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CORRELATES AND CAUSES OF
VIOLENCE AGAINST POLICE OFFICERS:
A CRIMINAL EVENTS ANALYSIS

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
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ABSTRACT

Violence against police officers is a major problem in America. Previous studies on violence and police officers have usually focused on violence *by* police officers, not violence *against* police officers. This study is the first of its kind as it examines violence against police officers from a comprehensive, criminal events perspective with detailed use of force/officer violence data collected by the Orlando Police Department. Individual officer characteristics, individual offender characteristics, situational variables, and geographical factors are considered. Logistic regression results indicate that use of force incidents are more likely to involve battery against one or more police officers when multiple officers are involved, when offenders are female, when offenders are of larger size (measured by weight), and when offenders are known to have recently consumed alcohol before the incident. Spatial analysis results indicate that there is significant clustering of batteries against police officers within the City of Orlando, and that the areas where police battery is predominant are very similar to areas where alcohol-related businesses are prevalent, and theoretically, more alcohol is consumed. Policy implications and directions for future research are discussed.

For Keith

ACKNOWLEDGMENTS

Thanks to my committee, whose individual strengths combined into a powerful combination—

My chair, Jay Corzine, who took me to OPD during my first semester at UCF, introduced me, and trusted me to “run with it.” For responding (usually with humor) to every single “question about my dissertation” email. And for the mentoring and guidance throughout the entire degree—your work is fascinating, and it is one of the main reasons that I chose UCF for my doctoral education.

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welcome exception to the rule that law enforcement agencies do not voluntarily share information with academics.

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CHAPTER ONE: INTRODUCTION

“One of the first things that’s imbued upon you when you come on this job is never think this guy is gonna come peaceful. Always assume he’s gonna fight like Satan. With anybody at all.”

-anonymous Chicago PD officer (Fletcher, 1990, p.16)

Violence is a common occurrence for law enforcement officers. Patrol officers see violence on a regular basis and are often personally involved. In 2008 alone, the FBI reports that 58,792 officers were assaulted, or about 11.3 officers were assaulted per 100 officers in the US (Federal Bureau of Investigation, 2009). Furthermore, over a quarter of those assaulted were injured during the assault (n=15,345), and 41 of the officers were feloniously killed (Federal Bureau of Investigation, 2009). The frequency of violence against officers has decreased slightly over the past few years, but is still much higher than the levels of 1960 when officer deaths totaled 28 (Chapman, 1998). While we are headed in the right direction, there is still a lot of work to be done to protect the officers who protect us every day.

There are many reasons that we should want to learn more about violence against police officers. Obviously, we want the officers themselves to be as safe as possible, but there are other types of costs besides the psychological and emotional

issues associated with being the victim of violent crime. When an officer is assaulted or battered, time and money are lost. There are tangible costs associated with all facets of the violent encounter, including lost work time or reduced-duty time due to injury or additional paperwork, in addition to medical costs, including ambulance services, hospital and doctor visits, and medications—and most (if not all) of these costs come from government funds, which, of course, come from citizens' tax dollars.

According to the work of Robert Kaminski, foot pursuits alone in Los Angeles County, California, resulted in an assault on one or more deputies in 42% of incidents and injury to at least one deputy in 16.9% of incidents, including minor injuries such as bruises and sprains as well as more serious injuries such as fractures and human bites (Kaminski, 2010). A similar study of the Richland County Sheriff's Department in South Carolina (Kaminski, 2007) found that force was used against deputies in about one in three foot pursuits, and nearly 40% of those pursuits involved serious force used against the deputies, such as weapon use or fist or foot strikes. Thirty-three percent of the deputies reported being intentionally injured by suspects during at least one foot pursuit, with injuries ranging from very minor injuries which did not require treatment to serious injuries requiring overnight hospital stays. The costs of the intentional foot pursuit injuries at Richland County were substantial, with a total of 273 days work lost and 358 reduced-duty capacity work days (Kaminski, 2007), and of course this does not include the costs of the medical care that was required due to these injuries.

In the past, many studies have focused on the connection between police officers and violence, but most of those studies have focused on the use of force *by* the police rather than violence used *against* the police (see, for example: Gallo, Collyer, & Gallagher, 2008; Hoffman & Hickey, 2005; Kaminski, DiGiovanni, & Downs, 2004; Lersch & Mieczkowski, 2005; McCluskey, Terrill, & Paoline, 2005; McElvain & Kposowa, 2004; Seron, Pereira, & Kovath, 2004; Seron, Pereira, & Kovath, 2006; Paoline & Terrill, 2007; Terrill, Leinfelt, & Kwak, 2008). Even so, there is a growing body of work regarding the police officer as a victim. Most of these studies look for general correlates of violence against police, but very few of them attempt to provide a solid theoretical explanation for such incidents, and those that do are often limited in the effectiveness of their explanations. Social events, especially crimes, are complicated by nature, and therefore any viable attempt to explain these events will require a more thorough examination than has been conducted in the past.

The current study is intended to increase the understanding of violence against police officers and the factors that lead officers who use force against a suspect to be battered by that suspect¹. This will be accomplished through the comparison of use of force arrests involving officer battery with use of force arrests not involving officer battery. Data on violence against officers collected from the Orlando Police Department will be examined through the framework of the criminal events perspective, a

¹ Throughout the study, violence against police officers will be discussed in different terms. This may be referred to as police violence, police assault, police battery, or police murder. In all of these instances, the study is referring to violence *against* the police, not violence *by* the police.

comprehensive approach to studying crime incidents, which is explained in further detail below. By gaining a better understanding of these situations and what leads to them, we will have a better understanding of how to effectively protect officers through policy changes and training recommendations. After a review of relevant existing literature, the methodology of the study will be discussed, followed by results, discussion, and recommendations for law enforcement policy and for future research.

CHAPTER TWO: LITERATURE AND THEORY

Existing Literature

The studies that have accumulated so far about violence against the police have uncovered several factors which may affect the frequency of these incidents. These studies usually focus on either general resistance against officers, assaults and batteries against officers, or the unlawful deaths of officers.

Resistance against Officers

While there have been few attempts to estimate how often suspects resist arrest, we know that suspect resistance occurs on a regular basis. Garner and Maxwell (2002) report that suspects use physical force during an arrest in about 1 in 6 cases. When a subject resists arrest, the extent of the resistance might be passive, or the offender might resist by assaulting or battering the officer. In extreme circumstances the encounter might end with the officer's and/or offender's serious injury or death. Suspect resistance may be the incident in itself, or it may lead to a situation that is much more serious.

Few studies have been conducted on the possible predictors of suspect resistance. The notable exception is a study of police use of force and suspect resistance in Phoenix, Arizona (Garner & Maxwell, 2002). In their study of 1,585 adult custody arrests, the authors found that in 61.6% of the arrests, the suspects offered no resistance. In 12.4% of the arrests, the suspects offered psychological or verbal resistance only, and in almost 9% of arrests, the suspects used or threatened to use a weapon or physical tactic. Many of the potential predictors of force by police officer or suspect turned out to have no effect or an inconsistent effect on the probability of force being used. Among factors found to significantly predict suspect use of force were increased numbers of police officers, bystanders being present, alcohol impairment of the suspect, gang involvement, and violent offenses.

Of the few other studies regarding suspect resistance, the results were rather ambiguous. Two of three major studies found race of the offender to be an indicator of high levels of resistance. Belvedere, Worrall, and Tibbetts (2005) found that in southern California black suspects were more likely to resist when being arrested by white, black, or Hispanic officers and white suspects were less likely to resist when being arrested by black or Hispanic officers. Engel (2003) found that in Rochester, St. Louis, and Tampa/St. Petersburg, non-white suspects were less likely to comply with white officers. It should be noted, however, that this study used data that were collected thirty years ago, and it is unknown whether or not trends have changed since that time.

None of these studies indicated that any officer characteristics were predictors of resistance, but several suspect characteristics were deemed as important, such as suspects being female (females were more likely to be disrespectful toward officers than males) (Engel, 2003), intoxicated, disrespectful, and arrested for serious or violent crimes (Garner & Maxwell, 2002; Kavanagh, 1997). Contrary to these findings, however, Belvedere and colleagues (2005) found that offense seriousness did not affect the likelihood of resistance by the suspect. Kavanagh (1997) also found that when suspects were in the presence of other suspects they were more likely to resist, but Garner and Maxwell (2002) found resistance more likely when there were more police officers and/or bystanders around. Situational factors deemed most important for predicting resistance were: contact initiated by the officer (as opposed to being initiated by a call for service) and night-time incidents (Kavanagh, 1997), as well as beat area. Beat areas commonly considered as dangerous by police were much more likely to breed suspect resistance than other geographical areas (Belvedere et al., 2005).

Assaults and Batteries against Officers

Assaults and batteries against police officers involve intentional, physical attacks and do not include mere passive resistance, although such attacks might occur *while* resisting. Some sources report that police assaults have decreased consistently in recent years (e.g. California Commission on Peace Officer Standards and Training or

CA POST, 2001; Federal Bureau of Investigation, 2008), while others argue that the number of assaults is generally static (e.g. Brandl, 1996). The FBI's Law Enforcement Officers Killed and Assaulted (hereafter referred to as LEOKA) data indicate a very slight decrease in the rate of officers assaulted over the past five years (Federal Bureau of Investigation, 2009) (see Figure 1). Research on assaults against police has been more prolific than on resistance in general, and several factors have been advanced which appear to correlate with these incidents.

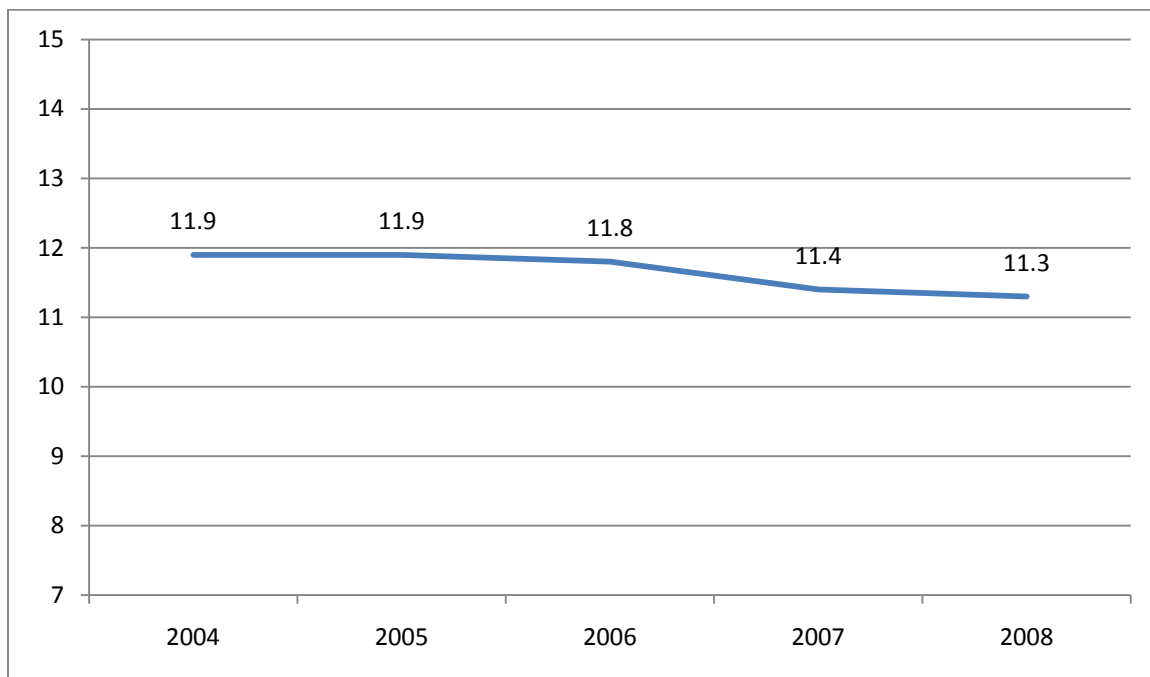


Figure 1: Rate of Officers Assaulted per 100 Sworn Officers by Year (FBI Law Enforcement Officers Killed and Assaulted, 2004-2008)

A study conducted by Toch (1992) shows that the major motivations for police assaults in general are in defending personal autonomy (i.e. not being touched or told what to do), defending others, and efforts to escape. The FBI (1997) found in a study of serious police assaults (which included cases of attempted but unsuccessful murder) that 38% of the incidents were committed to avoid arrest or to escape, 19% were attempts to kill the officer(s), 14% were attempts to frighten the officer(s), 7% were attempts to wound, and 2% were attempts to immobilize the officer(s) (the remaining 20% gave no answer to this question). Sixty-four percent of the offenders in these cases stated that the attack was impulsive rather than planned, and one-fourth stated that there was nothing that officers could have done to prevent the attacks. Those offenders who suggested that the officers did contribute to the attack stated that the officers might have avoided said attacks by waiting for backup, discontinuing the arrest, treating the offenders with “dignity and respect,” properly identifying themselves, acting calm, or immediately arresting them upon arrival at the scene (Federal Bureau of Investigation, 1997).

The “average” offender who seriously assaults a police officer (to the extent that there is such a person) is male, in his mid-20s, single, and around 5’9” (Federal Bureau of Investigation, 1997). The offender is usually in good general health and almost always has a criminal history (Federal Bureau of Investigation, 2006). At the time of the assault, the offender has often recently used drugs, alcohol, or both (Federal Bureau of Investigation, 2006; Stetzer, 2001).

Most serious officer assaults occur in situations when the officer has initiated contact with the offender rather than being called to the scene (Federal Bureau of Investigation, 1997). When the assaults do occur in response to calls, the calls are usually of a disturbance nature (Brandl, 1996; Federal Bureau of Investigation, 1997). The officer almost always arrives at the scene of an eventual serious assault in a vehicle, and usually it is a one-officer vehicle although other officers may be on scene or nearby. Almost half of the offenders also arrive in vehicles, but almost half are also in the company of others upon arrival (Federal Bureau of Investigation, 1997; Federal Bureau of Investigation, 2006). The assaults usually occur outdoors, either on a highway or roadway or in an alley. Although time frames are more difficult to agree upon as some studies find that the most common time frame is 12PM-12AM, some state that it is 10PM-2AM, and still others find it to be 4PM-midnight; most studies do agree that the most common times for officer assaults are during the hours of darkness (Brandl, 1996; Federal Bureau of Investigation, 1997; Federal Bureau of Investigation, 2006; Meyer, Magedanz, Dahlin, & Chapman, 1981). The slight discrepancies in these times may be due to geographical differences as some studies cover assaults nationwide while others focus only on one area, such as a specific city.

Only a few studies mention the days of the week that are most prominent for police violence. Meyer et al. (1981) report that officer assaults are more common on the weekend days. The FBI's LEOKA data report that most officer *deaths* from 1999 to 2008 occurred on Thursday, Friday, and Saturday, although there were spikes of

incidents almost every day of the week during at least one year (Federal Bureau of Investigation, 2009). This source does not report the days of the week most common for assaults in general, however, only felonious officer deaths. Only one other study was found to have examined days of the week for assaults, and that study also examined lethal assaults only. Among lethal assaults on officers that occurred between 1995 and 1999 in California, none occurred on Monday, four occurred on Tuesday, five occurred on Wednesday, four occurred on Thursday, eight occurred on Friday, five occurred on Saturday, and seven occurred on Sunday (California Commission on Peace Officer Standards and Training, 2001). While no particular day stands out as most dangerous in these cases, it does appear that weekends are the most dangerous times in general.

Another crucial factor in police assaults involves weapon use. The most frequently chosen type of weapon by far for general police assaults is personal weapons, which include hands, feet, and other body parts (Brandl, 1996; California Commission on Peace Officer Standards and Training, 2001). Almost four out of five assaults on officers employed personal weapons, about 5% employed firearms, 2.5% employed knives, and about 14% involved other types of deadly weapons (California Commission on Peace Officer Standards and Training, 2001). Officers were generally armed with their duty weapons, but at least one study shows that they rarely drew them (Stetzer, 2001).

Serious assaults on officers (those that attempted to kill the officer but were unsuccessful) told a much different story. The weapons of choice in these attacks were by far firearms, usually handguns. Most often the gun was brought to the scene by the offender, about half of which had been involved in previous shootings in some way (as either the shooter or the victim). The primary reason reported for the choice of particular gun was availability, followed by familiarity. In these more serious assaults, only 40% of officers who were assaulted with firearms were able to fire back during the assault (Federal Bureau of Investigation, 1997). While it is often assumed that the use of a weapon means that injury is more likely, Kaminski and Sorensen (1995) actually found that in Baltimore County, Maryland, injury was more likely when personal weapons (i.e. bodily force) were used rather than other types of weapons.

Other weapons at the disposal of police officers (besides firearms) have been studied, though not extensively. Robert Kaminski has conducted several studies on police assault incidents and intermediate officer weapons, including some work on the relationship between the use of oleoresin capsicum spray, or OC spray (pepper spray), and officer assaults. Kaminski, Edwards, and Johnson (1998) tested the “Velcro effect,” which refers to the compliance of an offender after hearing the officer open the Velcro pouch (or in some cases the snap pouch) containing his OC spray. The idea behind the Velcro effect is that further violence is deterred when threatened with the spray because many offenders have either experienced OC personally or have heard about its effects. OC spray has been widely adopted as a defensive weapon by police agencies but has

not been studied extensively. Kaminski and colleagues tested the Velcro effect by comparing police assaults both before and after the adoption of OC spray in Baltimore County and found that the weapon had a statistically significant effect on officer assaults, decreasing incidents by 3.2 per month (Kaminski et al., 1998).

Another intermediate weapon of officers which is now widely used is the conducted energy device, or CED (i.e. Taser). Smith, Kaminski, Rojek, Alpert, and Mathis (2007) studied the impact of the CED on officer and suspect injuries in two agencies. In one agency, the CED made both officer and suspect injury less likely as well as reducing the seriousness of suspect injuries. In the other agency, CEDs were not found to decrease the odds of injury, but pepper spray was. The authors concluded that while more research is needed on CEDs, their use and the use of pepper spray could reduce the likelihood of injury to both officers and suspects, especially over hand-to-hand combat techniques, which are more likely to cause injury.

Another factor that appears to be important in understanding police assaults, both regionally and by areas as small as neighborhoods, is the geographic area in which the assault occurs. Officers are assaulted more often in the South than in any other region of the United States (Federal Bureau of Investigation, 1997). It also appears that in at least some jurisdictions, as with resistance in general, certain smaller areas such as neighborhoods are overrepresented (generally those areas widely considered to be “bad neighborhoods”) (Stetzer, 2001). Kaminski, Jefferis, and Gu (2003) found similar results in Boston when they studied the effects of block-level

variables on violence against police. Results indicated that aggravated assaults against police officers are more common in block groups that have a high density of arrestees, as well as heightened levels of crime and violence.

There have also been a few studies conducted on the associations between police assaults and specific types of calls for service. Hirschel, Dean, and Lumb (1994), for example, studied the relationship between police assaults and consequent injuries and domestic violence in Charlotte, North Carolina. Contrary to popular conjecture, domestic violence was not found to cause more injuries to officers than other calls, leading the authors to suggest that officer safety policies should focus on general safety rather than strategies related specifically to domestic violence. Rabe-Hemp and Schuck (2007) found that domestic violence situations led to an increased risk of assault for female officers over that of their male counterparts, so it is possible that the gender of the officer has an effect on the situation that has not been found in prior studies of violence against officers and domestic violence.

Another study was conducted on police safety and traffic stops, another situation commonly claimed to be very dangerous for police officers. The researchers found that police deaths and assaults were rare when conducting traffic stops, and that traffic stops were not as dangerous as they had previously been deemed (Lichtenberg & Smith, 2001). These results were relative to the frequency of traffic stops, which are one of the most frequent duties of police officers, and carried out by most officers on a

daily basis. The actual number of officers assaulted while conducting traffic stops is still higher than when officers were assigned to most other duties.

Officer Deaths

It is difficult to determine the factors that might make police officers less likely to suffer assaults, and it is even more difficult to do so with intentional deaths of police officers. When dealing with police assaults, the officer's perspective on the situation is available; when dealing with police deaths, investigators and researchers often must take their best guess at the particulars of the situation. Sometimes the offender will talk about the incident if he or she was not also killed. At other times, there is evidence from the officer's in-car camera or body microphone, if available. There may be statements from other officers, offenders, or witnesses, but often there is very little to go on when studying these situations. There are, however, many more data collected on felonious police deaths than assaults in general, and consequently much more research has been conducted on police deaths than on police assaults.

Most researchers agree that police deaths increased from about 1960 until the early 1970s, and then started a descent that continued at least through the mid-1990s (Batton & Wilson, 2006; Chapman, 1998; Quinet, Bordua, & Lassiter, 1997). There are many suggested reasons for the decline, several of which probably worked together to lower the police homicide rate. First and foremost is the adoption and technological

advancement of body armor, which has undoubtedly saved many officers' lives. Also, there have been numerous advances in police training, technology, and research on top of the fact that police behavior has been under much more scrutiny than in previous eras. Also, advances in emergency medical treatment have probably played a role (Batton & Wilson, 2006; Harris, Thomas, Fischer, & Hirsch, 2002). Trauma care for injuries such as gun and knife wounds and head blows is available much more quickly, leading to the increased likelihood of survival when faced with what would previously have been fatal injuries (Harris, et al., 2002).

While rates of police homicide continue to generally decrease according to existing literature and FBI LEOKA data (see Figure 2), they are still unreasonably high. After continuing to decline since the early 1970s the number of deaths is still much higher than in 1960 when the low reached 28 (Chapman, 1998). In 2008, the FBI reports that 41 officers were feloniously killed (Federal Bureau of Investigation, 2009). Police officers continue to be intentionally killed more than any other occupational group except taxi drivers and chauffeurs (United States Postal Service Commission on a Safe and Secure Workplace, 2000 and Castillo & Jenkins, 1994). From 1992-1997, police homicides still accounted for half of all deaths of law enforcement (Clarke, 1999).

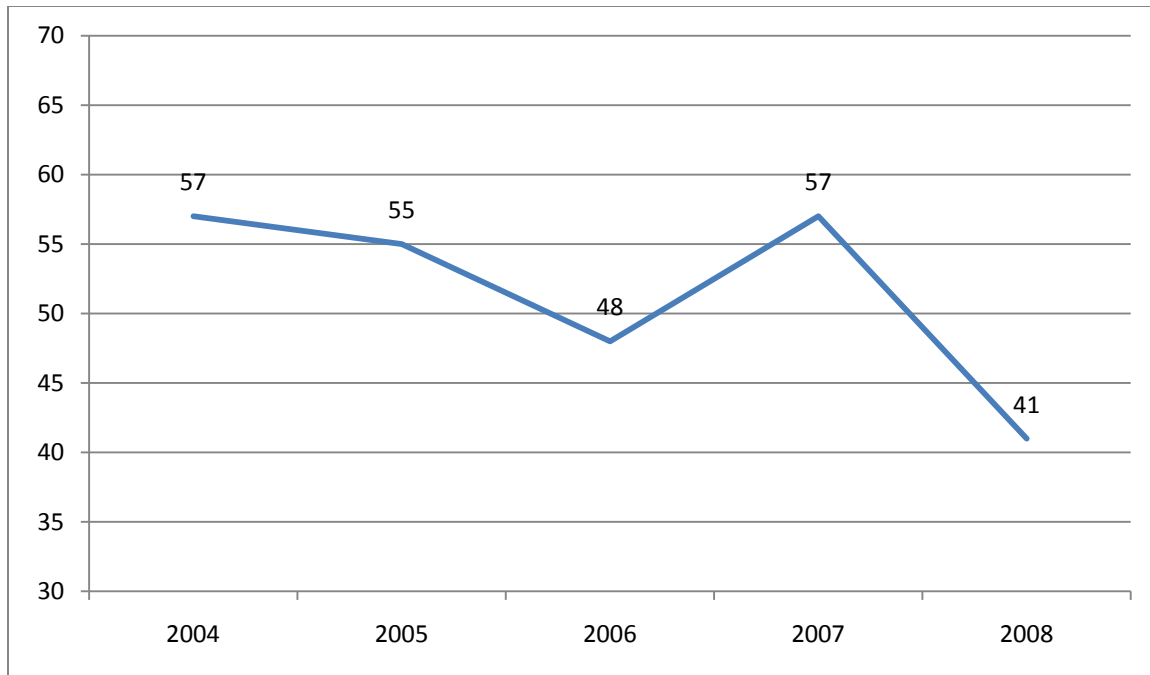


Figure 2: Felonious Deaths of Law Enforcement Officers (FBI Law Enforcement Officers Killed and Assaulted, 2004-2008)

To understand the dynamics involved in the killing of police officers, we turn to studies conducted by the FBI. *Killed in the Line of Duty* (1992) was the first of the FBI's three major studies on violence against law enforcement. It focused specifically on officers who were murdered on duty. The study examined in detail the cases of fifty-one incidents (which were not selected randomly) in which officers were slain and found similar results to the police assault cases studied. Officers in the study were generally white males with a high school education. The murdered officers were usually responding to disturbance calls in one-officer vehicles, and were most often killed with handguns. Offenders were of mixed races with a narrow white majority, were generally

male, and had no more than a high school education. Most often, the offenders were using drugs and/or alcohol.

