Partially	4	(1)	15	(4)
		Yes	**77**	**(20)**	54	(14)
Medical Total	.457	No	71	(37)	60	(31)
		Partially	8	(4)	10	(5)
		Yes	21	(11)	31	(16)
Reporting Total	.405	No	53	(41)	63	(49)
		Partially	13	(10)	12	(9)
		Yes	35	(27)	26	(20)

Bold numbers indicate a 20% or greater difference between matched and study department.

Table 6. IACP Category Scores

IACP	*p*	% (N)	Study Department		Matched Department	
Awareness and Training Total	.554	No	8	(1)	23	(3)
		Partially	0	(0)	0	(0)
		Yes	92	(12)	77	(10)
Deployment Total	.136	No	49	(45)	35	(32)
		Partially	12	(11)	13	(12)
		Yes	38	(35)	52	(47)
Post Deployment Total	.826	No	8	(1)	15	(2)
		Partially	8	(1)	8	(1)
		Yes	85	(11)	77	(10)
Medical Total	.021	No	43	(50)	50	(58)
		Partially	27	(32)	13	(15)
		Yes	30	(35)	38	(44)
Reporting Total	.948	No	63	(66)	62	(64)
		Partially	8	(8)	9	(9)
		Yes	29	(30)	30	(31)

Bold numbers indicate a 20% or greater difference between matched and study department.

Table 7. Comparison of Study/Matched Department's Failure to Comply Rate

			PERF		IACP	
			%	*p*	%	*p*
Depts. 1	Phoenix Police	Study	33	.274	35	.382
	San Diego Police	Matched	47		50	
Depts. 2	Harris County Sheriff	Study	53	.351	55	.244
	Dallas Police	Matched	37		46	
Depts. 3	Las Vegas Police	Study	37	.178	**58**	.351
	Orange County Sheriff (CA)	Matched	43		38	
Depts. 4	San Jose Police	Study	43	.003	31	.147
	Seattle Police	Matched	**80**		**58**	
Depts. 5	Jefferson Parrish Sheriff	Study	87	.031	**88**	.012
	East Baton Rouge Parish Sheriff	Matched	70		54	
Depts. 6	Miami-Dade Police	Study	47	.555	42	.691
	Jacksonville Sheriff	Matched	37		50	
Depts. 7	Orange County Sheriff (FL)	Study	30	.127	46	.469
	Miami Police	Matched	47		54	
Depts. 8	Sacramento County Sheriff	Study	**57**	.297	**35**	.362
	Riverside County Sheriff	Matched	37		19	
Depts. 9	Oklahoma City Police	Study	50	.059	50	.351
	Tulsa Police	Matched	47		31	
Depts. 10	Fort Worth Police	Study	70	.951	35	.018
	Austin Police	Matched	67		**73**	
Depts. 11	Gwinnett County Sheriff	Study	70	.260	**77**	.039
	Greenville County Sheriff	Matched	53		46	
Depts. 12	Indianapolis Police	Study	**70**	.000	50	.004
	Cincinnati Police	Matched	17		35	
Depts. 13	Sonoma County Sheriff	Study	50	.341	27	.010
	Stanislaus County Sheriff	Matched	43		**58**	

Bold numbers indicate a 20% or greater difference between matched and study department

APPENDIX B
ACRONYMS

ARD	Arrest Related Death
BJS	Bureau of Justice Statistics
CALEA	Commission on Accreditation for Law Enforcement
CED	Conducted Energy Device
CEW	Controlled Electrical Weapon
DOJ	Department of Justice
ECD	Electronic Control Devices
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
GAO	Government Accountability Office
IACP	International Association of Chiefs of Police
LTL	Less Than Lethal
NIJ	National Institute of Justice
OC Spray	Oleoresin Capsicum Spray
PD	Police Department
PERF	Police Executive Research Forum
POST	Peace Officer Standards and Training
TASER	Thomas A Swift Electric Rifle
VF	Ventricular Fibrillation