Again, we should be aware that these incidents were not randomly selected, so caution must be used with any generalizations drawn from this study. King and Sanders (1997) assert that the results of the FBI's study are not supported by the national LEOKA data, which are also compiled by the FBI, because the non-random selection of cases for this study led to biased findings, namely in the representativeness of the "average" offender.

The California Commission on Peace Officer Standards and Training (POST) (2001) conducted a similar study using LEOKA data for the state of California (hereafter referred to as the California POST study). The study found that of thirty-three officer slayings in California from 1995-1999, all of the officers were killed with guns (predominantly handguns), although there was a reported ten percent increase in the use of assault rifles against officers since the previous five-year report. Most incidents occurred in urban and suburban areas during spring and summer. The majority of the murders were on weekends, although there were cases spread across most weekdays. Most often the incidents occurred during the hours of darkness.

Most of the slain officers in the California POST study were wearing body armor; of the seven officers who were not, three were off-duty at the time of the murders. All of the officers except two who were off-duty were armed, and of these officers one-third were able to draw and fire their weapons and one officer was able to kill his murderer.

The officers' fatal wounds were mostly to the head and chest, and most officers were shot only once. In four cases, the specific bullets used defeated the officers' issued body armor. About half of the murdered officers were killed within one minute of their arrival on scene, and about two-thirds had either no back-up or only one additional officer present. The majority of offenders in the California POST study were also alone, and about eighty-five percent of them had criminal records.

Other studies have come to similar conclusions. Chapman (1998) found that most officers who were murdered were responding to a disturbance, a robbery, or attempting arrest, and that handguns were the most common weapons used to kill officers. Chapman also found that the weekends were more fatal to officers, but not by a large margin, and that half of the murders occurred between 6PM and 2AM, with the most deadly times between 10PM and midnight. He also reports that female officers tend to die in the same circumstances as their male counterparts (Chapman, 1998).

Fridell and Pate (2001) also found that the vast majority of officer murders were committed with handguns. They report that about 16% of the officers were disarmed, and of these most were killed with their own weapons. One-third of the murdered officers were wearing body armor but were killed anyway either because they were hit in another body location, their armor did not stop the particular type of bullets used, or the bullet circumvented the armor. In cases of circumvention, the bullet usually went either in the unprotected side of the body or just above or below the vest (Fridell & Pate, 2001).

As with police assaults in general, those assaults that result in officer deaths also appear to have a geographical dimension. Kaminski, Jefferis, and Chanhatisilpa (2000) performed a cluster analysis on police deaths in the United States and found that while the South may not be *the* most dangerous place for officers in the United States, it is definitely among the top clusters when it comes to police deaths, along with large cities such as New York, Los Angeles, Chicago, and Washington, DC. The authors report that while the rate is very high in the South, police fatalities most often occur in metropolitan areas in general. Kaminski (2008) also found that economic depression was a statistically significant predictor of police homicides when compared at the county level.

In another study related to social conditions and violence against police, Jacobs and Carmichael (2002) examined large US cities (with population over 100,000) in relation to their risk factors for police. They assert that danger factors include cities with higher divorce rates, higher rates of violent crime, and especially cities with larger disparities in resources available to whites and blacks (in general, areas of high social disorganization). They report that police murders are higher in cities where blacks have less political influence. For example, the deaths seem less prevalent in cities with black mayors, even if those cities have economic inequality between white and black citizens. However, Kaminski and Stucky (2009) found in a reanalysis of this study that there was no support for the black mayor hypothesis and that the finding may have been based on the specific model used. After addressing methodological issues brought up in Jacobs'

rebuttal (2010) and running additional analyses, Kaminski and Stucky (2010) still found that the black mayor hypothesis was not statistically robust. Also, Kaminski (2008) found that there was no correlation between police murders and divorce rates as originally reported by Jacobs and Carmichael (2002).

While many studies have attempted to determine correlates of police violence, fewer have rigorously examined social factors that might affect the rates of police homicide. A notable exception, Kaminski and Marvell (2002) found in a longitudinal study of felonious deaths of officers that many factors assumed to affect the number of police deaths do not have a statistically significant effect. These include changes in the crack epidemic, executions, access to firearms, and emergency medical care (although the authors warn that more valid measures of emergency care are needed). The authors found that the factors which affect the police homicide rate are generally the same as those which affect the overall homicide rate, such as the condition of the economy. However, these factors seem to affect police homicides to a larger extent. Another study, conducted by Mustard (2001), examined the impact of gun laws on police deaths and reported that concealed weapons permits and gun purchase waiting periods did in fact lower police deaths, although only slightly.

The studies reviewed above represent a growing body of research about individual and social factors which correlate with police violence or which affect these situations as they are occurring; however, there is relatively little knowledge about *why* police violence occurs. Can violence against the police be explained in the same ways

as violence in general? Do incidents of violence against the police have different causes or characteristics than general violent incidents? Violence against officers may be undertaken in an attempt to prevent arrest or in efforts to resist the current social control system, reasoning that obviously would not apply in the average case of a simple assault and battery. This underscores the importance of developing a theoretical framework to explain police violence, something only a few studies have attempted to this point.

Explaining Police Violence

Some studies of the correlates of police violence have indirectly tested explanations of resistance to, and assaults of, police officers. For example, some prior studies have tested political or conflict-related factors (i.e. Belvedere, Worrall, & Gibbs, 2005; Engel, 2003; Jacobs & Carmichael, 2002; Kaminski & Stucky, 2009) and others have examined variables that may align with subcultural explanations (i.e. Kaminski, Jefferis, & Chanhatisilpa, 2000). Most studies conducted on police violence to this point have focused only on limited theoretical factors if any, seriously limiting the explanatory power of current literature on this topic. Violence against police officers is a quite complicated matter, and only a thorough theoretical perspective that takes into account individual, contextual, *and* social factors will be truly useful in explaining such incidents.

Kaminski (2002) provides one such example of a more holistic explanation of police violence in his use of routine activities theory. Developed by Cohen and Felson (1979), routine activities theory specifies that crime occurs upon the intersection of a suitable target, a motivated offender, and a lack of capable guardianship. Rather than focusing only on the offender, as many criminological theories of the past, routine activities theory was revolutionary in that it forced the consideration of victim and situational characteristics as well.

The concept of the motivated offender may not apply to police assaults in the traditional sense because most police assaults are unplanned attempts to escape arrest; in cases of violence against police officers it is more likely that the offender *becomes* motivated after the encounter between officer and offender has begun. Kaminski (2002) argues that police officers may make suitable targets if an offender is motivated by his or her wrongdoing and the knowledge that s/he will go to jail or prison if caught. Guardianship for police officers may theoretically be provided by firearms, body armor, and the like, although in Kaminski's 2002 study these factors were not found to reduce police murders. These variables and others affecting the proximity of targets to offenders, geographically speaking, and the exposure of the officer targets to said offenders may help to explain officer murders.

Fridell, Faggiani, Taylor, Brito, and Kubu (2009) also use routine activities theory to explain police violence and build on Kaminski's (2002) work by examining agency-level variables for their possible significance to police violence. Using data from the

National Incident-Based Reporting System (NIBRS), the authors studied three years of assaults and killings of police officers in the US. They found statistically significant relationships between police violence and the agency body armor policies (i.e. agencies that required the use of body armor by officers experienced fewer police assaults), the level of accountability taken by agencies as evidenced by the highest level of supervisor who reviewed use of force reports, and the violent crime rate in the area. These are all factors that can be explained using the concepts that routine activities theory encompasses. Requiring the use of body armor by an agency affects the level of guardianship, as does the level of accountability assumed by the agency, and an area's violent crime rate affects the proximity of suitable targets—in this case, police officers—to motivated offenders, who are generally more plentiful in areas with higher crime rates.

The works of Kaminski (2002) and of Fridell et al. (2009) represent a broader theoretical approach to explain violence against police that is necessary to encompass all relevant explanatory factors. Unfortunately, these studies stand alone in the use of this more comprehensive approach to studying violence against police, and while routine activities theory may be able to explain how and under what circumstances police assaults occur, the current study is focused on *why* these assaults occur, a task for which the criminal events perspective is more appropriate.

The criminal events perspective, which is similar to routine activities theory in that it considers multiple facets of crime occurrence rather than solely the offender, is the

theoretical framework which was employed in the current study. This theoretical perspective originally grew out of Luckenbill's (1977) idea of homicide as a situated transaction in which the victim and offender act, in turn, based on their perception of the other's stance. Luckenbill describes a six-stage process in which victim and offender interact in a designated order, all of which are situated in a specific social situation. Stage one occurs when the victim performs some act which the offender perceives as being offensive toward him/herself, whether the victim intended this act to be offensive or not. This interpretation of the victim's act as offensive comprises stage two of the process, and in stage three the offender chooses a response to this perceived offense, either in the form of excusing the behavior, retreating from the interaction, or retaliating. In Luckenbill's cases of murder, and presumably in the cases of all types of violent crime, the offender chooses the third option. In stage four, the victim now makes his or her choice, either to challenge the offender, to apologize, or to retreat from the situation. If the victim chooses to stand up to the offender, the transaction moves on to stage five, in which both victim and offender have stood up to each other and cannot back down without losing face, so they "commit to battle," which one of the actors in the transaction inevitably loses. Finally, in stage six, the offender again makes a decision, this time either to retreat from the scene or to wait on scene for the arrival of police officers; conversely, the offender may be forced to wait for the arrival of police officers by others at the scene. This, according to Luckenbill, marks the end of the situated transaction.

The criminal events perspective, as developed by Sacco and Kennedy (2002), grew from this idea of the situated transaction, and was designed to encompass not only the situation of the offender, but also that of the victim and of the social circumstances surrounding a criminal incident. Sacco and Kennedy assert that criminal events, like other social phenomena, have a beginning, middle, and end—each event has precursors, the actual transaction, and the aftermath of the transaction, which are all affected by the social situation, the environment, and the perspectives of all those involved in the event. Precursors to an event are the factors that bring the involved parties together in time and space. The transaction itself (i.e. when the actual event occurs) may involve any number of factors defined by the characteristics of the particular situation, such as whether the event occurs in a crowded parking lot or an isolated alley, whether one or all of the participants have been drinking alcohol or consuming other mind-altering substances, etc. Finally, the aftermath of the event might include reactions of the actors, witnesses of the event, police officers, and the community at large, as well as the effects of the crime on any victims and the attitudes and feelings of any offenders toward the event.

Rather than focusing solely on the offender who wishes to commit a crime, the criminal events perspective places the offender as one of several important facets of the situation. The victim, bystanders, police officers, where and when the crime occurs, and the social and physical environments are also acknowledged as playing a role. As Sacco and Kennedy (2002) point out, the fact that an offender wishes to commit a crime

does not necessarily mean that a crime will occur. For a crime to take place, the *opportunity* to commit the crime must arise, and this is where the other factors come into play.

While the criminal events perspective has never been applied to violence against police officers, there have been empirical tests of the theory based on other types of violent crime. Sherley (2005) used the criminal events perspective to study sexual assaults through the use of police case files. This allowed for a more thorough examination of the incidents in which the author could consider the unique circumstances of each actor. She consequently discovered that importance lay not only in the intersection of the victim, offender, and lack of guardianship, but also with the dynamics of these interactions and the relative importance of each actor.

Another study which utilized the criminal events perspective to study violent crime was conducted by Weaver et al. (2004). Based on NIBRS data, this study examined factors from six categories comprising the idea of the criminal event in an effort to understand what factors affect the lethality of interpersonal violent crime. The study found the criminal events perspective to be an effective tool for understanding the correlates of lethality as variables all facets of the criminal event were determined to affect lethality, with the circumstance of the assault and the weapon used found to make the strongest difference.

The criminal events perspective has never been used to study police violence, but there is reason to believe that it would be useful in doing so. Routine activities

theory has been successfully used to study police violence in the past (Fridell et al., 2009; Kaminski, 2002), and the criminal events perspective may be viewed as an extension and/or broadening of routine activities theory. Some comparisons may also be drawn between factors that affect violence against the police and violence in general, but the effects are still ambiguous. Using data from the National Law Enforcement Officers Memorial Fund (NLEOMF), Kaminski and Marvell (2002) found that while some of the same factors (such as economic growth and decline) affect both police homicides and general homicides, they are affected at much different rates with police homicide trends being influenced much more than general homicide trends.

As noted above, the criminal events perspective places emphasis on how actors and circumstances come together in space and time to lead to the commission of a crime; *where* and *when* incidents occur is an important part of understanding *why* incidents occur. The social environment in which actors are situated is of high importance in determining how an event will unfold, so any study hoping to uncover causes of police violence must consider the characteristics of the neighborhoods in which these incidents are common, something that can be accomplished through looking at an area's level of social disorganization.

Theories of social disorganization have flourished in recent years, and for good reason: many types of crime can be explained by the characteristics of the geographical area in which the crime occurred. Since the early days of the Chicago School and the groundbreaking works of Park and Burgess (1925) and Shaw and McKay (1942), social

disorganization theory has been tested time and again. The basic logic behind this perspective is that residents of a community normally exert social control in the public spaces in their area in order to maintain a safe neighborhood. When these informal social control networks break down, the community loses its control over the area, and crime, or originally, delinquency occurs (Shaw & McKay, 1942). When neighbors stop investing in their community by getting to know each other and maintaining a support network together, citizens can quickly lose the feelings of comfort and safety that they once enjoyed. Soon indicators of social *dis*organization arise, including high poverty levels, high population turnover, high population heterogeneity (Shaw & McKay, 1942), and an increase in female-headed households (Bursik & Grasmick, 1993). When indicators of social disorganization arise within a community, increases in crime generally follow.

Social disorganization theory has undergone considerable empirical testing in recent years and the perspective has gained a substantial amount of support. Several studies have demonstrated that crime incidents, offender locations, and attitudes about crime vary by geographical area and that crime is often concentrated in certain neighborhoods, usually where there is less informal social control (for example, see Button, 2008; Martinez, Rosenfeld, & Mares, 2008; Mustaine, Tewksbury, & Stengel, 2006). When a neighborhood has less informal social control over its public spaces, more crime occurs (Sampson & Groves, 1989). This increase in crime inevitably leads to a higher police presence, which leads to more interactions between citizens and

police officers in areas where a higher proportion of citizens may be involved in criminal activity and do not wish to have a higher level of contact with the police. This can lead to further hostility between the police and citizens in the neighborhood. In these high-crime areas where animosity towards police as well as formal authority in general is bred, the environment is naturally ripe for more violence to occur between police and citizens in that area; the police and potential attackers are often in close proximity to one another and there are more subjects in these neighborhoods who are motivated to avoid arrest by whatever means necessary. Therefore, socially disorganized areas are likely to experience more cases of violence against the police than socially organized neighborhoods.

While these links between social disorganization and police violence have not been studied extensively, there have been significant relationships found between some social disorganization factors and the murder of police officers. Poverty (Chamlin, 1989), unemployment (Bailey, 1982; Bailey & Peterson, 1987), and divorce (Chamlin, 1989; Peterson & Bailey, 1988) have all been found to influence the odds of police murder to some extent. It follows that these factors may be important indicators of violence against police in general as well.

Importance of the Current Study

Police violence is a difficult phenomenon to study because it is impossible to ascertain the rate of prevention afforded by police actions and behaviors—there are undoubtedly countless times when an officer does something that prevents an assault on him or herself or others and never knows it—after all, officers are trained to keep violence to a minimum whenever possible. While the body of research connecting certain individual and social factors with police violence is growing, much more work is needed as the body of previous research has, on the whole, suffered from some serious deficiencies.

One of the main problems with studying violence against the police is the availability and quality of data sources. The majority of studies thus far have relied on official sources of data such as the FBI's LEOKA dataset or NIBRS. These data sources are quite valuable in that they represent a broad set of cases from across the US. However, they only provide limited types of information which have often been funneled not only through the officers and then their agencies, but through an additional federal government agency as well. Few studies (e.g. Bazley, Lersch, & Mieczkowski 2007; Fridell et al., 2009; Kaminski, Edwards, & Johnson, 1998) have relied on data collected directly from police agencies, and although the data may be restricted to only one geographical area, they may be more detailed or provide different types of information than that available from nationwide sources, allowing researchers to study

more varied facets of officer assaults. The current study employed data collected directly by the Orlando Police Department (OPD) for their own use. The data included many variables of cases of violence against officers which would not be available from any other source.

Another major problem with prior research on violence against officers is that the majority of studies have examined only those cases of police assault which have ended with the officer's death. Minor assaults and those that result in minor injuries have been largely ignored in existing literature although they are—thankfully—*much* more common and it costs police agencies vast amounts of resources to handle these incidents. Aside from the emotional costs to the officers themselves, agencies lose resources on several other factors such as lost work time due to officer injuries, lost work time for officers and their supervisors due to extra paperwork for the incident, medical care for officers, and counseling for officers who have been assaulted. The current study considered *all* reported batteries against Orlando Police Department officers within a three-year period to facilitate learning about these more common minor incidents.

A third and final problem with existing research is the lack of a consistent and comprehensive theoretical background with which to frame the study of these incidents. The current study will be the first to consider victim, offender, and incident characteristics of the police assault as a criminal event. The use of the criminal events

perspective along with social disorganization theory allows for the study of police violence in a more comprehensive way than has previously been possible.

Research Questions

Based on findings from the above prior studies and the current study's theoretical framework, the following five research questions are advanced. Specific hypotheses of the current study will be linked to each research question in the discussion of research methods below in *Chapter Three*.

1. When are officer batteries most likely to occur?
 - Exact times are not agreed upon, but prior research does indicate that hours of darkness are generally most dangerous for officers (Brandl, 1996; Federal Bureau of Investigation, 1997; Federal Bureau of Investigation, 2006; Meyer, et al., 1981). A compilation of the most dangerous hours in these studies suggests that a timeframe of about 9:00 PM to 3:00 AM would be appropriate for analysis, especially considering that many bars close for business at 2:00 AM.
 - According to a California Police Officer Standards and Training study (2001), a study conducted by Chapman (1998), and the work of Meyer, et al. (1981), weekends are more dangerous to police officers than

weekdays. This may especially be true in the downtown bar district and the tourist areas of the city where weekends often bring larger crowds and increased alcohol consumption.

- The work of Meyer, et al. (1981) indicates that police assaults are most likely to occur during warmer, summer months. Uniform Crime Report (UCR) data indicate that summer months are the most dangerous time of year in general as well (FBI, 2004). Summer is also a high tourist season in Orlando, when there is ample alcohol consumption and crowds, leading to increased chances of disturbances of all types.

2. What types of calls are most likely to lead to officer battery?

- Based on previous research, calls of a disturbance nature will more often lead to officer battery and/or injury (Brandl, 1996; Federal Bureau of Investigation, 1997), as will cases stemming from violent offenses, cases with multiple officers involved (Garner & Maxwell, 2002), and cases with multiple offenders involved (Federal Bureau of Investigation, 1997; Federal Bureau of Investigation, 2006). Furthermore, police injury will be more likely in cases in which personal weapons are used by the offender (Kaminski & Sorensen, 1995), and police battery will be more likely when no intermediate weapons (such as oleoresin capsicum spray and/or Tasers) were used by the officer (Kaminski, Edwards, & Johnson, 1998; Smith, et al., 2007).

3. What demographic characteristics of offenders most often lead to battery on an officer in a use of force situation?
 - According to extant research, we expect that offenders who batter officers will be most often young, non-white (Federal Bureau of Investigation, 2007), and female (Engel, 2003). We also expect offenders of larger size and offenders with altered mental states (i.e. perceived mental illness or intoxication) to batter officers more often than other offenders (Federal Bureau of Investigation, 2006; Meyer, et al., 1981; Stetzer, 2001).
4. What demographic characteristics of officers are more likely to lead to battery?
 - Prior studies would lead us to expect that young officers, white officers, and male officers will suffer battery most often (Federal Bureau of Investigation, 1992).
5. In which areas of the City of Orlando is officer battery more prominent?
 - Incidents of officer battery are most likely to occur in areas of high social disorganization because of a general attitude of disrespect for formal law enforcement that is more predominant in these areas. Officer batteries are also more likely to occur in areas where there are large crowds of people together along with large amounts of alcohol consumption because the combination of crowding and alcohol use is

likely to lead to disturbances and fights. In Orlando, the areas of high alcohol use would be the bar area of the downtown business district and the tourism areas.

CHAPTER THREE: METHODS

The goals of the current study are twofold: (1) the study tests for empirical support of the criminal events perspective as an explanation of violence against police, and (2) the study determines factors which contribute to the likelihood of batteries against police officers. As noted above, the variables tested can be divided into three broad categories: situational or structural characteristics, offender characteristics, and officer characteristics. *The criminal events perspective as a framework for studying violence against police is supported if at least one variable in all three categories is a statistically significant predictor of police violence.* These findings would indicate that viewing police battery as an event with a beginning, middle, and end and taking into account the entire social situation revolving around such incidents are necessary strategies if we are to understand why these crimes occur.

Data

Data used in the current study are from the Orlando Police Department (OPD), the municipal police agency of Orlando, Florida. OPD employs over 700 certified law enforcement officers in patrol capacities throughout the city of Orlando, including patrol vehicles, foot officers, horseback officers, and bicycle officers (City of Orlando, 2005). OPD serves metropolitan Orlando, which has a population of 250,000 year-round city

residents. The greater Orlando area has over two million year-round residents (US Census Bureau, 2007) and is the fourth largest metropolis in the southeastern United States (City of Orlando, 2009). The metro Orlando area is a major tourist destination which attracted 48.7 million visitors in 2007 alone (Orlando/Orange County Convention and Visitors Bureau, 2009), providing challenges for law enforcement that most areas do not face. Besides being responsible for a large metropolitan city with the crime problems that usually accompany growth, OPD must contend with the constant influx of visitors who are generally unknown to the department and who create unique challenges due to the heavy population density in popular tourist areas, especially the overcrowded downtown bars and nightclubs and other places where both locals and tourists gather en masse and where alcohol use is prevalent. These factors make Orlando an unusually interesting city in which to study crime.

The current study utilized data of Orlando Police Department (see Appendix A) that were collected internally by OPD for the agency's own use. OPD collects information on every reported incident in which force is used by any of the agency's police officers. Every reported use of force is recorded on these forms regardless of whether the incident resulted in injury to any party or even the eventual arrest of the subject on which force was used. For the purposes of the data collection, use of force may have involved the deployment of weapons by officers, but also simply the use of hands or bodies to control a suspect. The forms include: the time, date, and location of the incident (some incidents occurred outside city limits but involved City of Orlando

police officers), the original reason for the incident or call, any offenses for which the subject of the force was later charged, counts and demographic information on all offenders, OPD employees, and any known witnesses, information on all weapons used, a narrative of the incident written by the principal officer's supervisor, and whether or not the use of force was cleared by supervisors as appropriate and within agency guidelines. Also included is the number of OPD officers who were battered and/or injured from the incident, if any². It is important to note that in Florida, there is a legal distinction drawn between assaults, which can be verbal or involve the threat (but not actual use) of physical violence, and batteries, in which actual physical contact takes place. The OPD use of force forms indicate the number of officers *battered*. This allowed for a comparison between cases in which no officers were battered and cases that led to the physical battery of at least one officer.

The use of force forms were provided for use in the current study although they contain sensitive information that is not available to the public. For this reason, the study proposal was thoroughly reviewed and approved by the University of Central Florida's Institutional Review Board (see Appendix C). The files available represent three years of data from January 1, 2006 through December 31, 2008. However, the file for March 2008 could not be located at the time of data collection; therefore, the entire dataset represents a total of 35 months of cases rather than 36. All incidents reported will be included in the current study, so no sampling procedure will be required.

² A copy of the Orlando Police Department's use of force policy, including the described form, can be found in Appendix B.

The complete dataset contains 1,812 cases in which force was used by one or more officers for the three year total. This includes 391 cases in which a total of 457 officers were battered and 173 cases in which 216 officers were injured. All case information was taken from hard copies of the forms and put directly into an SPSS database for analysis.

It is important for our evolving knowledge of violence against the police to use different forms of data than the traditional official reports to the Uniform Crime Reporting system, and the current study assisted in this growth. However, as with any dataset, there were potential threats to validity and reliability that should be considered throughout the study methodology and subsequent interpretation of results. First, the information on the use of force forms was reported by the principally-involved officer's direct supervisor. As with any time that data are reported by several different people, there may have been conflicts in the way the data are reported. For example, the form asks for all physical tactics used by officers during the incident; some supervisors interpret this as weapons other than body parts, some include hands, knees, etc. only if they were used to strike, and some supervisors include any instance that an officer laid hands on a suspect, even if it were only to apply handcuffs. Therefore, in the current study, only intermediate weapons (i.e. Tasers) were tested for significance. Personal weapons (i.e. body parts) were not tested due to the ambiguity in the data.

Another methodological issue that should be considered relates to the reporting of injuries to officers. While some supervisors reported even the most minor of injuries,

others may have reported only more serious injuries. Furthermore, the traditional bravado associated with police officers may have led some officers not to report minor injuries, such as small scrapes or muscle soreness, at all. This undoubtedly led to an underreporting of officer injuries, although the extent of this problem is unknown. However, unreported injuries were almost certainly minor; we can be assured that any moderate or serious injury would generally have to be reported either because medical treatment was required or because there was blood-to-blood contact between the offender and the officer which had to be addressed for officer safety reasons.

A third methodological concern lies in the reporting of the races of the offenders and officers. Most supervisors reported race as either black, white, Hispanic, Asian, or other. Very few reports included whether an actor was white or black *and* whether he or she was Hispanic. Therefore, for purposes of uniformity in the data and their analysis, race in the dataset was reported simply as white, black, Hispanic, or other³; there was no separate distinction between white or black non-Latinos and white or black Latinos.

The fourth and final methodological issue to be aware of is temporal. Police-citizen interactions are complex and involve a large amount of perception on both sides. In some cases, offense may have been taken by the officer first, while in other cases offense might have been taken by the offender first. While all of these cases involved force by the police and some involved violence by the suspect, there was no reliable method to determine how the incident actually *started*, or more importantly which actor

³ Asians were included in the *other* category because there were too few Asian officers and suspects to form a separate category.

made the first move. The reader should be aware that because of data limitations, the analyses in the current study were incapable of addressing this temporal issue.

Analysis

Phase One: Descriptive Statistics

After testing for outliers, multicollinearity issues, and high levels of correlation between potential variables, three phases of analysis were conducted⁴. Phase one included an examination of the data collected on the incidences of violence against Orlando officers. Because these data had never been previously studied, they were first examined thoroughly through the use of descriptive statistics to fully understand the characteristics therein. This helped promote understanding of the general trends in the data and ensured that the data were clean for further analysis.

Phase Two: Logistic Regression

Phase two of the analysis employed inferential statistics to examine possible connections between officer battery and personal characteristics of the victims and

⁴ There were no multicollinearity problems detected and no variables were highly correlated.

offenders as well as situational characteristics. This phase utilized logistic regression⁵ in order to determine the statistical significance of several different factors related to police violence. Three models were employed during this phase of analysis. The first model included situational independent variables only, the second model added in offender characteristics, and the third model tested officer characteristics in addition to the variables of the first two models. The dependent variable for all three models was a dummy variable indicating whether or not a use of force incident led to a battery on one or more officers (where 0= use of force with no officer battery and 1= use of force with officer battery).

The independent variables for the first logistic regression model tested the relevance of situational factors for each incident. Independent variables included Taser use, time of day, season, the nature of the original call or officer-initiated contact, whether or not there were single or multiple officers and offenders on scene, and the number of businesses licensed to sell alcohol within a ½ mile radius of the incident location. Model Two added in variables to test characteristics of the primary offender, including race, age, gender, size/body composition (measured by BMI), and whether or not the offender was known to have recently consumed alcohol before the incident. The third and final model added in characteristics of the primary officer, including race, age, and gender.

⁵ Logistic regression was used as opposed to linear regression because the dependent variable was dichotomous.

The logistic regression models were designed to test several hypotheses that were directly related to the first four of the five research questions listed above.

1. When were officer batteries most likely to occur?
 - a. Officer batteries were more likely to occur between 9:00 PM and 3:00 AM.
 - b. Officer batteries were more likely to occur on Friday, Saturday, and Sunday.
 - c. Officer batteries were more likely to occur during June, July, and August.
2. What types of calls were most likely to lead to officer battery?
 - a. Officer batteries were less likely to occur when Tasers were used.
 - b. Officer batteries were more likely to occur when the original reason for the officer/suspect interaction was a violent crime (i.e. involved assault and/or battery, attempted murder, etc).
 - c. Officer batteries were more likely to occur when multiple officers were on scene.
 - d. Officer batteries were more likely to occur when multiple offenders were on scene.

- e. Officer batteries were more likely to occur in areas within ½ mile of a large number of businesses that are licensed to sell alcohol⁶.
3. What demographic characteristics of offenders most often led to battery on an officer in a use of force situation?
- a. Officer batteries were less likely to occur when the suspect was white.
 - b. Officer batteries were more likely to occur when the suspect was young.
 - c. Officer batteries were less likely to occur when the suspect was male.
 - d. Officer batteries were more likely to occur when the suspect had a higher BMI.
 - e. Officer batteries were more likely to occur when the suspect was known to have recently consumed alcohol.
4. What demographic characteristics of officers were more likely to lead to battery?
- a. Officer batteries were more likely to occur when the officer was white.
 - b. Officer batteries were more likely to occur to younger officers.
 - c. Officer batteries were more likely to occur to male officers.

⁶ The number of businesses licensed to sell alcohol within ½ mile was derived from a ½ mile buffer around all incidents created in ArcGIS.

Phase Three: Spatial Analyses

The third phase of analysis employed crime analysis techniques through the use of two geographic mapping and analysis software programs: ESRI's ArcGIS suite (ESRI, 2008) and NIJ's CrimeStat program, which is a statistics program that aids in the analysis of crime locations (Ned Levine and Associates, 2009). Phase Three was designed to examine the geographical characteristics of the incidents as compared to areas of social disorganization and alcohol use; this provided a test of the importance of space and time to the occurrence of police battery. First, maps were created to visually examine the locations of use of force incidents in general and use of force incidents that resulted in officer batteries. The base map layer of Orlando streets was obtained from ESRI's website (www.esri.com), where current map layers of Orlando city limits, streets, and neighborhoods are available for public use. Using this source ensured that the street layer was as up to date as possible. Census tract layers were obtained from the US Census Bureau website. All other map layers, which contained information about the battery incidents against officers, were created by the author directly from the OPD data.

Next, spatial analyses were conducted to determine whether there were statistically significant clusters of any of the above types of incidents. Because each type of spatial analysis tests for connections in different ways, it was crucial to use more than one type of analysis. Using multiple analyses to test for clusters allows for the

testing of both point and aggregate data, and the analyses vary in statistical robustness. If a simple analysis is run with positive results, there is impetus to run more advanced analyses.

In the current study, three analyses were run to test for spatial clustering. First, a choropleth map⁷ of officer batteries by count was created to visually test for incident clustering at the census tract level. Second, two nearest neighbor analyses were run. The nearest neighbor analysis tests for statistically significant clustering and returns an index value which tells the researcher whether clustering exists and the strength of the clustering. The single-order nearest neighbor index is a measure of how close, geographically, each incident is to the next closest incident; the k-order nearest neighbor index is a measure of how close each incident is to the next closest incident, then the next and the next to the kth incident. The index value returned states whether or not the incidents are closer than what would have been expected to occur by chance (Paulsen & Robinson, 2009).

The nearest neighbor analysis is a robust test of clustering, but does not describe *where* the clustering occurred. Therefore, a third spatial analysis was run—a quartic kernel density interpolation. Kernel density interpolation places a fine grid over the entire study area, then measures the distance from the center of each grid square to the incident locations (Paynich & Hill, 2010). This provides a continuous layer over the

⁷ Choropleth maps use varied colors to indicate intensity of a variable in each area under study. In this case, for example, each census tract was shaded so that darker tracts indicated a higher number of incidents occurring in that tract.

study area that indicates clustering or lack of clustering in all areas. The quartic type of interpolation was chosen because it is the most appropriate for mapping crime incident locations (Eck, Chainey, Cameron, Leitner, & Wilson, 2005). This is because crime locations are not continuous—in other words, no incidents occur “between” incidents.

Upon determining the extent and location of officer battery clusters, analyses were conducted in attempts to explore *why* there were clusters in these areas. To test for a relationship with social disorganization factors, a social disorganization scale was created using data from the US Census Bureau’s 2000 data collection⁸. Six social disorganization variables were considered, including: population heterogeneity (measured by % white), education level (measured by the percentage of the population age 25 and older who received less than a high school education), unemployment levels (measured by the percentage of the population age 16 and older who were unemployed), poverty level (measured by the percentage of households on public assistance and the percentage of families whose income was below the poverty level), housing stability/mobility (measured by the percentage of renter-occupied housing units and the percentage of vacant housing units), and family composition (measured by the percentage of female-headed households).

A scale was developed to measure social disorganization by census tract, and each tract was assigned a score from zero to six which indicated the number of social

⁸ The 2000 Census was the most recent source for obtaining all of the data needed at the tract level rather than the city level. A comparison between 2000 Census data for Orlando City and 2006-2008 3-year estimates from the American Communities Survey for Orlando City did indicate some changes over the past few years, although most were minor. For more information on the estimated differences between the 2000 and 2006-2008 data, see Appendix D.

disorganization variables for which the tract was above average; higher scores indicated higher levels of disorganization. A choropleth map was then created of social disorganization levels by census tract that could be compared to officer battery counts by census tract. This allowed for an investigation of the potential linkages between areas with high levels of officer violence and areas with high levels of social disorganization.

Another exploration into why officer batteries were more prevalent in certain areas revolved around alcohol use and crowding situations. A list of all current businesses in Orlando that hold licenses to sell alcohol was obtained from the State of Florida's Department of Business and Professional Regulation. These locations were mapped and compared to the clusters of officer battery incidents to determine the extent of overlap. Furthermore, alcohol license locations were also mapped by type (on premises consumption such as bars and clubs vs. off premises consumption such as liquor stores) to examine any differences therein.

These spatial analyses were designed specifically to test hypotheses related to the fifth research question:

5. In which areas of the city of Orlando was officer battery more prominent?
 - a. Officer batteries were more likely to occur in areas of high social disorganization.
 - b. Officer batteries were more likely to occur in areas of high alcohol use.

The first step in determining the characteristics and causes of officer battery in Orlando, as described above, was to examine the data set in detail. In *Chapter Four: Descriptive Statistics*, the frequency and characteristics of officer battery incidents are discussed. The regression analyses that comprise the second phase of analysis are discussed in *Chapter Five: Regression Analyses*, and in *Chapter Six: Spatial Analyses*, all of the spatial tests and results are provided.

CHAPTER FOUR: DESCRIPTIVE STATISTICS

The first stage of analysis involved using descriptive statistics to examine the data in detail. Between January 1, 2006 and December 31, 2008, there were 1,812 reported use of force incidents by police in the city of Orlando. Of those 1,812 incidents, 391 (21.58%) involved battery against at least one law enforcement officer employed by Orlando Police Department, and 173 cases (9.54%) involved the injury of at least one OPD officer. Six-hundred twenty-eight use of force cases occurred in 2006, 629 occurred in 2007, and 554 occurred in 2008 (although, as noted above, the file for the March 2008 cases could not be located at the time of data collection). There was no significant difference in the frequency of incidents by year. Of the incidents involving battery against an officer or officers, 140 occurred in 2006, 153 occurred in 2007, and 98 occurred in 2008. Twenty-four officer battery cases occurred in January, 34 occurred in February, 28 occurred in March, 40 occurred in April, 36 occurred in May, 38 occurred in June, 25 occurred in July, 32 occurred in August, 32 occurred in September, 38 occurred in October, 31 occurred in November, and 33 occurred in December. There appeared to be little difference by seasonality, which is logical because the semi-tropical climate in Orlando does not allow for the defined seasons that are found in other areas of the country. For a further breakdown of year and month of incidents, refer to Figure 3.

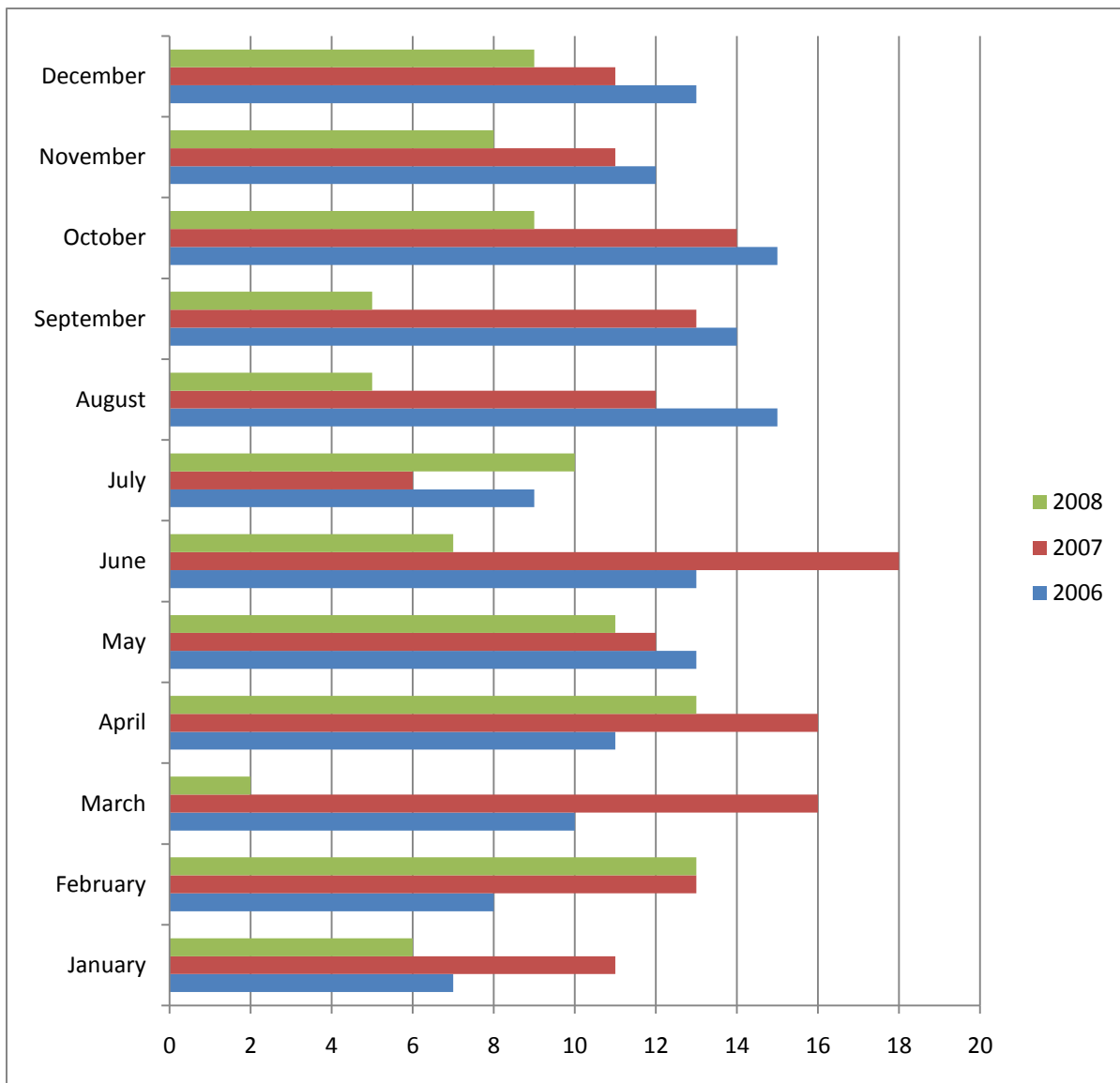


Figure 3: Officer Battery by Month and Year

NOTE: The main file for March 2008 incidents was missing at the time of data collection.

In 27 cases, battery against an officer or officers occurred on a Monday, 45 cases occurred on Tuesdays, 50 occurred on Wednesdays, 47 occurred on Thursdays, 60 occurred on Fridays, 79 occurred on Saturdays, and 83 cases occurred on Sundays (see Figure 4). Although prior research has not found a significant pattern of officer assault by day of the week, this is consistent with FBI reports (Federal Bureau of Investigation, 2009) indicating that the murder of police officers occurs most frequently during the weekend days. As for the time of day in which the incidents occurred, thirty-one cases occurred during the earlier part of the day, from 9:00 AM to 3:00 PM. Eighty-two cases occurred from 3:00 PM through 9:00 PM, 235 cases occurred between 9:00 PM and 3:00 AM, and 43 cases occurred between 3:00 AM and 9:00 AM (see Figure 5). While prior studies have not reached a consensus on the specific times that are most dangerous to officers, this finding is consistent in that the most dangerous times in general are times of darkness (Brandl, 1996; Federal Bureau of Investigation, 1997; Federal Bureau of Investigation, 2006).

Victim Characteristics

The 391 battery incidents involved 620 individual officer victims. The victims were overwhelmingly male (563 male victims, or 91%) (see Figure 6), to a slightly larger degree than the breakdown of the total officer population, which is 84% male and 16%

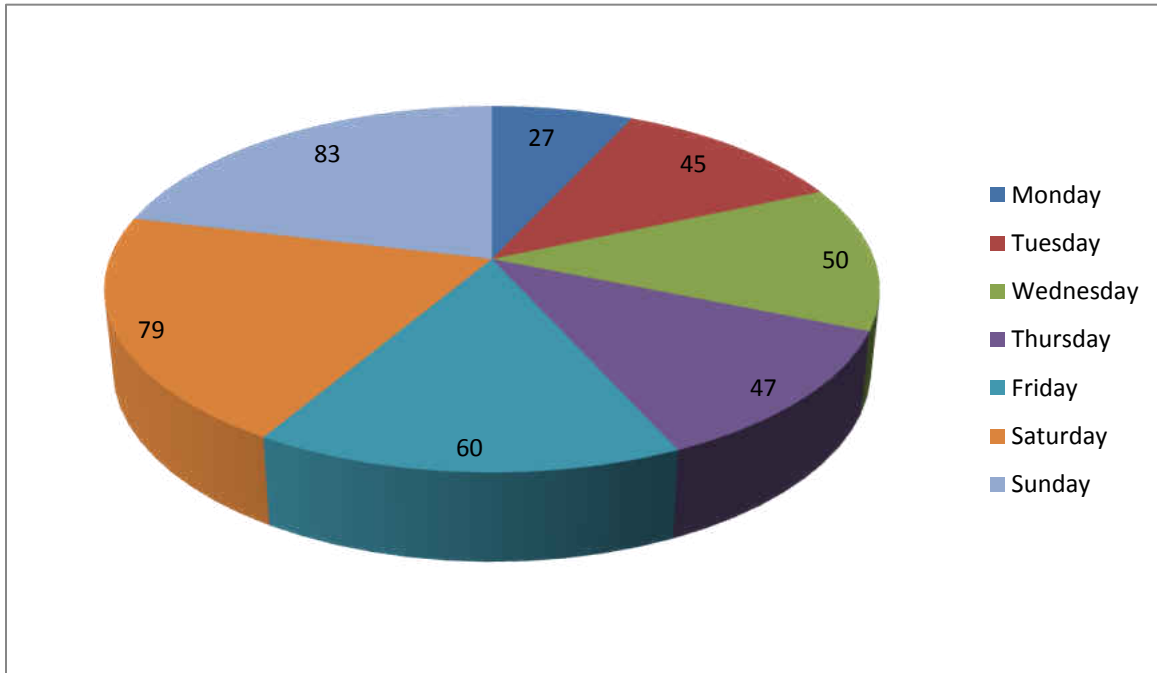


Figure 4: Officer Battery by Day of Week

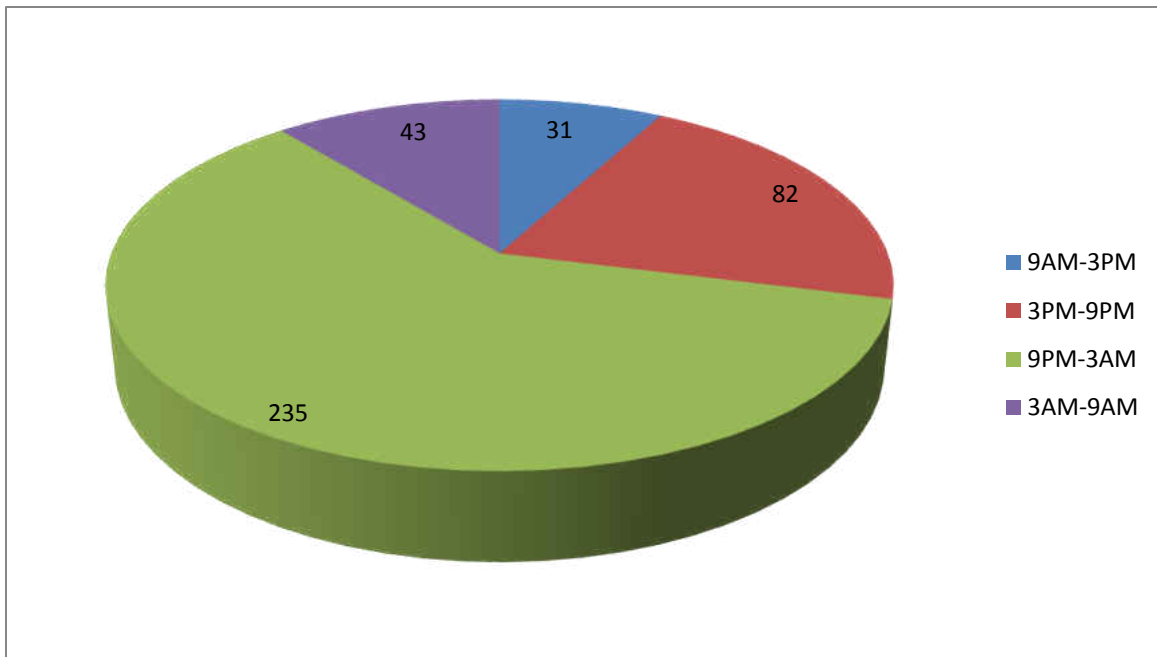


Figure 5: Officer Battery by Time of Day

female. The victim officers were predominantly white (72%), while 16% were black, 6% were Hispanic, 1% were Asian, and 2% were of other races. In 17 instances (3%), race information was missing (see Figure 7).

As compared to the general officer population, it appears that white officers are overrepresented among those battered, while Hispanic officers are underrepresented. Sixty-two percent of the total officer population at OPD is white, 18% is black, 16% is Hispanic, 3% is Asian, and about 1% is comprised of other ethnicities. About 8% of officers were age 25 or younger (n=50), while 44% were between 26 and 34 years of age (n=269), 44% were between 35 and 49 years of age (n=270), 2% were between 50 and 64 years of age (n=14), and 3% were age 65 or older (n=17) (see Figure 8). Officer ages ranged from 22 to 56 years at the time of the battery incident, with an average officer age of about 34.4 years. The officer demographic information was in general agreement with the findings of prior research.

Offender Characteristics

In the 391 battery incidents, there were 425 individual offenders. The offenders were also predominantly male (85%), but not to the same extent as the victims (Figure 6). Racial makeup of the offenders was strikingly different than that of the victims, with 43% white, 43% black, 11% Hispanic, and 1% each of Asian and of other descent (4 offenders, or about 1%, were missing race information) (Figure 7). This is generally in

line with the previously discussed prior studies in the area. Offenders were also younger than victim officers on the whole, with 6% age 17 or younger, 38% between 18 and 25 years of age, 30% between 26 and 34 years of age, 18% between 35 and 49, 4% between 50 and 64, and 1% age 65 or older (16 offenders, or 4%, were missing this information). Offenders were over five years younger than officers on the whole, with a range spanning 65 years (from 10 years to 75 years old) (Figure 8) and an average of about 28.9 years. Of course, some of this difference in age between victim and offender may occur because officers must be at least 21 years of age before being employed in law enforcement while there is no minimum age for offenders. The heights of offenders ranged from 4 feet and 4 inches to 6 feet and 5 inches with an average of about 5 feet 9 inches. Offender weights ranged from 90 pounds to 390 pounds with an average of about 181 pounds.

Offenders were not only from the state of Florida, but also many other states in the US as well as outside the US. Of the 425 offenders, 339 resided in Florida, 30 lived elsewhere in the US, and 1 was visiting from a foreign country. Another 28 offenders were transient, and for 27 offenders the residence was unknown, usually because the offender refused to answer or in a few cases because the offender had fled and not been found at the time of the report. For a breakdown of the counties in which the Florida suspects lived at the time of the incident, see Figure 9.

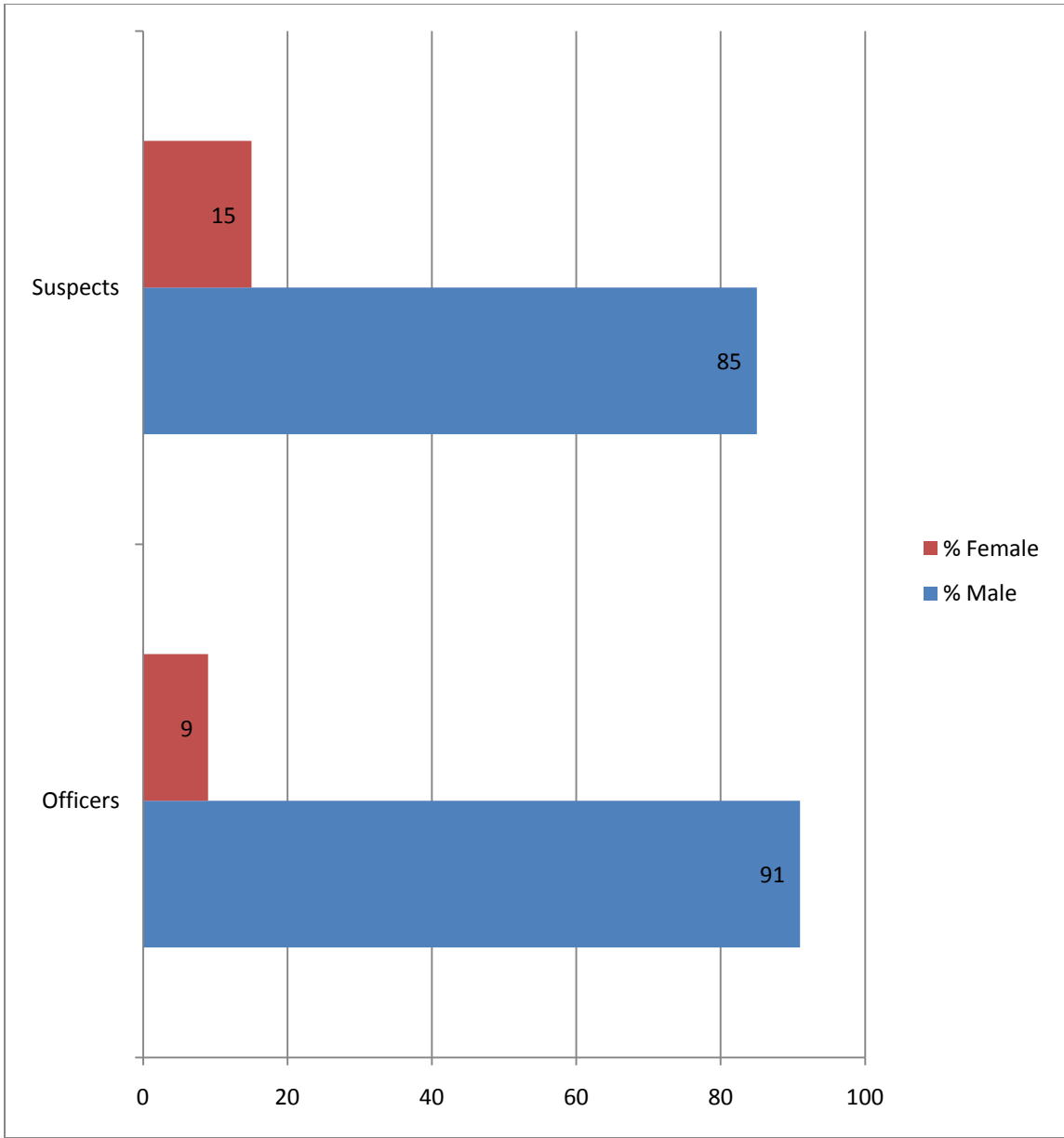


Figure 6: Sex of Officers and Suspects

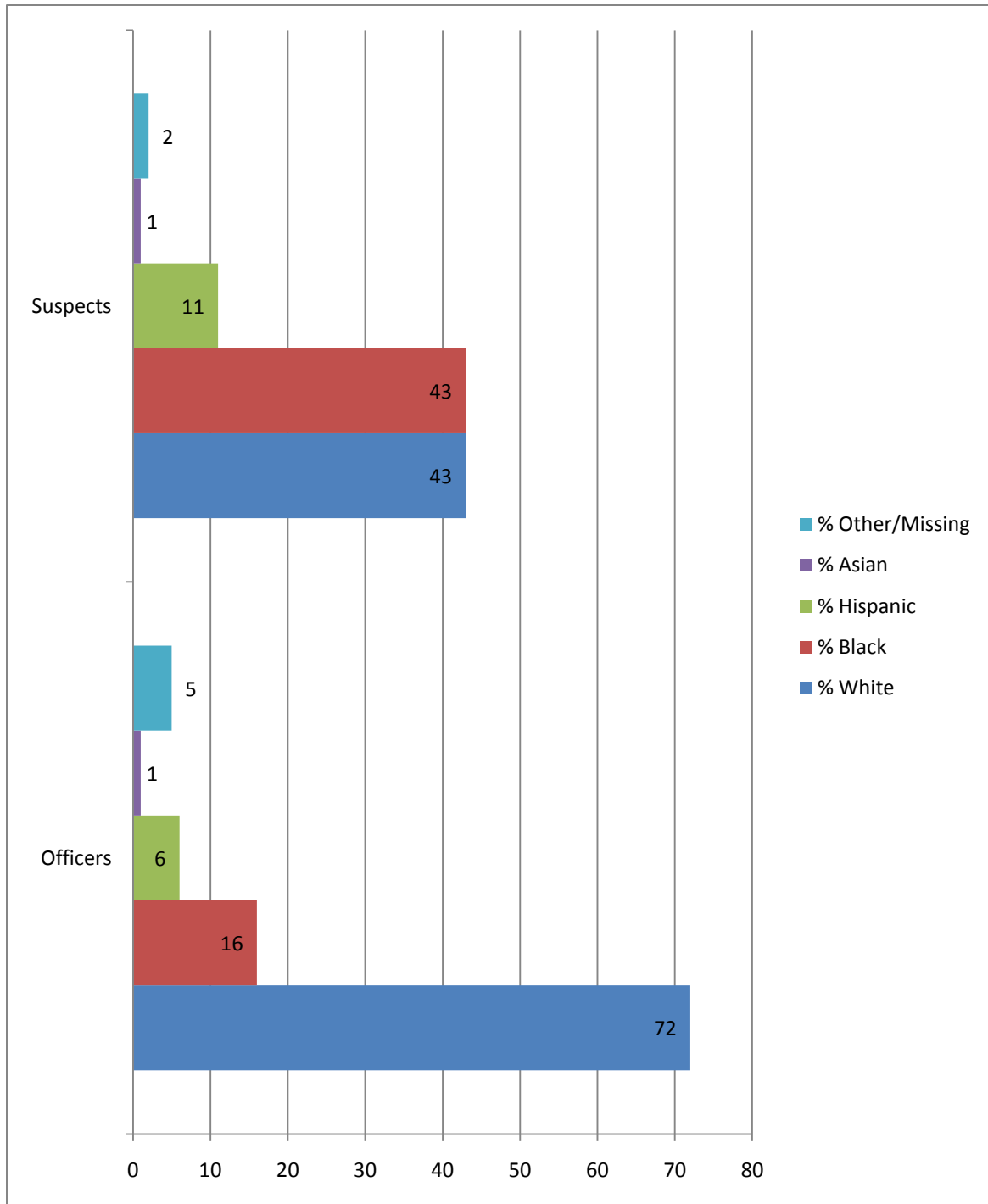


Figure 7: Race of Officers and Suspects

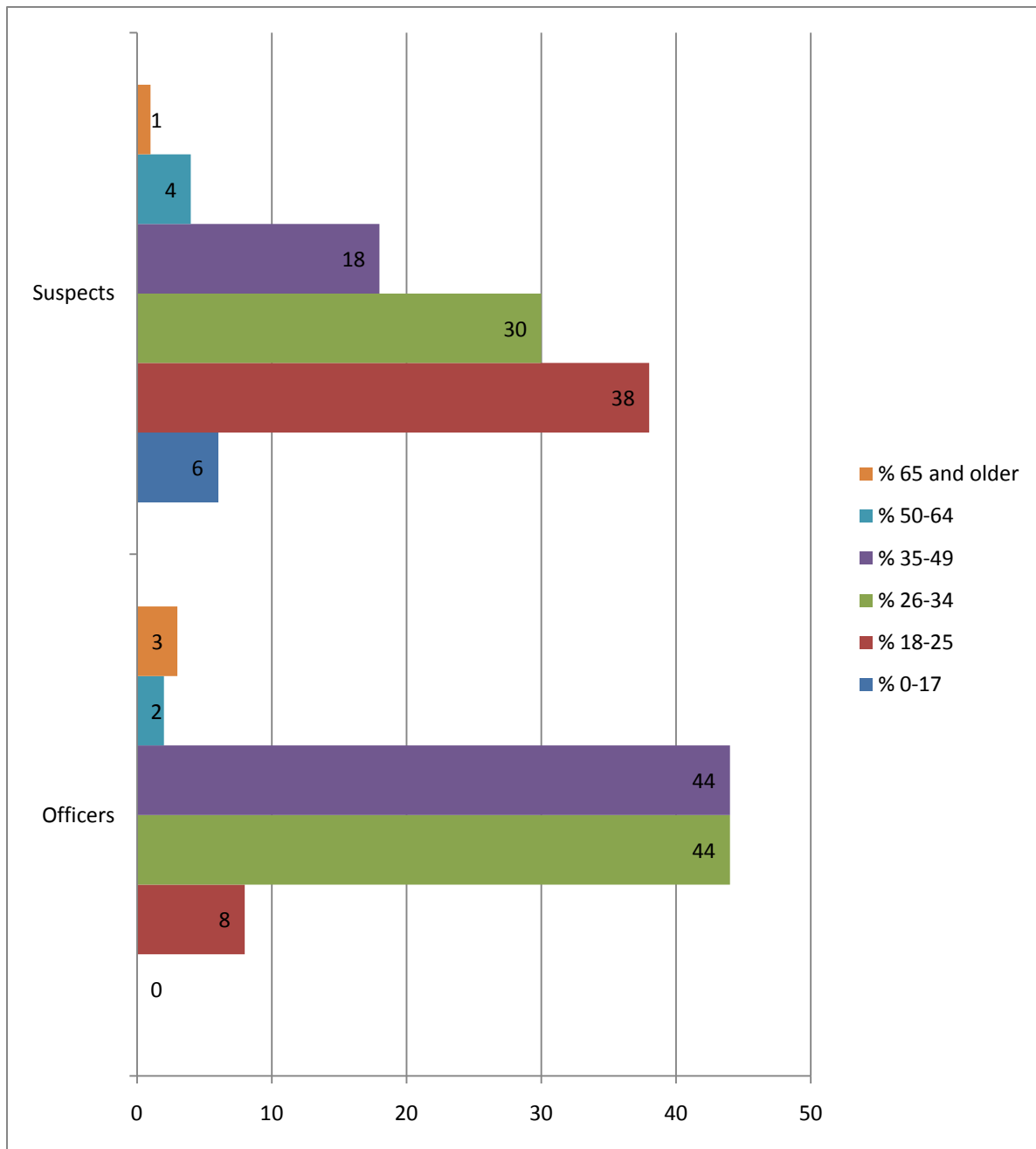


Figure 8: Age of Officers and Suspects

NOTE: Citizens are not eligible to be employed as law enforcement officers until the age of 21 years.

At the time of the incidents, several suspects were known to have altered mental conditions or prior injuries of some sort. The most common type of altered condition by far was alcohol use. One-hundred ninety offenders (45%) were known to be under the influence of alcohol, while another 39 offenders (9%) were known to be under the influence of some other type of substance such as narcotics or, occasionally, prescribed medication. This category also includes those offenders who had purposefully ingested narcotics in an attempt to avoid their detection. This finding was to be expected according to prior studies in which a large percentage of offenders had recently consumed alcohol and/or illegal drugs at the time of the incident in question (Federal Bureau of Investigation, 2006; Stetzer, 2001).

Considering other types of altered conditions, thirty-three offenders (8%) were known to have had prior injuries before the incident (either because they were observed by the officers or because the suspect verbally expressed this), and 6 offenders (1%) were known to be mentally ill. Eight offenders (2%) had other prior conditions that affected the incident, such as being elderly, and for the other 149 offenders no prior condition was known (although this does not mean that none of the above conditions existed in these cases) (see Figure 10).

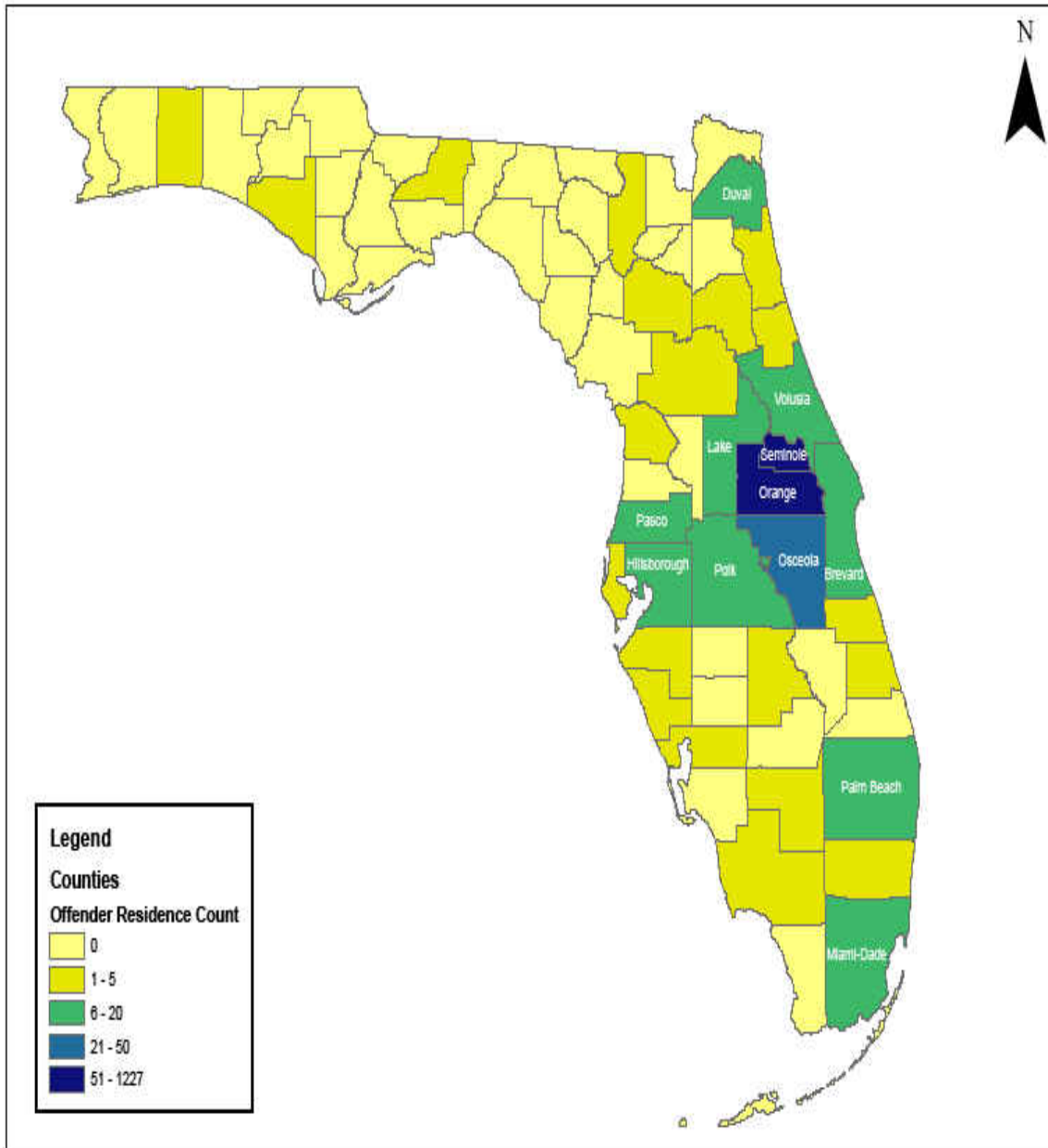


Figure 9: Florida Resident Suspects by County

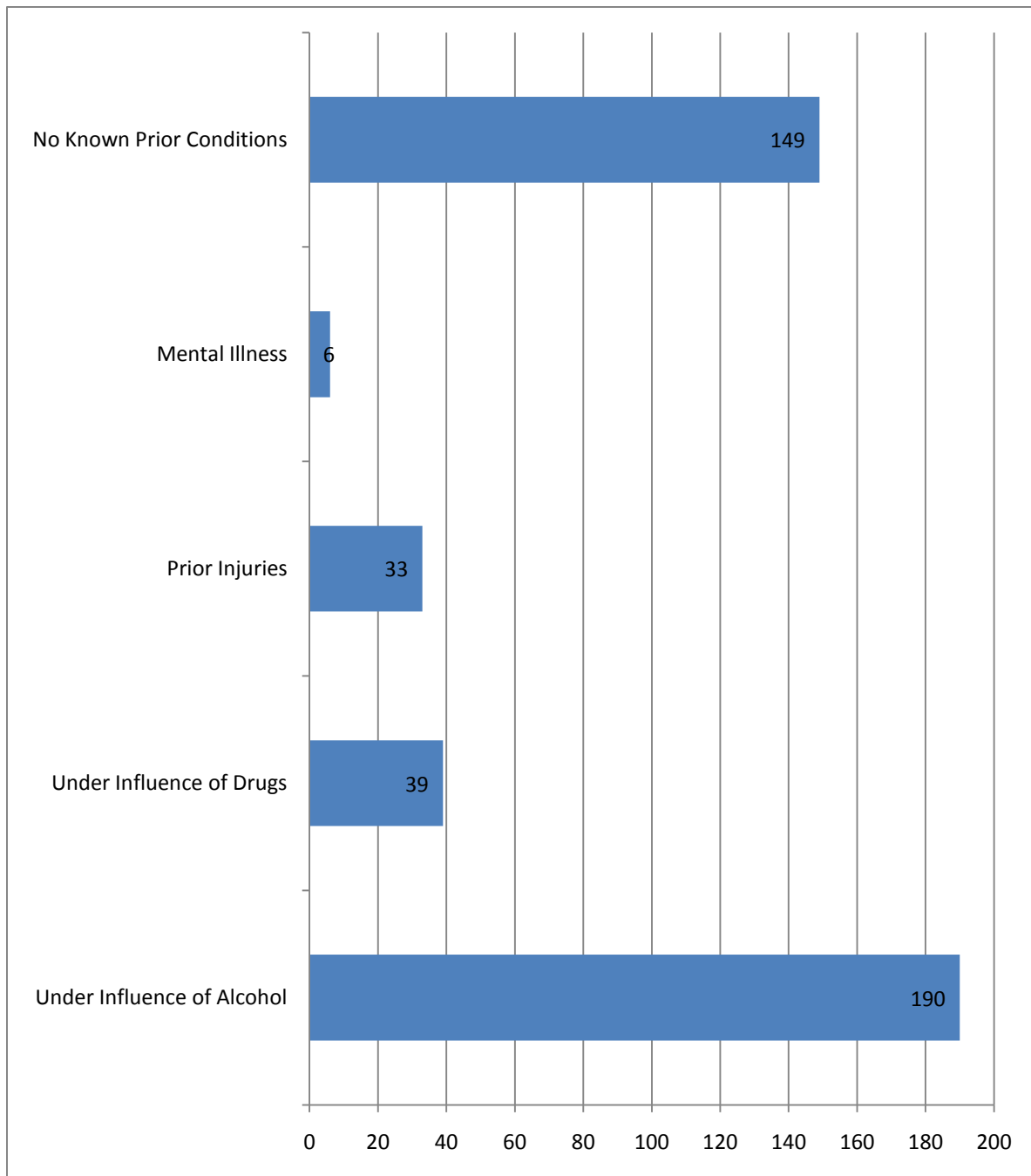


Figure 10: Known Prior Conditions Affecting Suspects at Time of Incident

Ratio of Officers to Offenders

Another important characteristic to examine is the ratio of suspects to officers. In about 43% of cases (n=169), the incidents involved one suspect and one officer. This is in line with prior studies that indicate that single officers and single offenders represent the most common breakdown of actors in officer violence scenarios (Federal Bureau of Investigation, 1997; Federal Bureau of Investigation, 2006). In just over 3% of cases in the current study (n=13), the number involved was also even, with two suspects and two officers. About 29% of cases (n=115) involved one suspect and two officers, and about 13% of cases (n=49) involved one suspect and three officers. Smaller proportions of cases involved one suspect and more than three officers (4% or 16 cases for 4 officers, 2% or 7 cases for 5 officers, and 1% or 3 cases for 6 officers). There were other cases in which officers outnumbered suspects but these incidents were less frequent. About 2% of cases (n=8) involved two suspects and three officers, one case involved two suspects and five officers, and one case involved three suspects and four officers.

There were also a few cases that involved multiple suspects against one officer, but this circumstance was much rarer, possibly because officers work in pairs or groups as often as they possibly can for safety purposes. Less than 2% of cases (n=6) involved one officer and two suspects and in one case there were two officers and four suspects. For a general breakdown of the ratio of officers to suspects, see Figure 11.

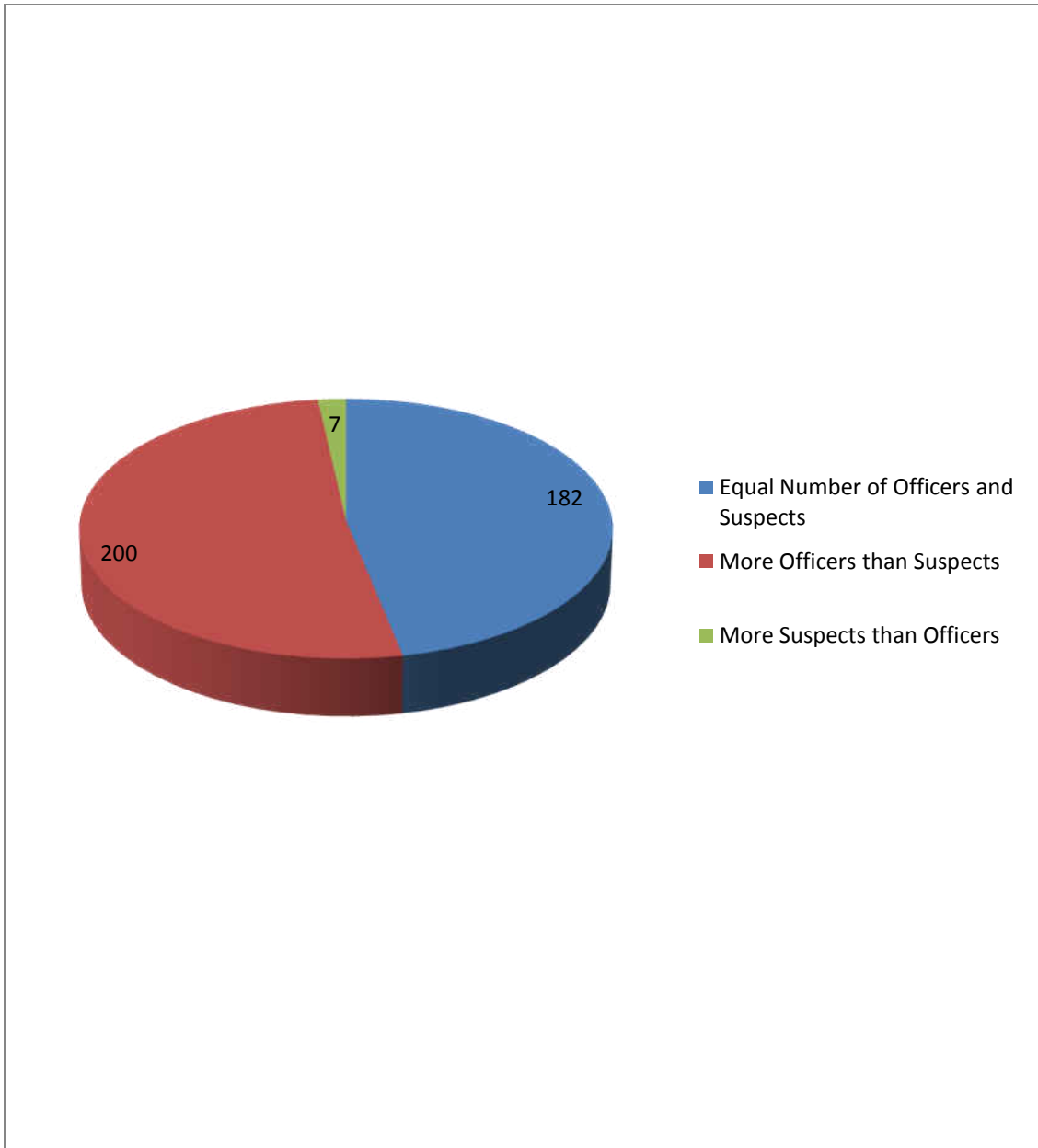


Figure 11: Number of Officers versus Number of Suspects

Weapon Use and Injuries

Because the Orlando Police Department collects these data to examine their use of force incidents, there is detailed information available for weapon use by the officers but not for the offenders. Personal weapons (i.e. body parts) were by far the weapons of choice by officers. Officers or supervisors reported the use of hands or other body parts either for control of the situation or as weapons in 275 of the 391 cases (about 70%). In 250 of those cases, more detailed information was available as follows: in 103 cases (41%) in which personal weapons were used, hands were used for escort or control only, in 70 cases (28%) bodily pressure points were used to gain compliance, in 48 cases (19%) officers initiated takedowns or tackles of some type, in 3 cases (1%) officers utilized open hand strikes, knee strikes, or elbow strikes, and in 25 cases (10%) officers used closed fist strikes or kicks to gain control (see Figure 12).

The next most frequent weapon used by officers was by far the Taser. Tasers were used in half of all use of force incidents (n=196). Chemical sprays (such as oleoresin capsicum or pepper spray) were used about in about a quarter of the cases (24% or 95 cases), and impact weapons (such as asp batons) were used in about 14% (n=54) of cases. In 9 cases (about 2%) canine police units were deployed. It is important to note that these weapon categories are not mutually exclusive—more than one type of weapon could have been used in each incident (Figure 13).

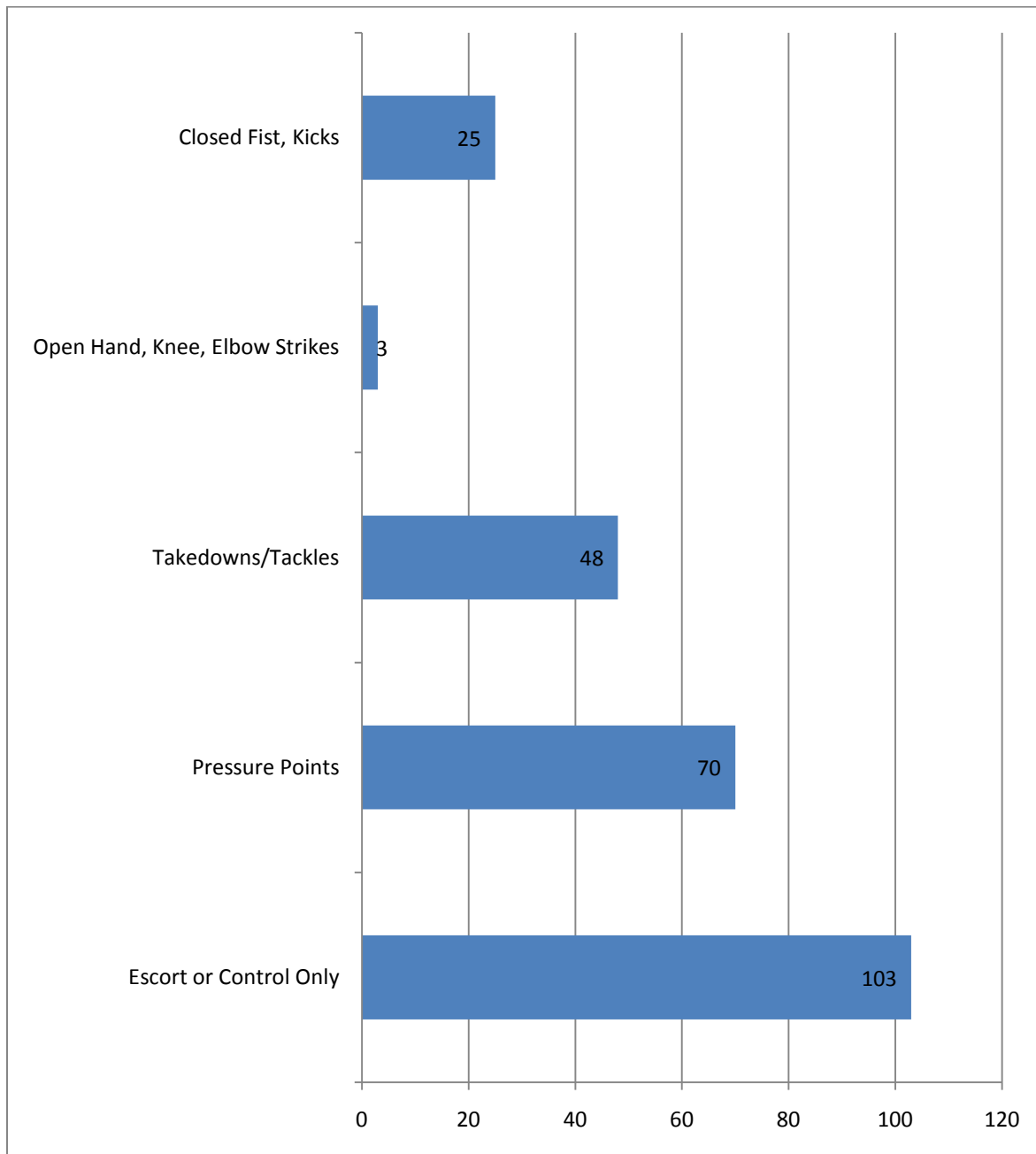


Figure 12: Breakdown of Personal Weapon (i.e. body parts as weapons) Use

Firearms were not listed as a weapon category for officers on the use of force forms because officer-involved shootings require a separate and more in-depth investigation. According to the Internal Affairs Unit at OPD, however, firearms were discharged in only 14 cases between January 1, 2006 and December 31, 2008.

Weapon use by both the officers and the suspects led to several injuries on both sides. During the course of the 391 incidents in which officers were battered, 137 of the 620 (22%) involved officers reported receiving injuries. Among the injured officers, 58 (42%) reported receiving abrasions or cuts, 23 (17%) reported bruising and redness, 30 (22%) reported muscle or joint injuries, 2 (1%) reported broken bones or possible broken bones, and 19 (14%) officers reported head, neck, or back injuries. Eight officers (6%) also suffered significant exposure to another's blood, a potentially dangerous or even fatal incident (Figure 14).

A much larger percentage of suspects than officers were injured in the incidents, although most of the injuries (as with the victim officers) were minor. A total of 299 suspects of the involved 425 (about 70%) reported injuries. Of the injured suspects, a quarter (n=76) reported only minor Taser marks (from prongs or direct contact) and another 5% (n=14) reported only eye irritation from chemical sprays such as oleoresin capsicum. Three percent (n=10) received bites from police dogs (not including bites to the face or head which were categorized more seriously). About 17% (n=50) of

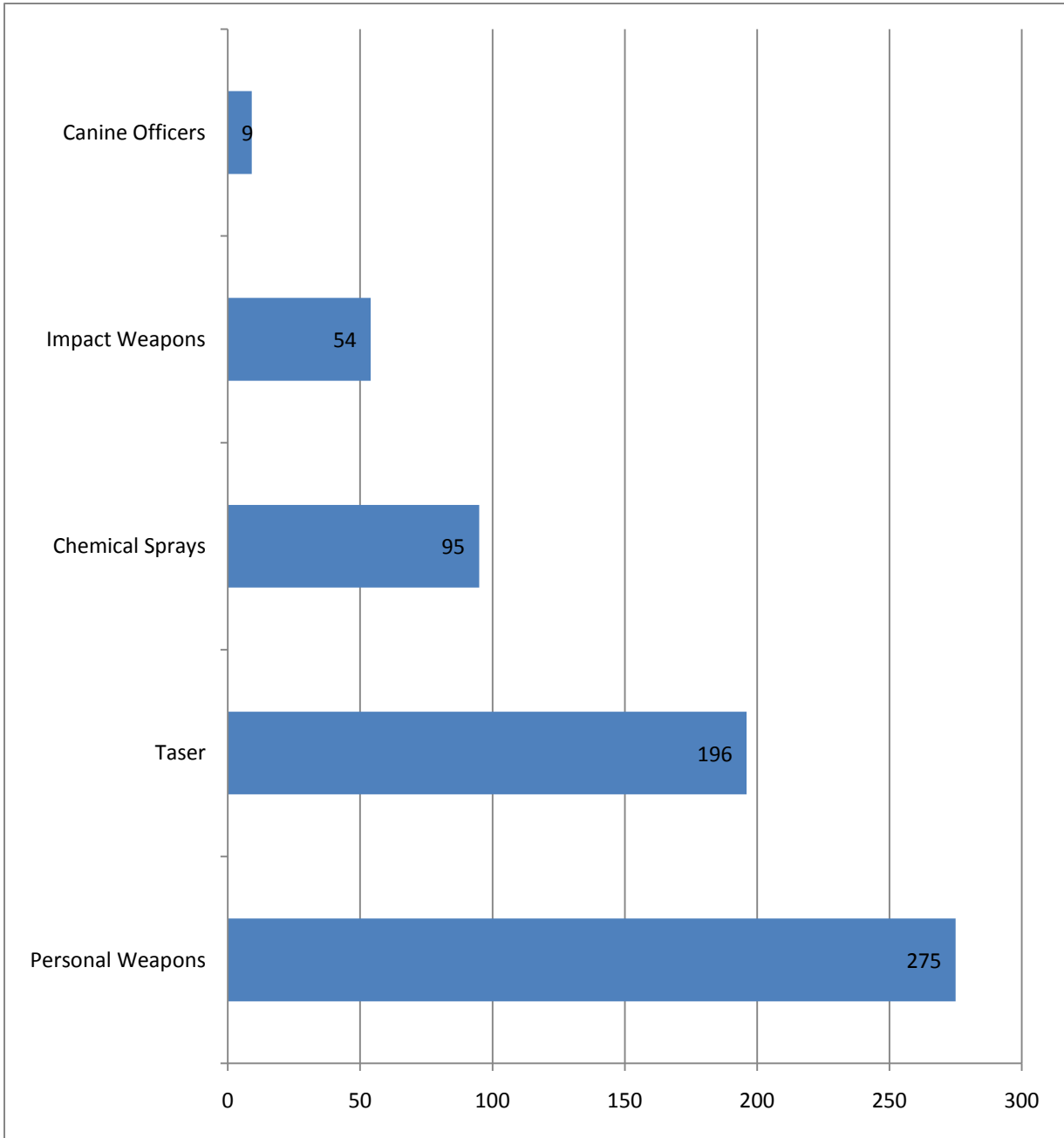


Figure 13: Weapon Use by Officers

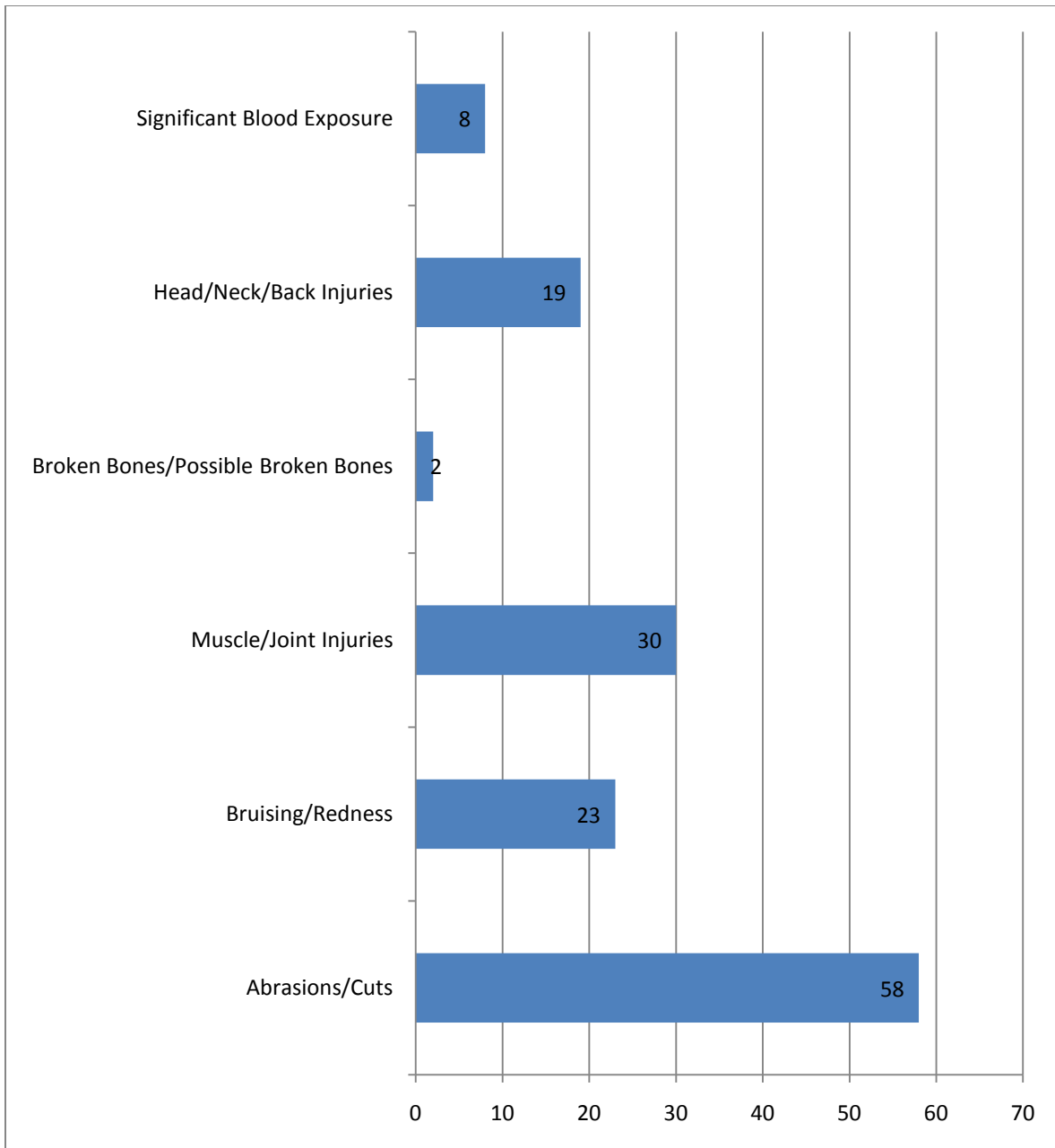


Figure 14: Reported Officer Injuries

suspects received other types of minor injuries such as scrapes or bruises, while about 40% (n=121) reported intermediate level injuries such as sprains, larger cuts, or minor facial injuries. Finally, about 9% (n=28) of the injured offenders reported receiving more serious injuries such as larger facial injuries, head injuries, or broken bones (see Figure 15). One-hundred eighty-nine (63%) of the injured offenders sought some level of medical treatment for their injuries.

Incident Types and Charges

The types of incidents that led to the altercation in which officers were battered were quite varied. The incident types were generally in line with prior literature in that batteries resulting from disturbances and other types of public order issues were quite common (Brandl, 1996; Federal Bureau of Investigation, 1997). The most common type of incident, which occurred in over a quarter of cases (27.6% or n=108), was public order crime such as public intoxication. The next most prominent offense for which officers were called, which occurred in 13.3% of cases or 52 incidents, was violence against a law enforcement officer or emergency personnel. These were often cases in which the officers who were battered responded to assist other officers or other emergency personnel such as paramedics or firefighters. Twelve percent of cases

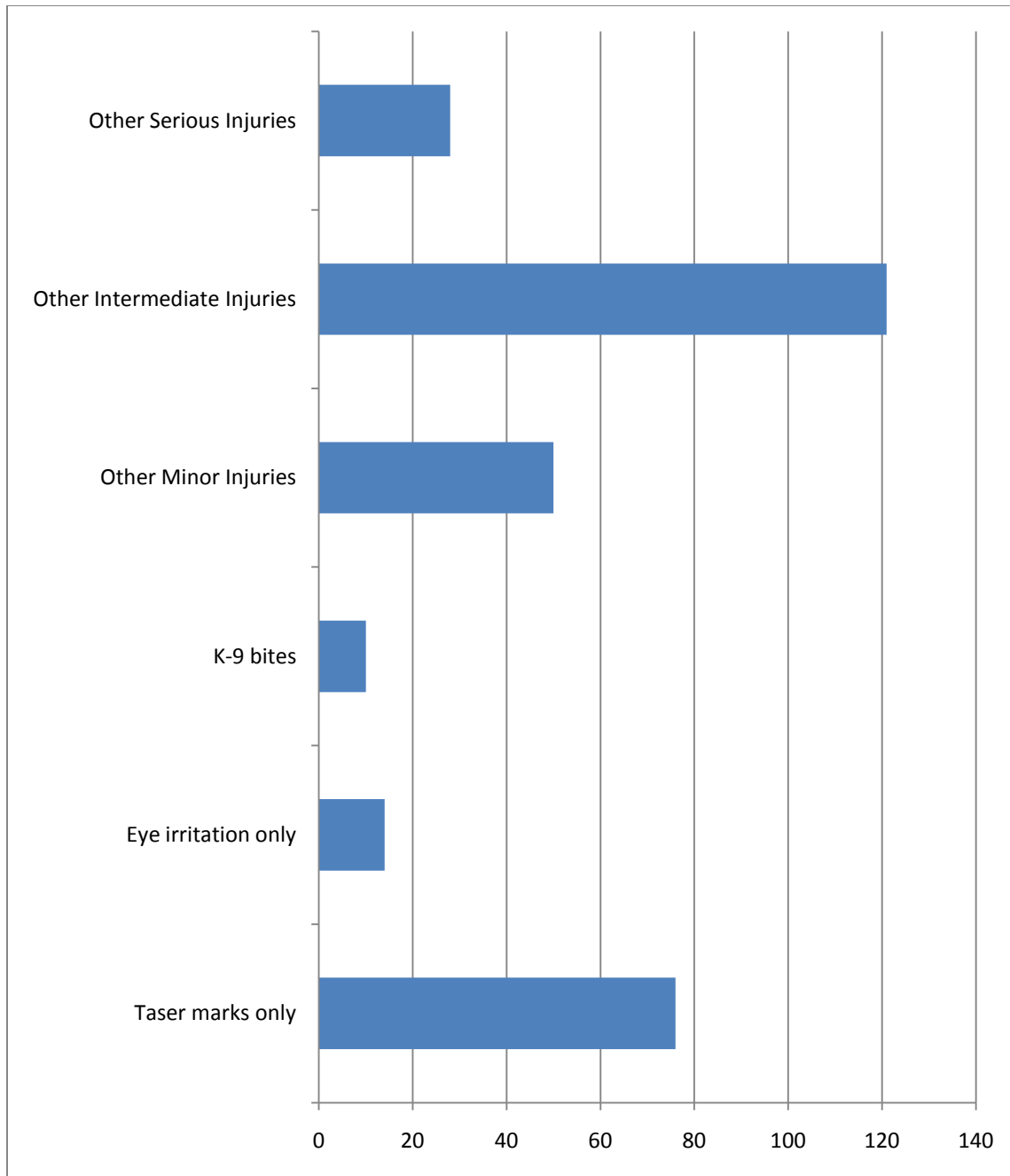


Figure 15: Types of Reported Suspect Injuries

(n=47) were initiated because of some type of general disturbance or fight, and another 12% (n=47) were initiated for traffic incidents such as traffic stops, crashes, or DUIs. Simple assault and battery cases and drug or alcohol offenses accounted for 6.9% (n=27) of cases *each*, while domestic violence related cases accounted for 4.1% (n=16) of incidents.

Other serious violent crimes accounted for 3.8% or 15 cases. Property crimes and attempted property crimes accounted for 3.3% of cases (n=13), while warrant service and backups for other agencies accounted for 1.3% (n=12) *each*. One percent of the cases or less were initiated by: obstruction of an investigation or interference with the duty of law enforcement officers (n=4), “man down” calls or calls to check well-being (n=3), attempted suicides (n=3), mentally ill persons or Baker Act cases (cases in which the suspect was taken into custody for involuntary mental evaluation) (n=2), and fleeing and eluding or escaped prisoners (n=2). There was one incident each of a sex crime with a victim (i.e. not prostitution, etc.), a weapons offense, and an alarm call. In 3.1% of cases (n=12) the initial reason for the interaction between officer and suspect was unclear from the data provided (for a breakdown of all incident types, see Figure 16).

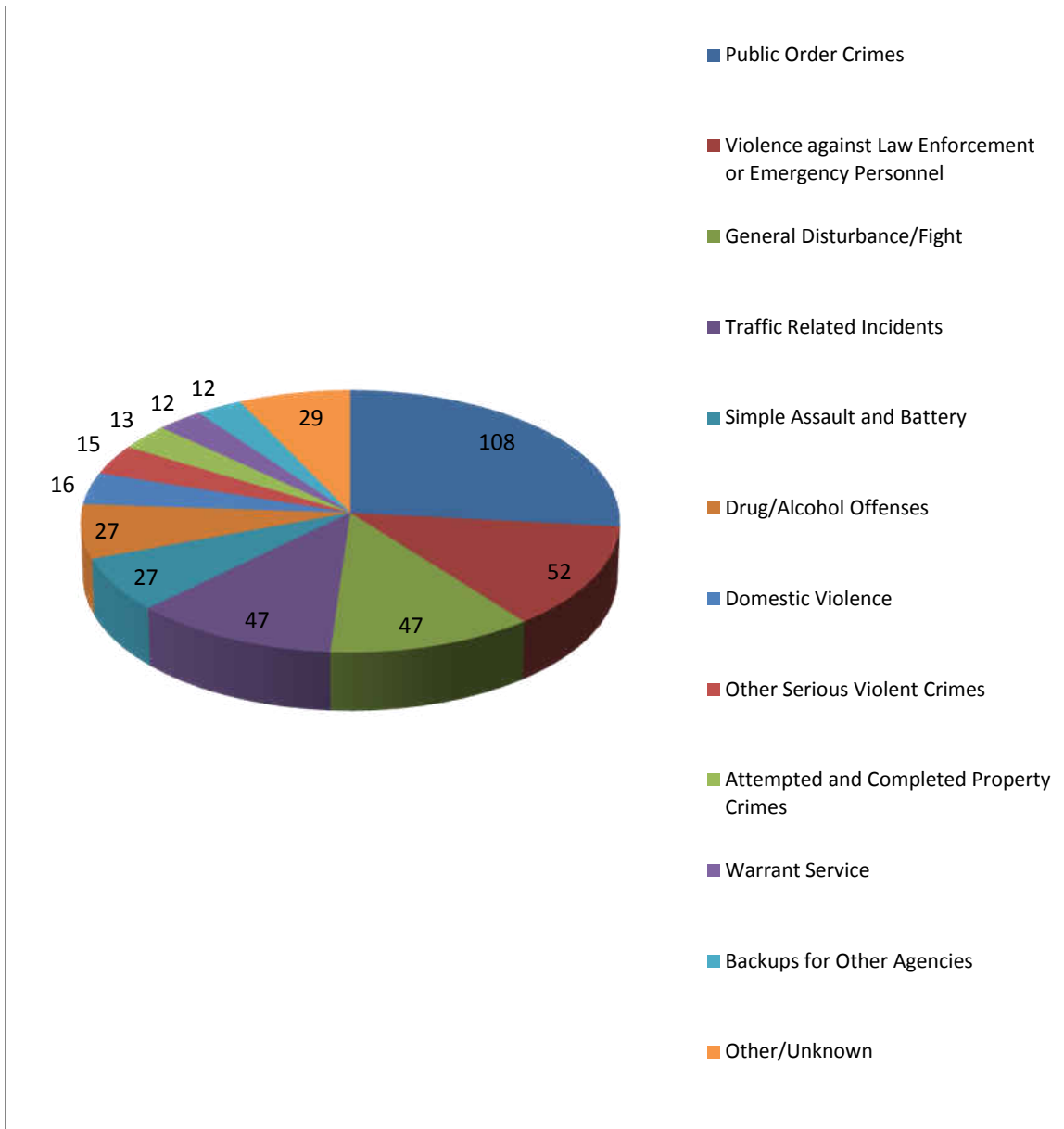


Figure 16: Original Incidents Leading to Officer Batteries

Most suspects faced multiple charges stemming from these officer battery incidents with the most common type of charge by far resulting from the battery on the officer(s) itself. In 9 out of 10 incidents (n=349), suspects were charged with resisting an officer with violence and/or assault or battery on a law enforcement officer. In another seven percent of cases (n=28), suspects were charged with resisting an officer without violence.

Charges not relating to resisting or battering officers often provided the reason behind the initial interaction between officer and suspect. In order to simplify understanding of these situations, these charges were categorized according to the type of incident and then ranked by seriousness. In other words, if a suspect was charged with a violent crime and a property crime, the case was categorized with violent crimes because the most serious offense resulting from the case was a violent crime. The charges related to the incidents break down as follows: 51 incidents (13%) involved violent crime charges and another 12 incidents (3.1%) involved depriving an officer of his or her means of communication; 9 other incidents (2.3%) involved charges for disobeying a law enforcement officer, fleeing, or providing false information to a law enforcement officer; 31 cases (7.9%) involved drug charges and 11 cases (2.8%) involved property crimes, while another 11 cases (2.8%) involved traffic offenses and 2 cases (0.5%) involved the service of warrants that had been issued prior to the incident. Seventy-seven cases (19.7%) involved public order offenses or the violation of city ordinances, such as public intoxication or panhandling. Nearly half of the cases (47.6%

or n=186) did not result in any charges other than those of resisting or battering an officer (for a breakdown of charges, see Figure 17 below).

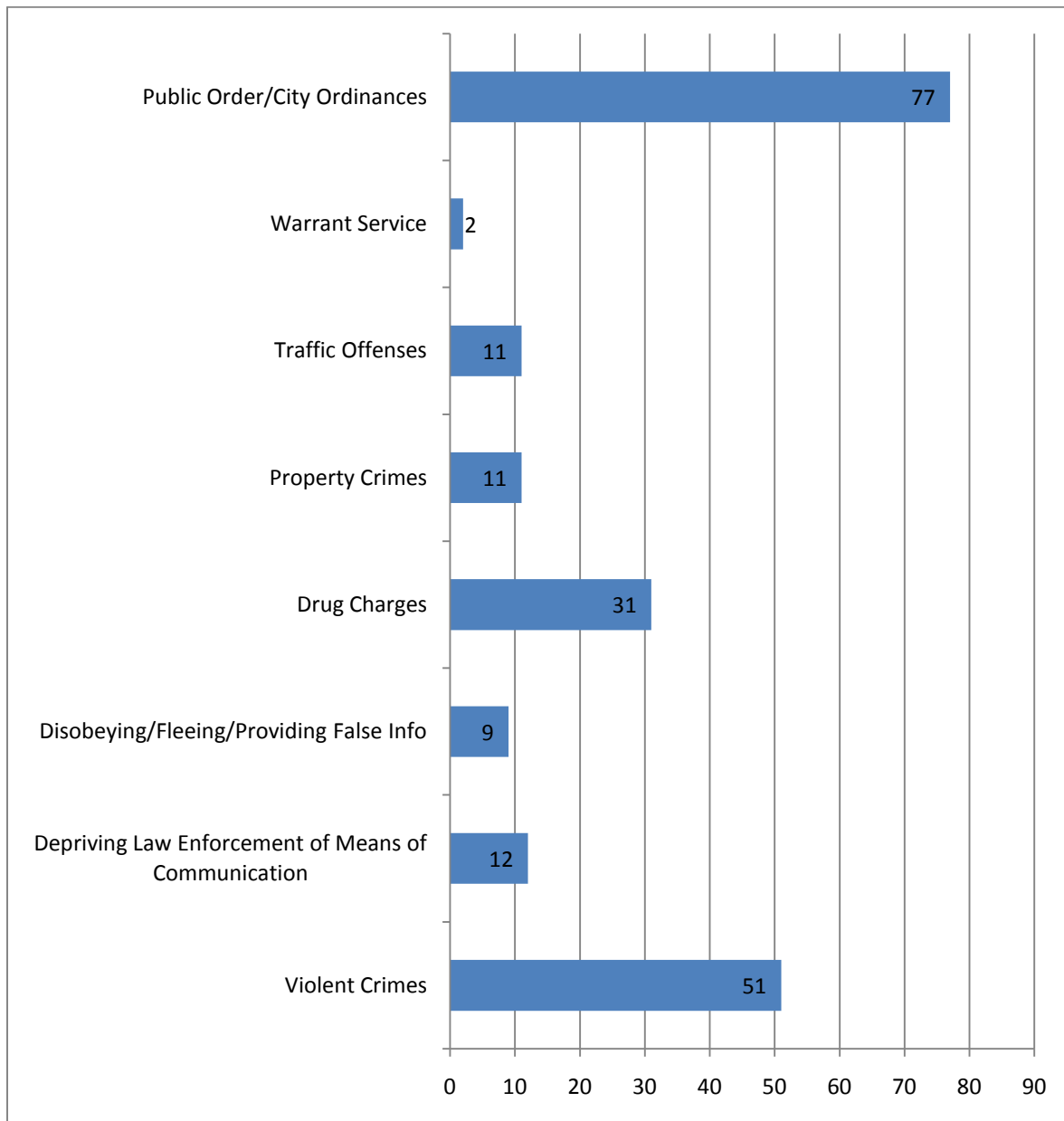


Figure 17: Non Resistance-Related Suspect Charges

While examining the data in detail is essential, this type of descriptive analysis cannot indicate the correlations or predictive value between officer battery and situational factors regarding the officers, suspects, and incidents. The next chapter, *Chapter Five*, covers logistic regression analyses that test the relationships between many situational factors and battery against officers. Then, *Chapter Six* includes spatial analyses of the geographical areas in which officer batteries most often occurred.

CHAPTER FIVE: REGRESSION ANALYSES

After the detailed description of the data from Orlando Police Department that was discussed in *Chapter Four* above, regression models were estimated to test the potential situational and individual-level factors that might lead to battery against officers. Because the dependent variable (officer battery vs. no battery) was dichotomous, logistic regression was the most appropriate choice for the analysis. Independent variables were grouped into three blocks, with the first block containing situational factors, the second block containing characteristics of the primary offender, and the third block describing the primary officer involved.

Independent Variables

The first block of analysis, which contained situational factors, was comprised of eight independent variables. TIME93A was a dummy variable indicating that the incident occurred between the hours of 9:00PM and 3:00AM rather than during other times of the day (1=9PM to 3AM, 0=all other times). WEEKEND3 described whether or not the incident occurred during the weekend (Friday, Saturday or Sunday) or during the week (Monday, Tuesday, Wednesday or Thursday) (1=weekend, 0=weekday). SUMMER referred to whether the incident occurred during the summer months of June,

July, or August rather than during another season (1=summer, 0=other seasons). DTTASER was created as a dummy variable to indicate whether or not officers used Tasers as intermediate weapons during the use of force incident (1=taser use, 0=no taser use). VIOLENT refers to the type of incident that the officers were originally handling when the use of force occurred, including both officer-initiated incidents and calls for service. This variable was created as a dummy variable indicating violent incident types as opposed to other incident types such as property crimes or public order crimes (1=violent incident, 0=other types of incidents). NUMEMPL and NUMOFND refer to whether or not the incident involved single or multiple officers and single or multiple offenders, respectively (1=multiple officers, 0=single officer; 1=multiple offenders, 0=single offender).

Finally, NUMALCLIC refers to a count of businesses licensed to sell alcohol within ½ mile of the incident location (continuous variable). This variable was of high interest because of its potential substantive value, but there was a substantial portion of cases missing that had to be dealt with before the variable could be used. Because this variable was created by placing a ½ mile buffer around each incident location to obtain a count of the alcohol-related businesses within the area, the data relied on incidents that could be mapped. Many incidents could not be mapped either because the incidents actually occurred outside of the city limits or because there were errors in the address of the incident location. Consequently, using this variable led to a loss of 742 cases (nearly 41%), a rather large portion. Obviously, this caused concern that bias

might become an issue. A dummy variable was created to measure whether or not this issue created a significant difference in the overall model. A value of “1” indicated that the case involved the mean number of alcohol-related businesses in close proximity (14), while “0” indicated other values. This variable was not found to be significant, indicating that the loss of cases because of the mapping issues did not pose a major issue for the validity of the regression results. Therefore, the variable for the number of alcohol-related businesses within ½ mile of each incident was included in the analysis, but mean substitution was used to keep bias from the variable to a minimum⁹.

The second block of independent variables added in five characteristics of the primary offender. OFF1WHT referred to the race of the primary offender (1=white, 0=non-white), OFF1_AGE referred to the age of the primary offender (continuous variable), and OFF1_SEX referred to the gender of the primary offender (1=male, 0=female). OFF_BMI was a continuous variable referring to the primary offender’s body mass index, and OFF1ALC referred to whether or not the offender was perceived to have been under the influence of alcohol at the time the incident occurred (1=alcohol use, 0=no alcohol use).

The third block added in independent variables that described characteristics of the primary officer involved. EMPL1WHT referred to the primary officer’s race (1=white, 0=non-white). EMPL1AGE referred to the primary officer’s age (continuous variable),

⁹ The models were run both with and without the NUMALCLIC variable, and also with the NUMALCLIC variable with mean substitution employed for the missing values. There were few differences between the significant factors in each model. The one potentially important difference was that the number of offenders was a significant predictor of battery in earlier models and this effect disappeared in the final model which used mean substitution.

and EMPL1SX referred to the officer's gender (1=male, 0=female). For a complete review of the variables involved in the logistic regression models, see Table 1 below.

Table 1: Description of Variables in Logistic Regression Models

Variable Name	Measurement
DUMMY_DV (<i>dependent variable</i>)	1=officer battery, 0=no officer battery
TIME93A	1=9:00PM to 3:00AM, 0=all other times
WEEKEND3	1=Friday, Saturday or Sunday, 0=Monday, Tuesday, Wednesday or Thursday
SUMMER	1=June, July or August, 0=other months
DTTASER	1=taser used, 0= no taser used
VIOLENT	1=violent original incident/call, 0=other types of original incidents
NUMEMPL	1=multiple officers, 0=single officer
NUMOFND	1=multiple offenders, 0=single offender
MSFORALCLIC	Continuous variable, count of the number of businesses licensed to sell alcohol within ½ mile of the incident location (with mean substitution for missing cases)
OFF1WHT	1=white offender, 0=non-white offender
OFF1_AGE	Continuous variable, age of offender in years
OFF1_SEX	1=male offender, 0=female offender
OFF_BMI	Continuous variable of offender body mass index (BMI)
OFF1ALC	1=offender had consumed alcohol, 0=offender was <i>not known to</i> have consumed alcohol
EMPL1WHT	1=white officer, 0=non-white officer
EMPL1AGE	Continuous variable, age of officer in years
EMPL1SX	1=male officer, 0=female officer

Results

The results of the regression models (found in Table 2 below) indicated that several variables were significant indicators of officer battery. Overall, the first model, which contained only the situational independent variables, was highly significant ($p=.000$, Chi-Square=45.568, $df=8$) but only explained about 4.1% (Nagelkerke=.041) of the variance among use of force cases that involved officer battery and use of force cases that did not involve officer battery. In this model, two variables were significant. The odds of battery for incidents involving multiple officers were actually 94.2% higher than incidents involving a single officer (odds ratio=1.942, $p<.001$)¹⁰. Model One results also indicated that the odds of battery for incidents occurring in areas where there were higher numbers of businesses licensed to sell alcohol were slightly higher (odds ratio=1.008, $p<.05$), but this effect was not found in subsequent models.

Model two included the situational variables, but added in characteristics of the primary offender as well; this model was also highly significant ($p=.000$, Chi-Square=81.272, $df=13$) although overall it explained only 7.3% of the variance between cases involving officer battery and cases that did not (Nagelkerke=.073). When offender characteristics were included, the number of alcohol-related businesses was not significant, but the number of officers involved remained an important contributor to

¹⁰In cases of field training, which may last between 4 ½ and 8 months, two officers are in each patrol vehicle. Also, when personnel are available, officers “double up” in the City’s more active districts. Otherwise, it is Orlando Police Department policy for officers to ride one per patrol vehicle.

officer battery situations with little change in odds ratio or significance. The odds of battery among cases with multiple officers were 92.2% higher than cases with single officers (odds ratio=1.922, $p<.001$).

In Model Two, there were three new significant variables as well, including the gender of the offender, the weight of the offender, and whether or not the offender was known to have recently consumed alcohol before the incident. The odds of battery in cases involving male primary offenders were actually 56.1% lower than cases involving female primary offenders (odds ratio=.439, $p<.001$). Among cases involving offenders with higher BMI, the odds of battery were also slightly higher (odds ratio=1.045, $p<.01$). Furthermore, the odds of battery for cases in which the primary offender was known to have recently consumed alcohol were about 39.8% higher than those in which the offender was not known to have recently consumed alcohol (odds ratio=1.398, $p<.05$).

Model Three included all of the above factors and also included some basic demographic characteristics of the primary officers involved, including race, age, and gender. The full model remained highly significant overall ($p=.000$, Chi-Square=82.983, $df=16$), but explained only about 7.4% of the variance between use of force cases that involved officer battery and those cases that did not (Nagelkerke=.074). In this model, all of the factors that had previously been significant in Model Two remained significant. Cases involving multiple officers resulted in 91.6% higher odds of battery (odds ratio=1.916, $p<.001$). Odds of battery in cases involving male offenders were about 54.8% lower than those with female offenders (odds ratio=.452, $p<.001$), and incidents

with offenders with higher BMI had very slightly lower odds of officer battery (odds ratio=1.045, $p<.01$). Incidents involving offenders who had recently consumed alcohol also remained a significant factor; the odds of these incidents involving officer battery were about 40.8% higher than incidents in which the offender was not known to have recently consumed alcohol (odds ratio=1.408, $p<.05$). However, none of the newly added independent variables which contained officer demographic information were significant indicators of officer battery. See Table 2 for results of all three regression models; see Appendix E for full regression output from SPSS.

Discussion

While most of the results of the logistic regression models were expected, a few findings were surprising. The full model containing all sixteen independent variables only explained about 7.4% of the variation between use of force cases involving officer battery and use of force cases in which no officer battery was reported. This seems low, but then again there is very little to compare this result to as violence against officers has not often been studied with this method in prior research. Garner and Maxwell's (2002) study of police use of force and suspect resistance used logistic regression to determine predictors of both police force and suspect resistance,

	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE</i>	<i>Exp (b)</i>	<i>B</i>	<i>SE</i>	<i>Exp (b)</i>	<i>B</i>	<i>SE</i>	<i>Exp (b)</i>
9PM – 3AM	.179	.125	1.196	.095	.132	1.099	.097	.133	1.101
Weekend	.068	.123	1.071	-.022	.126	.978	-.016	.126	.984
Summer	-.139	.142	.870	-.146	.143	.865	-.146	.143	.864
Taser Use	.058	.121	1.060	.132	.127	1.141	.120	.127	1.128
Violent Call	-.146	.167	.764	-.171	.170	.843	-.171	.170	.843
Multiple Officers	.663	.121	1.942***	.653	.123	1.922***	-.650	.123	1.916***
Multiple Offenders	.327	.233	1.387	.276	.241	1.318	.289	.242	1.335
Alcohol-Licensed Businesses	.008	.003	1.008*	.007	.003	1.007	.007	.003	1.007
White Offender				.151	.137	1.163	.154	.137	1.166
Offender Age				-.004	.006	.996	-.006	.006	.994
Male Offender				-.822	.201	.439***	-.794	.203	.452***
Offender BMI				.044	.013	1.045**	.044	.013	1.045**
Offender Consumed Alcohol				.335	.144	1.398*	.342	.144	1.408*
White Officer							-.030	.141	.971
Officer Age							-.006	.009	.994
Male Officer							-.332	.284	.717
<i>Step Chi-Square</i>	45.568***			35.704***			1.711		
Model Chi-Square	45.568***			81.272***			82.983***		
<i>Degrees of Freedom</i>	8			13			16		
Nagelkerke R-Square	.041			.073			.074		

Table 2: Logistic Regression Results—Dependent Variable is Officer Battery (1) vs. No Officer Battery (0)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

and they found that only nine of the forty-one independent variables examined had a consistent, significant effect on whether or not force was used. Even in this inclusive, methodologically sound study, two-thirds of the variation in police use of force remained unexplained (Garner & Maxwell, 2002).

Obviously, there are factors at work here that the current regression models do not capture. This in itself should not be a surprise considering that all police-citizen interactions involve a high degree of perception on both sides. Officers or offenders may perceive a look or an aggressive stance that is not measured here, and take this as offensive. The information available when a call for service comes to the officer is often skewed if one of the involved parties is the person who calls for help, and this may affect the officer's perception of the incident (and the aggression levels of those involved) before he or she even arrives on scene. Incidents that occur among crowds of people must be treated differently by law enforcement officers than those which are contained within a residence where the involved parties are the only people on scene. Furthermore, the personal experience of officers in certain neighborhoods can color the way the officer handles the call. Conversely, offenders who have had negative interactions with law enforcement personnel in the past are likely to be on guard for perceived slights or mistreatment in a way that many other citizens would not. These types of information were not available in the current study, but some of these issues undoubtedly affected the way these incidents played out, and whether or not the use of force led to violence against the involved officer. These types of issues underscore the

importance of using varied methods in studying any law enforcement issue to gain as much information about different aspects of police-citizen interaction as possible.

Other results, while sometimes counterintuitive, followed the course of prior studies on the subject. Incidents involving single officers were actually much *less* likely to involve officer battery. It seems that there would be safety in numbers, but according to prior research this is not the case. Kaminski and Sorensen (1995) and Wilson, Brunk, and Meyer (1990) also found that single officers were in a better position than multiple officers—in these studies, single officers were less likely to be injured. Perhaps this is because multiple officers automatically respond to situations that are known to be more volatile at the outset, and during which officer battery and injury are more likely. It is also possible that when faced with multiple officers, rather than feeling intimidated, the offenders felt the need to act offensively in order to gain control of the situation or save face. This would likely be especially true in cases where friends of the offender or bystanders were nearby watching the interaction¹¹.

Also, cases involving female offenders were much more likely to involve officer battery than those involving male offenders. While this seems at first to be contrary to the logic that males are generally more aggressive than females, it does follow what would be expected from prior research on the subject which indicates that females are generally more likely to be disrespectful toward officers than males (Engel, 2003).

¹¹ OPD's use of force forms listed the number of witnesses as a variable, but this was not considered in the current study because only those witnesses who chose to stay and talk to police and provide their personal information were included. Therefore, this variable is likely to be unreliable and was excluded from analysis.

The other significant factors were basically as expected. Offenders with higher BMI were slightly more likely to batter officers, while offenders who were known to have recently consumed alcohol were much more likely to batter officers. Alcohol use has been shown in previous research to be correlated with many types of violence, including violence against police officers (Garner & Maxwell, 2002; Kavanagh, 1997), so this result was not surprising.

Perhaps more surprising than those variables found to be significant were the variables that were *not* significant. Several factors that seemed in prior research to be important were not actually found to be significant in the current study. Part of this discrepancy may be due to the specific location under study. For example, prior research has indicated that violence is more prevalent in the summer months (CA POST, 2001), but in this case season had no effect¹². However, in Florida in general and especially as far south as Orlando, the seasons do not change as they do in more northern areas. Summer weather lasts through much of the year, so it is logical that the season would not have the effect found in other studies.

It is also interesting that there was no significant difference between cases occurring on the weekends rather than weekdays, or cases occurring during nighttime hours rather than daytime hours. There was also no evidence in these analyses that the use of intermediate weapons by officers (in this case, Tasers) or the type of call that officers were responding to was a significant factor in predicting battery. Race was also

¹² Because of Florida's uniquely warm climate, a variable that defined "summer" as April through September was also run. This variable was not significant either.

not a factor on either side, nor was age. Incidents with multiple offenders were not statistically more likely to involve officer battery than those with single offenders. Furthermore, there was no significant effect found for incidents occurring near large numbers of businesses selling alcohol versus those with less alcohol sold, and presumably less demand (except in Model One, and that effect was slight). All of these variables represent factors that reason and prior research would lead us to believe are important, but none of them were found to be significant predictors of officer battery in this dataset.

Furthermore, in this study the demographic characteristics of the officers did not have a significant effect on officer battery at all. Officer race, age, and sex were all found to be nonsignificant predictors of officer battery. It appears that some of the situational factors of the incident had a much greater effect on whether or not officers were battered than such uncontrollable factors as demographics. This is encouraging in the sense that many factors that do or do not lead to officer battery can be controlled and accounted for in training and agency policy.

Of course, the above regression results represent only one part of the current study. It is important to consider all available data, including geographical factors.

Chapter Six: Spatial Analyses will describe these spatial factors as well as the analyses used to test their significance and the results.

CHAPTER SIX: SPATIAL ANALYSES

The purpose of the analyses in this chapter was to examine the geographic characteristics of police officer battery in Orlando in three ways. First, the analyses considered the general characteristics of officer battery location and whether or not the incidents were clustered geographically. Second, the analyses examined the possible connection between officer battery and social disorganization theory. Finally, the spatial analyses considered the possible connection between officer battery and alcohol use.

Before any analyses were run, it was important to consider the characteristics of the study area. The city of Orlando is divided into two main halves, as seen in Figure 18. The northwestern portion of the city jurisdiction contains the downtown area as well as most all other business and residential districts within the city. The southeastern portion contains the Orlando International Airport, which was annexed by the City in 1982 (City of Orlando, 2006). There are relatively few instances in which the city police department responds to the airport area, so while they do patrol this area, it was not as relevant to this particular portion of the study as the upper portion of the city. Therefore, all spatial analyses were focused on the more northern and western portion of the city in an effort to avoid any outlier effects.

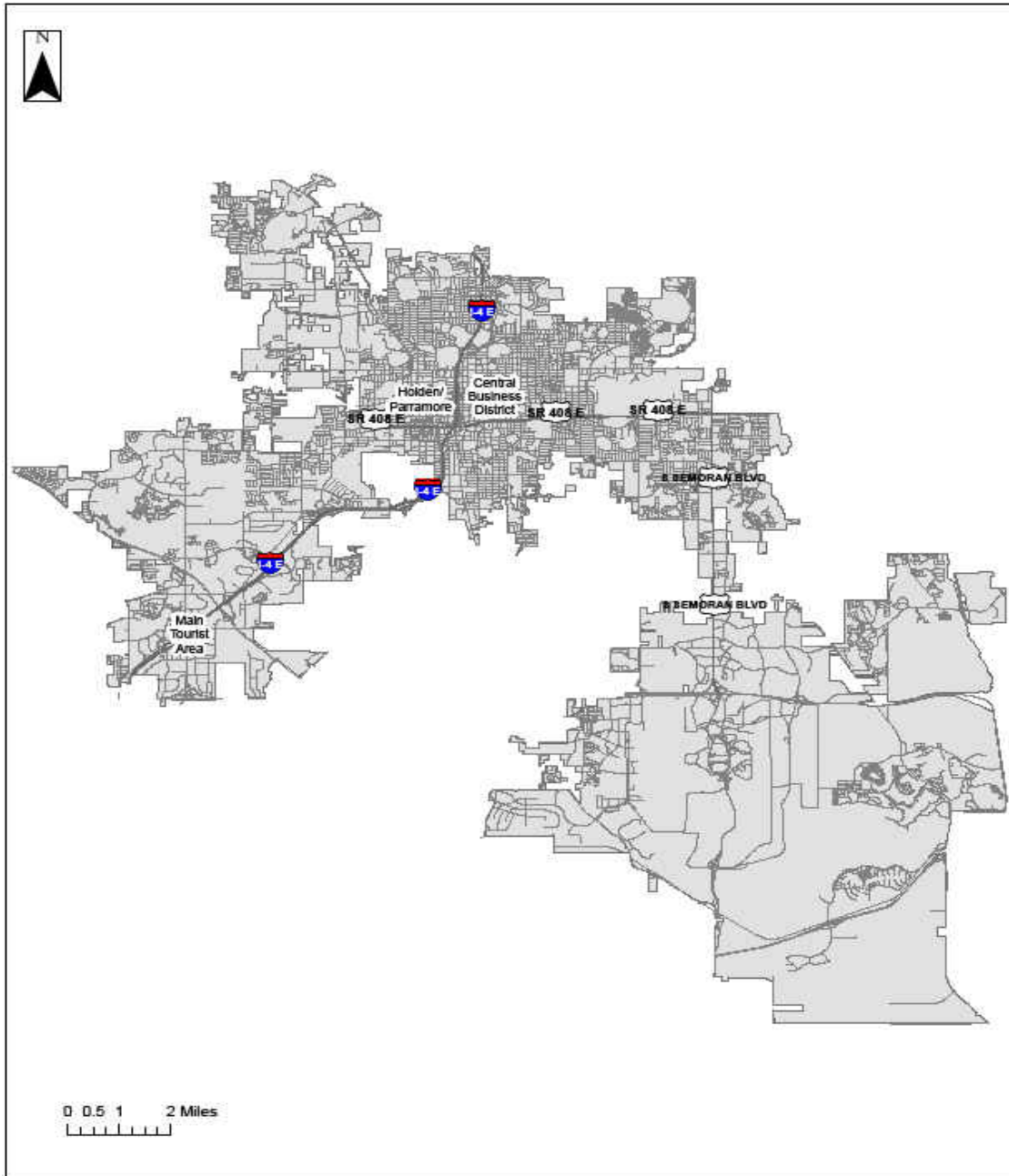


Figure 18: Orlando City Boundary

As demonstrated in Figure 19 below, the main portion of the city of Orlando (that portion considered in the current study) is bisected from north to south by Interstate-4 (I-4). In the central part of the city, the central business district is located just east of I-4 while some neighborhoods that are known to be high-crime areas, such as Parramore and Holden, are located just to the west of I-4. These are predominantly African-American neighborhoods which are poverty stricken and commonly thought to be affected by social disorganization. Located in the central business district is an area concentrated along South Orange Avenue where many bars and nightclubs are located. These businesses are frequented by both locals and tourists to the area, and together they comprise an area in which there is a large amount of alcohol consumption and crowding conditions, especially at nights and on the weekends.

On the far eastern side of the city, Semoran Boulevard runs from north to south and provides the main route of travel into the Orlando International Airport (see Figure 19). The Semoran Blvd. area has a high Hispanic population and is a common area for crime occurrences. The Orlando area is known for its tourist attractions such as Walt Disney World and Universal Studios. Walt Disney World is not located within the city limits of Orlando, but Universal Studios and some other attractions are, and they can be found in the southwest portion of the city. It is important to note that while some tourist

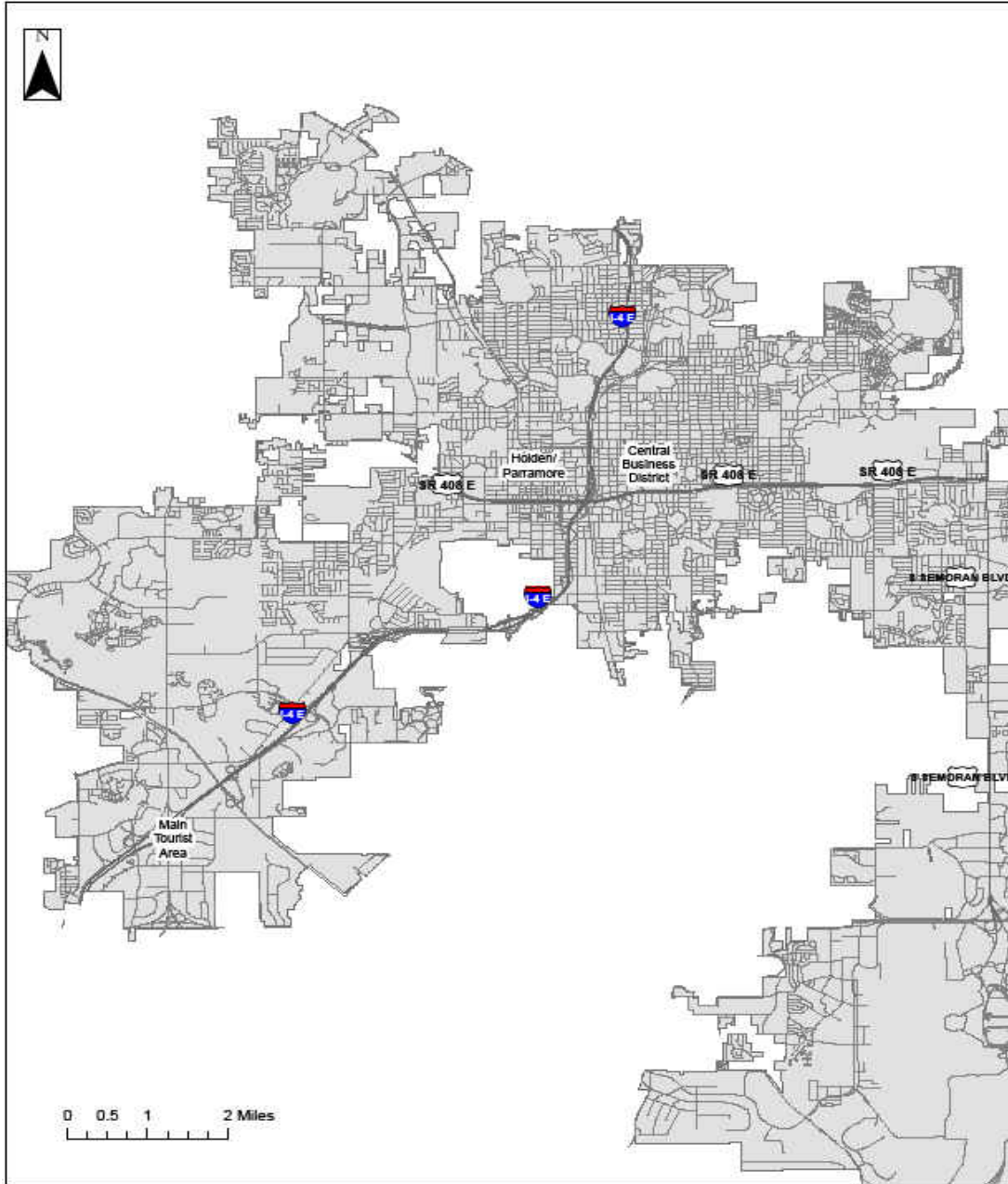


Figure 19: Main Areas of Interest

attractions are located within the City of Orlando and some are on the other side of the boundary, there is a large amount of fluidity between the City and Orange County because of the tourists crossing back and forth in that general area. The crowding and factors that come with it, such as large quantities of alcohol consumption, are not confined to one jurisdiction or another.

Figure 20 demonstrates the locations of most¹³ of the officer battery incidents within the city limits (n=367). Upon a simple visual inspection, there immediately appeared to be more clustering of incidents around the downtown areas, especially in the central business district, and around the Holden and Parramore neighborhoods. The areas around Semoran Blvd. and the tourist areas showed several incidents, but it was not immediately clear whether or not there were enough incidents in a small enough area for them to be considered geographically clustered.

Spatial Analyses

While a visual inspection was a helpful place to start, statistical analyses were necessary to determine whether or not there was indeed clustering of officer battery incidents. Three analyses of clustering were conducted¹⁴, each successively more

¹³Six percent of addresses within City limits were left unmatched due to data errors or technical difficulties. While there is no generally regarded “acceptable” address match rate (Harries, 1999), a rate of above 90% is quite high.

¹⁴ Refer to *Chapter Three: Methods* for a description of each type of analysis.

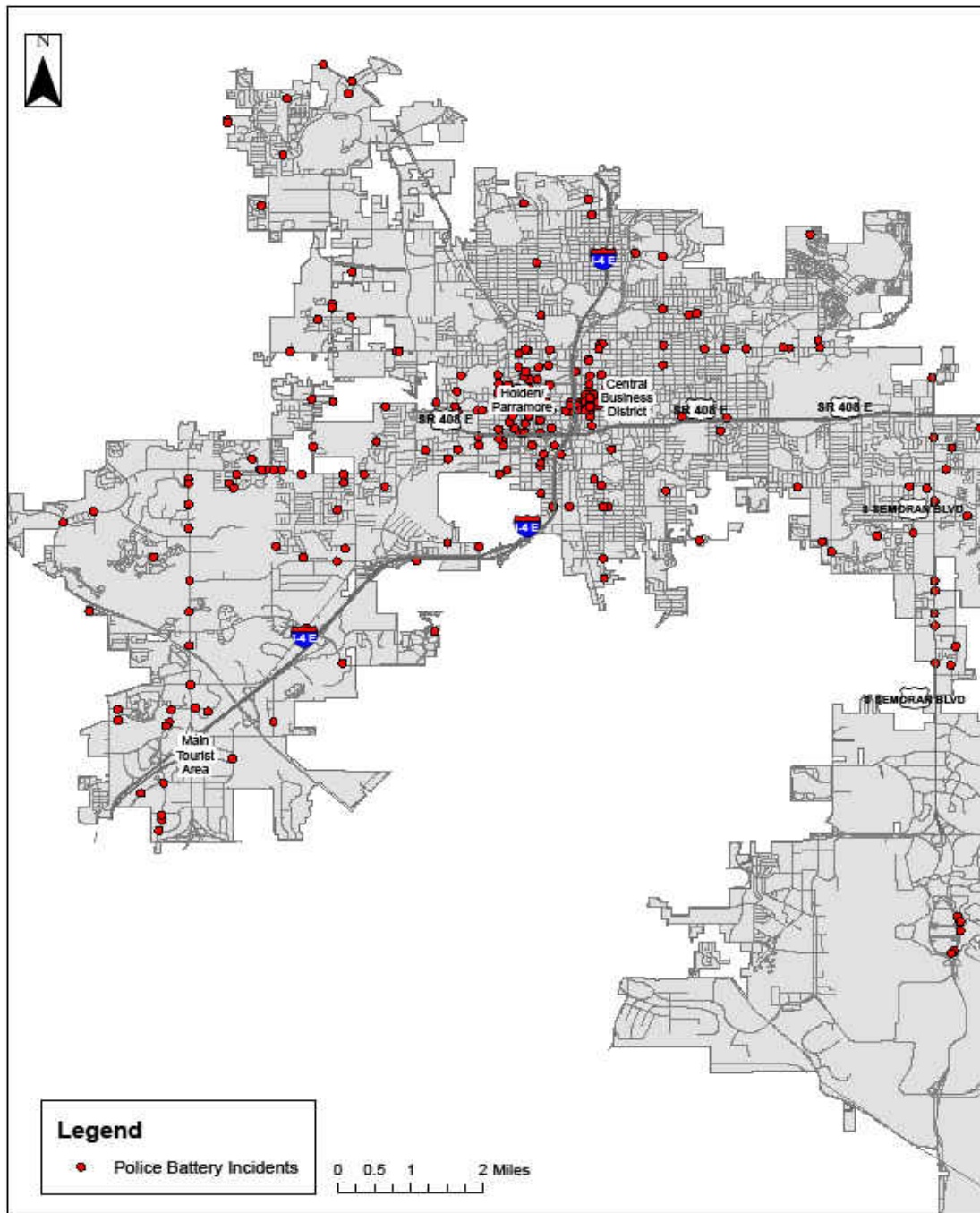


Figure 20: Locations of Officer Battery Incidents

statistically robust. The first analysis involved creating a choropleth map which would show the frequency of officer batteries by census tract¹⁵. When the battery locations were aggregated to the census tract level, there was the definite appearance of clustering in the downtown business district as well as in the high-crime neighborhoods just west of I-4 (see Figure 21). There also appeared to be potential clustering in the tourist areas in the southwest portion of the city. These positive results on the choropleth map provided reason to conduct a more robust type of analysis, the nearest neighbor index.

The nearest neighbor index (NNI) was conducted as both a 1st-order analysis and a k-order analysis where k=100 (a common value for these tests). This means that the index of the 1st-order analysis displayed the strength of clustering between each incident and its nearest neighbor, while the k-order analysis where k=100 would show the strength of clustering to the 100th level. In other words, the index would describe the strength of clustering between each incident and its nearest neighbor, second nearest neighbor, third nearest neighbor, and so on until the one-hundredth nearest neighbor. An index value of over 1.0 indicates no statistically significant clustering, while an index value of less than 1.0 indicates significant clustering and values closer to 0.0 indicate stronger clustering.

¹⁵ Because the census tract boundaries were not designated according to the city limits of Orlando, the census tract boundaries had to be adjusted slightly to match up with the Orlando boundaries for mapping purposes. This should not have posed any major problems.

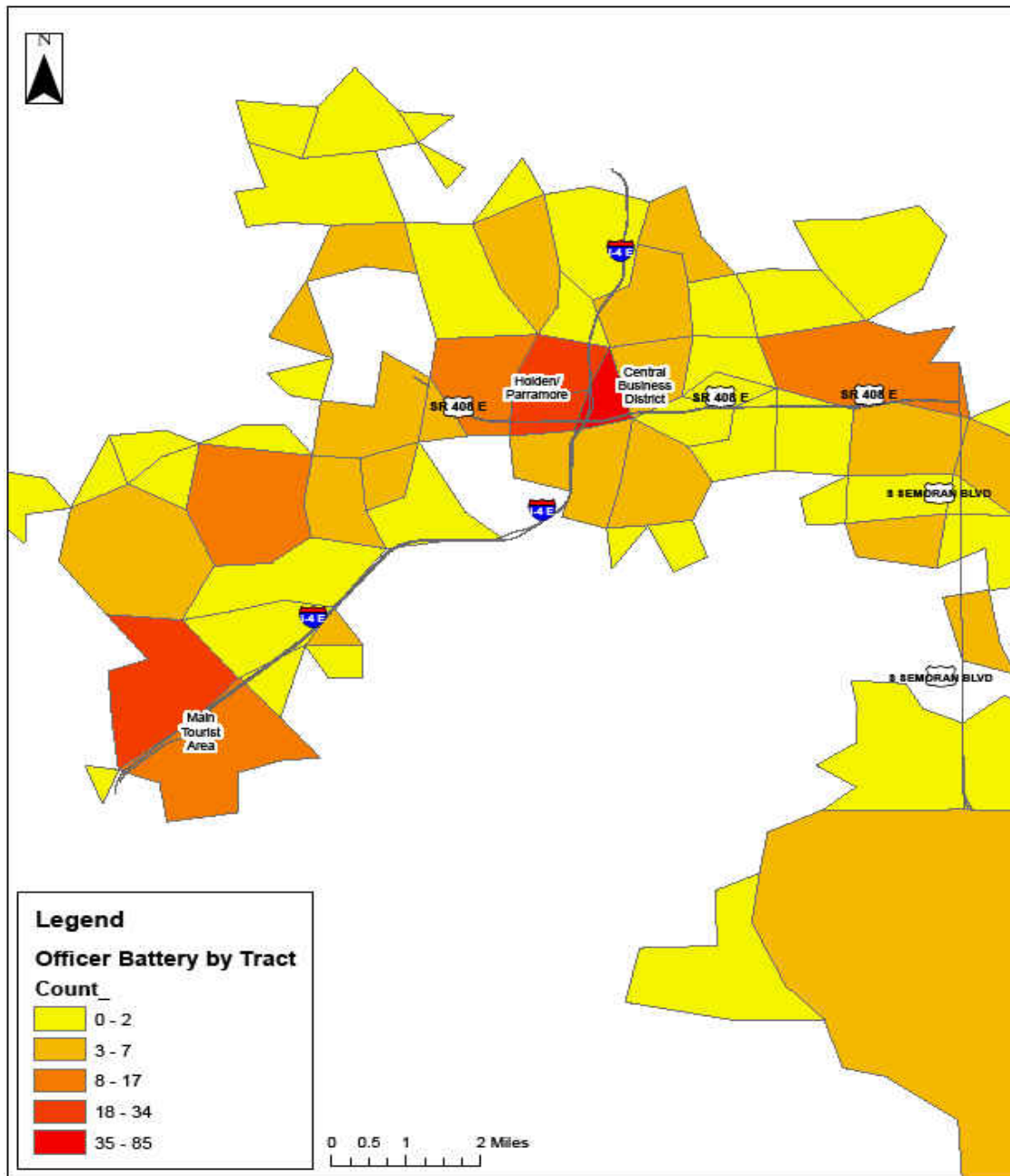


Figure 21: Officer Battery Incidents by Census Tract

The results of the 1st-order nearest neighbor index can be found in Table 3. The index value of 0.33874 indicates strong clustering between each incident and its nearest neighbor. The k-order analysis to 100 also indicated that the clustering of officer battery incidents was strong, where even to the 100th order the index value was well under 1.0 at 0.61321 (see Table 4, next page). For complete results and associated statistics of both the 1st-Order NNI and the k-order (k=100) NNI, see Appendices F and G respectively.

Table 3: Results of 1st-Order Nearest Neighbor Index

Sample Size	367
Mean Random Distance	1890.14 feet
Mean Nearest Neighbor Distance	640.27 feet
Standard Deviation of Nearest Neighbor Distance	1249.97 feet
Minimum Distance	0.00 feet
Maximum Distance	92027.24 feet
P-value (one tail)	0.0001
P-value (two tail)	0.0001
Nearest Neighbor Index	0.33874

The nearest neighbor analysis is a statistically robust strategy, and in this case the analyses indicated that there was strong geographical clustering of officer battery incidents, but this type of analysis does not describe where clustering occurs. For a reliable test of the location of clustering, a quartic kernel density interpolation was

conducted. By weighting incidents' location in reference to a grid of the entire study area, interpolations can provide information as to the location as well as strength of clustering. The results of the kernel density interpolation, which demonstrates stronger clustering

Table 4: Results of k-Order (k=100) Nearest Neighbor Index

Sample Size	367
Mean Random Distance	1890.14 feet
Mean Nearest Neighbor Distance	640.27 feet
Standard Deviation of Nearest Neighbor Distance	1249.97 feet
Minimum Distance	0.00 feet
Maximum Distance	92027.24 feet
P-value (one tail)	0.0001
P-value (two tail)	0.0001
Nearest Neighbor Index—Order 1	0.33874
Nearest Neighbor Index—Order 2	0.40725
Nearest Neighbor Index—Order 3	0.43150
...	...
Nearest Neighbor Index—Order 98	0.61450
Nearest Neighbor Index—Order 99	0.61417
Nearest Neighbor Index—Order 100	0.61321

with higher z-scores and thus darker color shades, indicated that there was extremely strong clustering centered in the downtown business district and emanating out west of

I-4 to the Holden and Parramore neighborhoods. In this analysis, there was no significant clustering found in either the tourist district or in the Semoran Blvd. area (see Figure 22 below).

Upon determining the extent and location of clustering of officer battery incidents, the next step was to attempt to determine what factors might lead these areas to display more violence against officers. One potential explanation comes from social disorganization theory, in which areas of higher social disorganization (often indicated by high poverty, low educational attainment, and high residential mobility among other factors) are also high crime areas. To compare areas with more officer batteries to areas of high social disorganization, a choropleth map was produced which showed the social disorganization of census tracts using the scale created earlier in this study¹⁶. Then, the choropleth map of officer batteries (Figure 21, page 96) was compared with the choropleth map of social disorganization (see Figure 23).

It was obvious upon visual comparison that the main areas of officer battery did not match up to the most disorganized areas as expected. The most dangerous area for officers, the downtown business district/bar area, was not found to be highly disorganized. The tourist areas, also dangerous to officers, were not overly disorganized either. Conversely, many areas of the city were demonstrated to be highly

¹⁶ See *Chapter Three: Methods* for a complete description of the social disorganization scale.

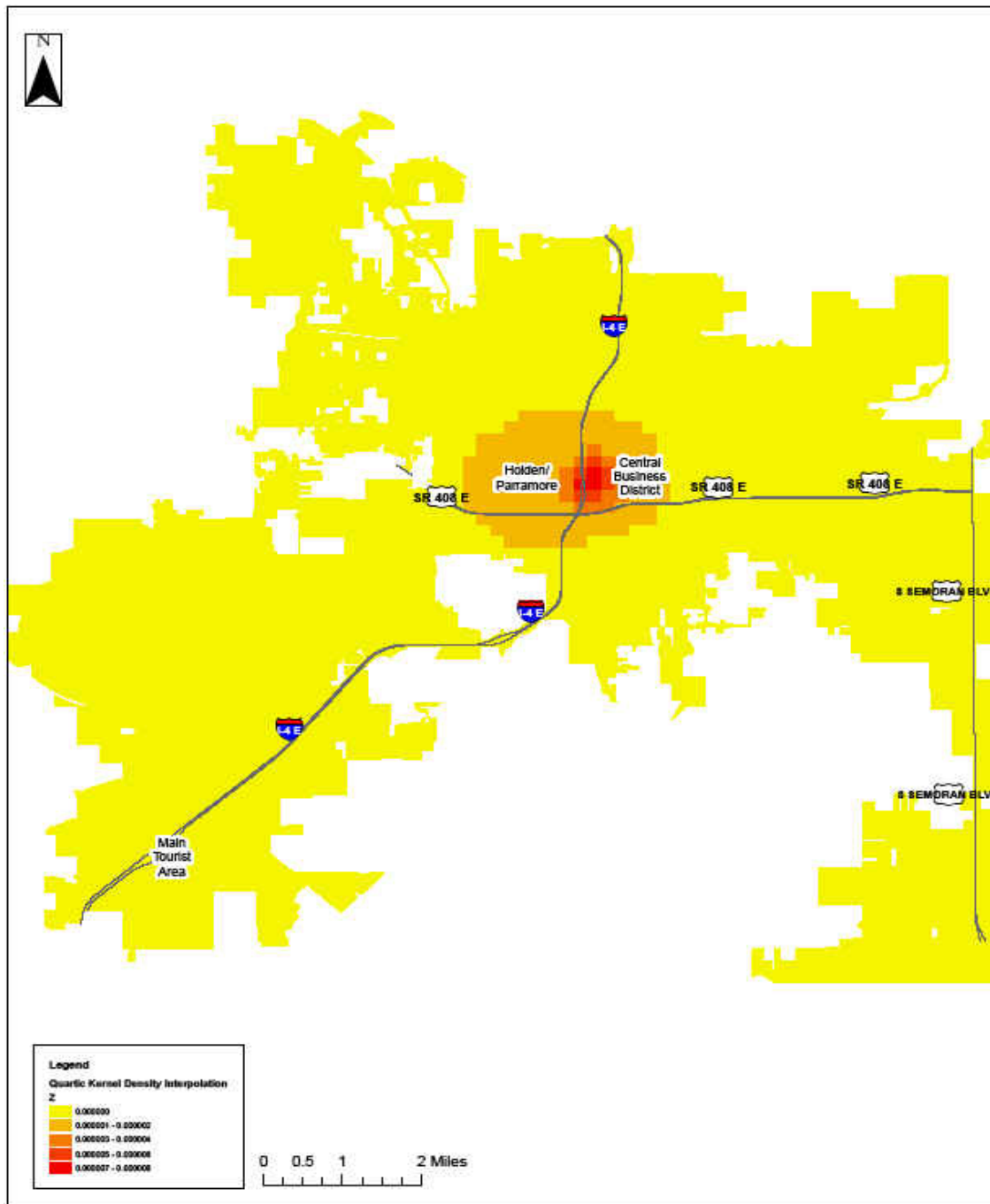


Figure 22: Kernel Density Interpolation of Officer Batteries

disorganized but not overly dangerous to officers. The areas extending west and north from Parramore and Holden were highly disorganized, as were some tracts along Semoran Blvd. and a few small tracts just north of the main tourism area; however, none of these areas was overly dangerous for officers. There may have been several reasons for this disjunction. High violence areas for officers were largely commercial, but many common indicators of social disorganization, such as residential mobility and poverty level, are measures of residential populations and do not apply well to commercial areas. Therefore, the commercial areas in question may not show the signs of social disorganization that residential areas would. Also, the suspects may have been traveling from other areas and may not actually reside in the areas where the batteries took place. In any case, the main areas of danger for officers seemed to have only one thing in common that was theoretically connected to the violence against officers—they are the main areas in which a large amount of the city's alcohol consumption and crowding conditions take place.

Considering the apparent lack of connection between officer battery and social disorganization and the potential connection between officer battery and alcohol use (and potential crowding), further analyses were conducted that more closely examined these factors. The locations of businesses with licenses to sell alcohol within the city of Orlando were retrieved from the website of the Division of Alcoholic Beverages and Tobacco, which is part of the Florida Department of Business and Professional Regulation (2010). The list of licenses in Florida was restricted to include only those

businesses with Orlando addresses (n=2042) and then those locations were further truncated to include only those licenses that were acquired before or during the study period (i.e. before December 31, 2008; n=1466). Mapping was then attempted for the addresses, and once the addresses that were not actually located within the city limits or those with incomplete information were eliminated, there were 493 addresses of businesses with current alcohol licenses within the city limits of Orlando.

These 493 addresses were mapped and then aggregated to create a chloropleth map of the number of businesses licensed to sell alcohol by census tract. A comparison of the chloropleth maps of officer batteries (Figure 21, page 96) and alcohol licenses (Figure 24 below) demonstrated a much closer geographical link than that between officer batteries and social disorganization. Furthermore, when the exact locations of alcohol-licensed businesses were laid over the chloropleth map of officer battery by census tract, the correlation could even more clearly be seen (Figure 25). While there were high concentrations of alcohol-licensed businesses on main roads without high levels of officer battery, the main clusters of businesses that sell alcohol were clearly found in the same areas where officers were most at risk. These areas specifically were the downtown bar area, the neighborhoods just west of I-4 such as Parramore and Holden, around the main tourist area, and possibly on the east side of the city near where State Road 408 and Semoran Blvd. meet.

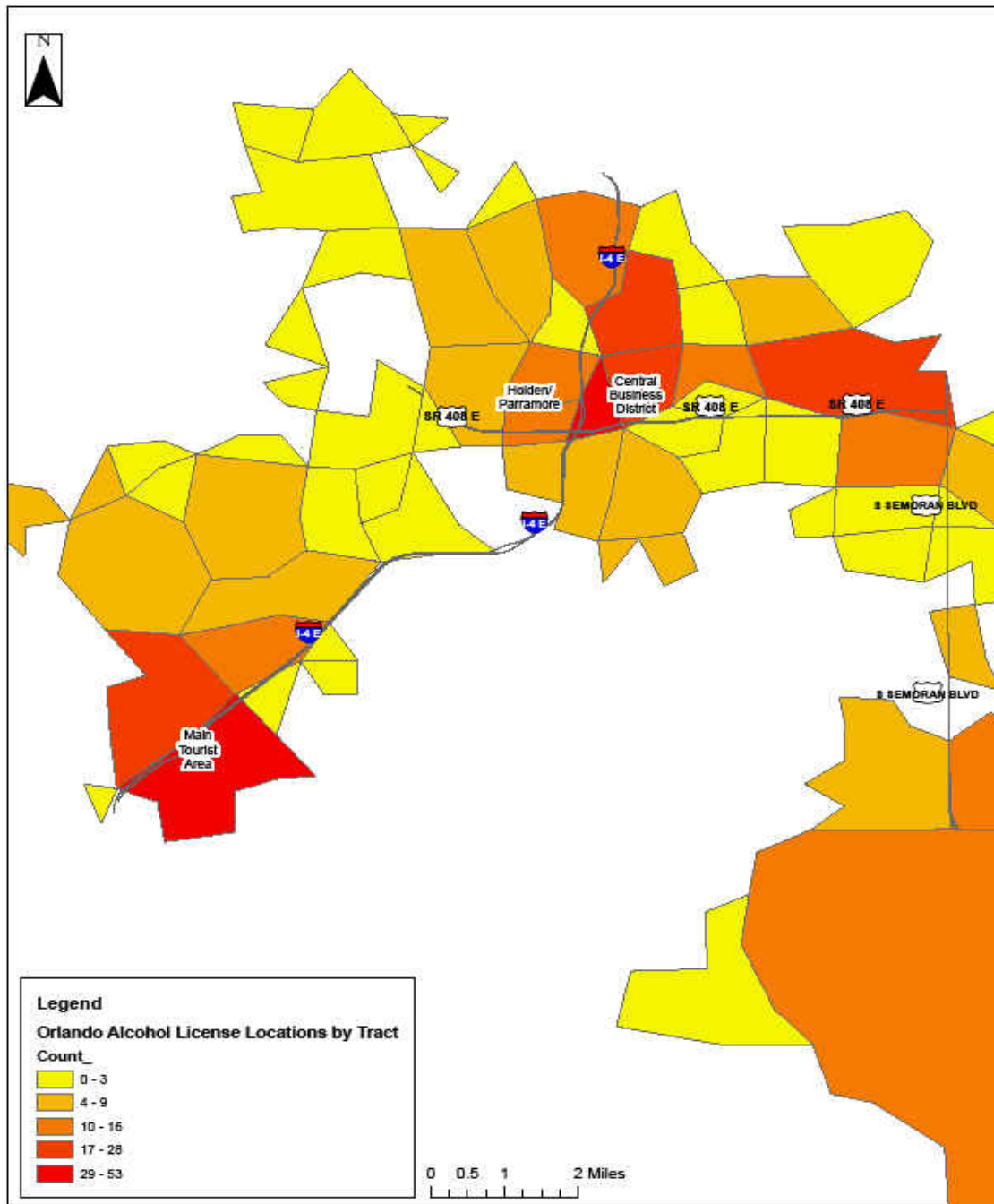


Figure 24: Alcohol Licenses by Census Tract

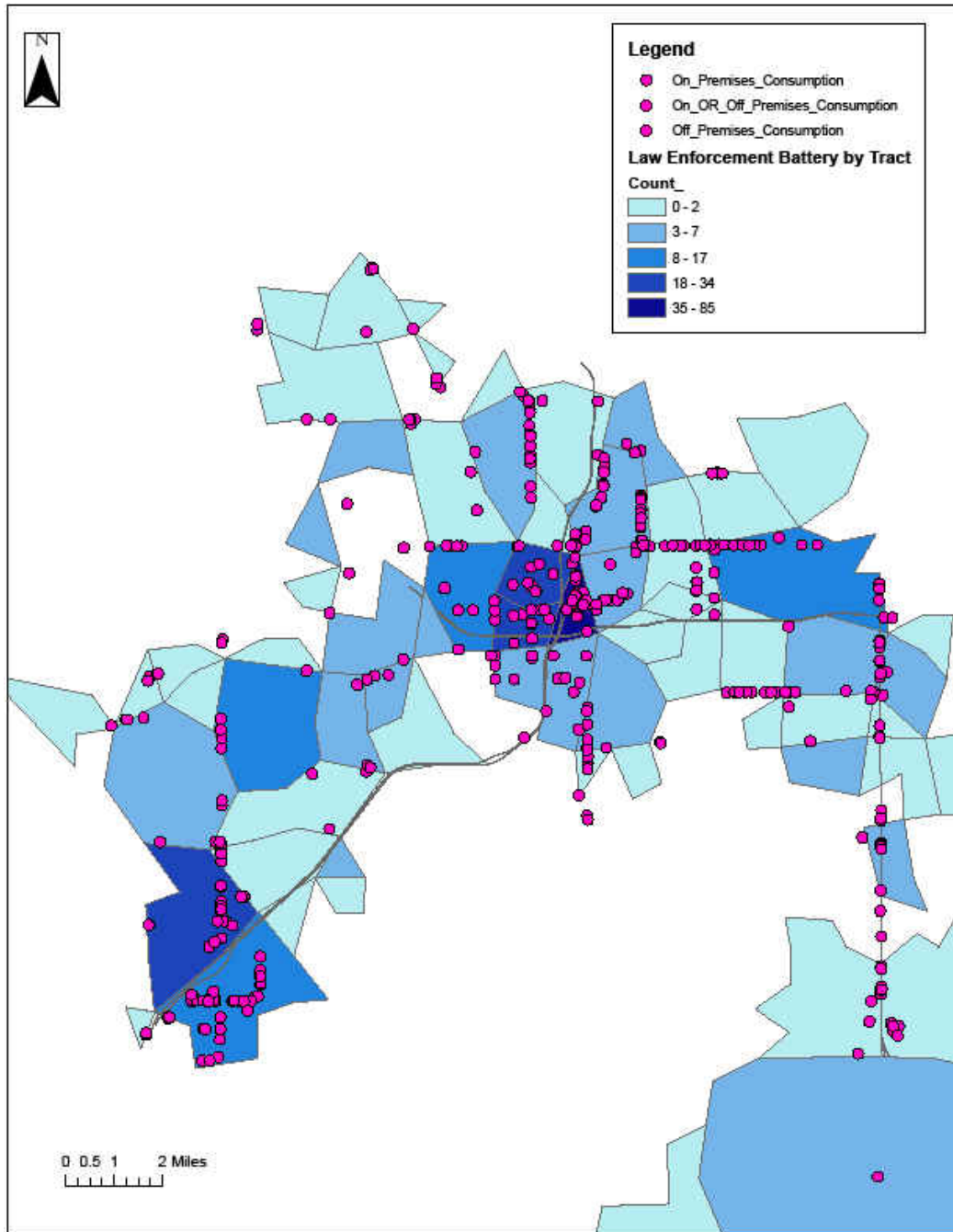


Figure 25: Alcohol-Licensed Business Locations over Officer Battery Levels

It was possible that certain types of alcohol licenses may also be affecting the level of violence against officers. Some businesses on the register were licensed to sell alcohol for off premises consumption only (i.e. liquor stores, package stores). Other businesses were licensed to sell alcohol for on premises consumption only; these included bars, nightclubs, social clubs, etc. Still other businesses were licensed to sell closed packages for off premises consumption as well as alcohol by the drink for on premises consumption. A map was created to demonstrate the locations of these different types of alcohol-selling businesses (see Figure 26 below). The types of alcohol licenses, here designated by color, provide a visual layout of where each type of licensed business is predominantly located. In the downtown bar area just east of I-4, most businesses that are licensed to sell alcohol are selling alcohol either for on premises consumption or for both on or off premises consumption. In the disorganized areas west of I-4, the opposite is true; businesses are licensed to sell either for off premises consumption or for both on and off premises consumption. The idea that the neighborhoods west of I-4 have more closed package alcohol sold for off premises consumption is consistent with many low income areas. And the downtown business district has a strong nightlife and several bars and is a popular area for drinking and partying on site, so this is consistent with the idea that the business district has a stronger concentration of licenses for consuming alcohol on premises. This could be an important determinant of violence against officers because on premises consumption creates more crowding conditions and more disturbances, not only inside the bar or club

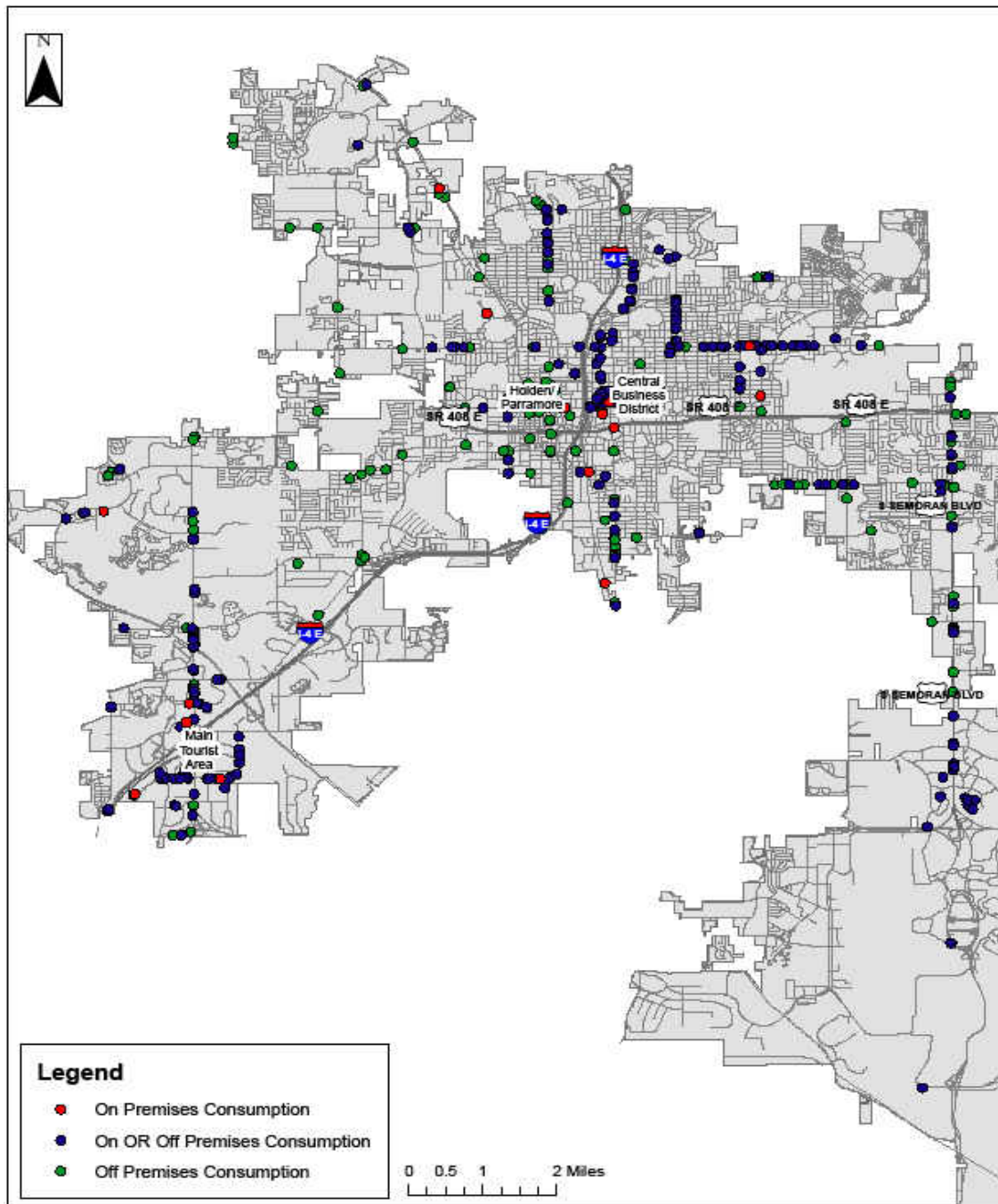


Figure 26: Locations and Types of Businesses Licensed to Sell Alcoholic Beverages

during business hours but also outside after the bars close down and crowds of people, most of whom have been consuming alcohol, flood the sidewalks and streets at the same time.

The tourist area appears to have a mixture of alcohol licenses, those which allow businesses to sell for on or off premises consumption or both. This is surprising considering that there is an assumption in the main tourist areas that visitors are going out to clubs and restaurants to consume alcohol—it appears that they are also purchasing the alcohol to consume in other areas such as their hotel rooms. Finally, the last area of interest was around the northern portion of Semoran Blvd. where Semoran meets State Road 408. In this area, as around the Parramore and Holden areas, there appears to be a mixture of businesses selling alcohol for off premises consumption or for both on and off premises consumption.

Discussion

Based on the spatial analyses conducted here, we can conclude that there was a strong clustering of officer battery incidents in Orlando throughout 2006, 2007, and 2008. Depending on the analysis, there was definitely clustering around the downtown business district and the neighborhoods just west of I-4 such as Parramore and Holden. There was potential clustering in the main tourist areas of the city as well and possibly to a lesser extent around the northern portion of Semoran Blvd.

Tests of a potential relationship between officer battery and social disorganization were not so predictable, however. There did not appear to be a strong relationship between violence against officers and social disorganization, but there did appear to be a relationship (at least geographically) between violence against officers and alcohol consumption. Since we know that alcohol use often leads to disturbances and disturbances are the main type of call that leads to violence against officers (Brandl, 1996; Federal Bureau of Investigation, 1997), it is logical that those areas in which more alcohol is sold (and presumably consumed) would be more dangerous to officers.

The results of this chapter, as well as *Chapter Four: Descriptive Statistics* and *Chapter Five: Regression Analyses*, paint a more complete picture of the characteristics of violence against police officers and their potential causes than we have had available before. There are numerous policy implications inherent in these findings. We will discuss these implications next, along with the conclusions that may be drawn from this study as well as the most promising directions in which to take our future research.

CHAPTER SEVEN: CONCLUSIONS

Discussion and Policy Implications

The purpose of this study was two-fold. First, this project was a test of sorts for the criminal events perspective as an explanation for violence against police officers. Second, the project was designed to determine the validity and strength of potential predictors of officer violence in Orlando. In the end, the results were mixed. As discussed in *Chapter Three: Methods*, support for the criminal events perspective would be defined as discovering significant predictors of officer violence in all facets of analysis, including situational and geographic factors as well as individual factors of both the suspects and the officers involved. Finding significance in every facet of the battery event would have lent credibility to the idea that officer battery is indeed a criminal event with a beginning, middle, and end. In this sense, the criminal events perspective as an explanation of officer violence was not supported. While situational and geographic factors as well as some factors pertaining to the offenders were found to be significant, no factor relating to the specific officer involved was significant.

Of course, this may have been due to specific limitations within the study methodology and data set. Fewer officer variables were available for testing than situational or offender variables. Perhaps the officer variables that are of the most importance were not available in this dataset. Although the criminal events perspective

was not supported as an explanation for violence against officers in *this* study, it would be premature to assume that it would not be a useful explanation when using other data or studying other areas. More research is needed here.

The second goal of the study was to identify potential correlates of officer violence; two situational variables and three variables related specifically to offenders were determined to be significant. Regression analyses identified one situational variable¹⁷ as well as all three offender variables, while the other situational variable (location) was determined through spatial analysis.

A particularly strong finding from this study was that use of force incidents with multiple officers are more likely to involve battery against at least one of those officers. Unfortunately, the data available did not provide temporal information as to whether or not there were multiple officers on scene right away or if those officers arrived on scene at a later time, but it appears that there is not safety in numbers in these cases, nor do multiple officers automatically intimidate potential batterers. This is not to say that officers should not work together and provide back-up for each other as often as possible; clearly many an officer has been spared assault or worse because his or her partners were ready to assist in any way necessary. It is to say, however, that officers should not think and act complacently simply because there are more of them than there are suspects. Furthermore, officers should not rely on sheer numbers or strength to control a situation because they assume offenders will be intimidated—clearly this is

¹⁷ The independent variable describing the number of alcohol-selling businesses nearby was significant only in the first model, and therefore it is not included in the discussion here.

not the case, and when physical confrontation can be avoided by using verbal skills or whatever other means are available, it should be.

The other main situational variable of importance was the area in which the incident occurred. There was strong evidence of clustering of officer batteries in the City of Orlando. This is an area in which knowledge is power. Knowing which areas are most prevalent for violence against officers is an excellent way to protect officers. Simple strategies such as doubling officers per car when possible in those areas or using more aggressive patrol strategies such as zero-tolerance policing could make a big difference in the safety of OPD's officers. By all indications, OPD is aware of the most dangerous areas for its officers and is currently using these strategies. These results in this case, then, stress the importance of continuing to do so.

In addition to these situational variables, three characteristics of the offenders were found to be significant predictors of officer battery. Female offenders were much more likely to batter officers than male offenders. Although the thinking patterns in the criminal justice system regarding gender have been changing, stereotypes still exist, and it appears that they can easily get officers into trouble. Officers must be trained to be on guard against physical danger from females as well as males, and while they should continue to consider differences such as physical size of the offender when making decisions about defensive tactics, they should not assume that women are "gentler" or less likely to assault or batter them than men. The results of this study indicate that quite the contrary is true.

The finding that offender size (measured by weight) was a significant predictor of officer battery was an interesting one. While this variable was significant to the .01 level, it did not have a major impact on the likelihood of battery. In fact, pound by pound, incidents involving heavier offenders increased the likelihood of officer battery by less than 1%. This was not the most useful finding, especially considering that most officers are naturally going to be more wary of larger offenders without being told to do so!

The final major finding, while not unexpected, is quite important. Offenders who were known to have consumed alcohol within the few hours before the incident in question were much more likely to batter officers than those who were not known to have recently consumed alcohol. This is in line with prior research on the subject, and with common sense, but it cannot hurt to stress the point. People who have consumed alcohol are less inhibited and more likely to do things that they would not ordinarily do. Even someone who is “stumbling drunk” and lacks the coordination to walk a straight line may have the strength and willingness to pull a trigger. His or her aim probably will not be very accurate, but is it worth the chance? The impulsiveness of the intoxicated, if nothing else, calls for increased vigilance.

The fact that situational and offender characteristics were significant predictors of officer battery and officer characteristics were not actually bodes well for the practical usefulness of this study. Officer demographics, after all, cannot be changed by the officer—sex, age, and race are pretty well determined at this point. The factors that can

be changed, thankfully, are the ones that appear to matter according to this study. Of course we cannot change the sex, age, or race of offenders, either, but we can understand how these differences affect officer interactions and use this information for policy and training purposes, just as we can be aware of the differences between single and multiple officer calls and the areas in which the calls are occurring. Understanding the characteristics of the incidents in which officers are battered and injured is the best way to combat those batteries and injuries.

Directions for Future Research

This study filled several gaps in prior research. The criminal events perspective as an explanation for officer violence was tested for the first time. A new data source was explored, and it provided some crucial information, especially for the local area in which it was collected. Spatial analyses that had not previously been conducted on violence against police officers were conducted in this study, and with useful results. There is, however, much more work to be done.

Studies at other agencies and in other geographical areas are necessary for a comparison of results. For other agencies that collect use of force data and/or data on violence against their officers, similar projects could indicate whether or not the results found here are generalizable to other areas or are mostly specific to Orlando (which is, after all, a rather unique city). Further support or refutation of the criminal events

perspective as an explanation of violence against officers could also be discovered through studies conducted in other areas and at other agencies.

Further investigation is also needed into the disjuncture between areas of social disorganization and areas of danger to officers. Perhaps there are positive intervening factors in some disorganized areas that counteract the disrespect for formal social control agents that would be expected there. Community social service agencies and/or churches could be mapped and compared in further efforts to determine *why* some areas are more or less dangerous for police than others. Along these same lines, continued investigation is needed into the seemingly strong link between police violence and alcohol use. It is important to understand whether or not officer violence is affected by the type of alcohol consumption (i.e. on or off premises) or the characteristics of those who often use alcohol in the area.

Additionally, more investigation is needed into the nature of the relationship between officer violence and suspect gender. The current study found, as has prior research, that females were more likely to batter officers than males. This does not necessarily mean that female offenders are more dangerous to officers as far as the chance of injury, however. Future studies into this interplay between gender and officer violence should attempt to determine whether or not female offenders are also more likely to injure officers or to use weapons against officers. This knowledge would help shape training and policy decisions further.

Finally, it is also absolutely critical that we look into other, new explanations for officer violence. The explanatory power of the regression models in this study was paltry. We are obviously missing factors that help determine the outcome of these incidents. While this type of rigorous statistical testing is necessary and serves a useful purpose, we are neglecting to investigate these incidents in the detail that cannot be examined through quantitative analysis. Qualitative analysis could provide more in-depth information about the perceptions and the interplay of the actions of both the officer and the offender. Case studies and interviews are necessary next steps in determining what other traits or conditions might lead officers to be battered, or worse.

In the end, Orlando Police Department has obviously made some very good decisions regarding the safety of its officers. Hopefully, this study will provide information that agency administrators can use to further protect their officers and decrease officer violence in the area. Perhaps this project has also introduced some new methods of studying violence against police officers that will be useful in other areas. Maybe it has served to confirm or refute the importance of some variables that are commonly held as predictors of this type of violence. Maybe it will spurn new projects that will substantially lower the rate of violence against officers. Meanwhile, America's police officers, deputies, and agents will continue to protect us every day and do the job that most of us cannot, or will not, do.

APPENDIX A: PERMISSION TO USE OPD DATA



CITY OF ORLANDO


POLICE DEPARTMENT



February 05, 2009

MEMORANDUM

TO: Institutional Review Board
University of Central Florida
Orlando, FL.

FROM: Sgt. John Holysz 
City Of Orlando FL. Police Department
100 S. Hughey Ave.
Orlando, FL. 32801
In Service Training Supervisor

SUBJECT: UCF Doctoral Student- Michelle Covington-authorization to access records

The City of Orlando Police Department, In Service Training Unit, has give UCF Doctoral student, Michelle Covington, permission and authorization to access Orlando Police Department records concerning the incidents of Assaults and Batteries on law officers and police use of force incidents, to be used in a study concerning violence against law enforcement officers. Ms. Covington has authorization to make copies of these reports and use the copies to conduct her studies and research. After the study and research paper is completed, the Orlando Police Department requests that these copies be shredded and discarded, as they do contain personal biographical information.

Please feel free to contact me, any time, if you have any questions regarding the above information.

Office 407 246-3913
Cell 321 436-1829

E mail: john.holysz@cityoforlando.net

**APPENDIX B: ORLANDO POLICE DEPARTMENT USE OF FORCE
POLICY AND FORM**

**ORLANDO POLICE DEPARTMENT POLICY AND PROCEDURE
1128.9, USE OF FORCE AND APPREHENSION TECHNIQUES**

EFFECTIVE:	07/17/09
RESCINDS:	1128.8
DISTRIBUTION:	ALL EMPLOYEES
REVIEW RESPONSIBILITY:	TRAINING SECTION COMMANDER
ACCREDITATION STANDARDS:	4.01, 4.02, 4.04, 4.05, 4.06, 4.07, 4.09-4.12, 14.11, 17.03, 29.07, 39.01
CHIEF OF POLICE:	VAL B. DEMINGS

CONTENTS:

1. DEFINITIONS
2. RESISTANCE AND RESPONSE CONTINUUM
3. RESTRAINING TOOLS
4. WEAPONS
5. DEADLY FORCE
6. MAINTAINING PROFICIENCY
7. REPORTING REQUIREMENTS

POLICY: It is the policy of the Orlando Police Department to ensure all employees utilizing any level of force including deadly force do so within current state law and only use the degree of force necessary to effect lawful objectives. (4.01)

PROCEDURES:

1. DEFINITIONS

Approved Weapons and Equipment: Any Department-issued weapons and equipment or personally-owned weapons and equipment approved by the appropriate Departmental authority. (4.06a)

Area Treatment: The delivery of a chemical agent to an area directly or indirectly to cause people to leave the area or deny access to an area. This delivery is not directed at a specific subject.

Deadly Force: Any action, by a subject or a member, that is likely to cause death or great bodily harm.

Direct Application: The delivery of a chemical agent to a specific person or persons to modify their behavior.

Force: The tactics and/or techniques utilized by an employee to control or regain control of a subject in self-defense, the defense of others, or to counter resistance by a subject.

Forcible Felony: Murder, armed robbery, armed sexual battery, arson or use of explosive devices to a structure occupied or presumed to be occupied, kidnapping, burglary armed with a firearm, and any felony that involves the threat of or the use of deadly force against an individual.

Great Bodily Harm: Any action by a subject or a member, likely to cause permanent disfigurement or serious bodily injury.

Imminent Danger: An employee's perception that a threat is pending, and/or a subject has the capability of inflicting death or great bodily harm, or otherwise incapacitating an employee, with or without a weapon and is demonstrating an intention to do so.

Last Resort: All practical means available to the officer to avoid using deadly force have been exhausted. Depending on the situation, these means may include verbal commands to disengage or using a lesser necessary force when these means can be accomplished without endangering the officer or any other persons.

Non-Deadly Force: Force that is neither likely to nor intended to cause great bodily harm or death.

Physical Force: The employment of authorized physical tactics and/or techniques or other responses that do not utilize weapons.

Restraining Tools: Include Handcuffs, Flex cuffs, Ripp-Hobbles and four-point restraint. (29.07)

Supervisor: A sergeant or the ASL who is the on-duty supervisor when the squad supervisor is not on duty.

The "Resistance and Response Continuum" (Attachment A): A graduated guideline that defines the various levels of resistance and the authorized levels of employee response and techniques. The level of force utilized by an employee is based on the subject's level of resistance.

2. RESISTANCE AND RESPONSE CONTINUUM

The Resistance and Response Continuum (Attachment A) provides guidelines for employees' responses to resistance from a subject. Each level outlines appropriate responses ranging from employee presence to the use of deadly force; each directly related to the level of resistance encountered. An employee that has used force on a subject must monitor the affected subject for breathing irregularities and level of consciousness. The employee must call OFD if there is any doubt as to the subject's condition and provide aid until relieved by medical authorities. In the event that multiple employees used force on a subject, then one officer shall be designated to monitor the subject until medical personnel arrive. (4.09)

3. RESTRAINING TOOLS

Subjects shall be restrained in a manner so as not to injure themselves or others.

Members should maintain physical control over the handcuffed subject to ensure the safety of the subject and other individuals, including the member. Non-compliance of a handcuffed subject shall be handled within the guidelines established in the Resistance and Response Continuum.

3.1 HANDCUFFS

Members responsible for the custody and safe handling and transporting of subjects are strongly urged to utilize their Department-issued handcuffs as a primary restraining device. Subjects should be handcuffed to ensure the security of and prevent injury to the subject. The handcuffs should be double-locked, behind the subject's back. Consideration may be given to a subject's age, physical condition or disability, and mental capacity with regard to the decision to utilize handcuffs. In the event the decision is made not to handcuff a subject, another member should be assigned to assist in transporting the subject to the final destination. (29.07)

Subjects shall not be handcuffed to any part of any object unless it is necessary to protect another from great bodily harm or death. (39.01d)

3.2 FLEXCUFFS

Members may use flexcuffs in lieu of handcuffs when appropriate. Subjects should be flexcuffed in such a manner as to ensure the security of and prevent injury to the subject. (29.07) Flexcuffs shall be removed using flexcuff cutters, which are available in Supply, CID, patrol cars, and the Patrol off-going squad room. In cases of emergency only, flexcuffs may be removed with other cutting instruments. **(When using other cutting instruments, extra care should be given to removal of the flexcuffs to ensure injury does not occur to the subject during the removal process.)** (39.01d)

3.3 RIPP-HOBBLE

Members may use a Ripp-Hobble as an additional restraining tool. Most often the Ripp-Hobble will be utilized in applying a four-point restraint. Subjects should be Ripp-Hobbled in such a manner as to ensure security of and prevent injury to the subject. Ripp-Hobbles are available in patrol vehicles for members' use. (29.07)

3.4 FOUR-POINT RESTRAINT

When a subject resists with **aggressive resistance** and this resistance creates an imminent danger to the subject, member, or others, or other restraining tools have not been effective, members may utilize a four-point restraint. A four-point restraint is securing the subject's feet to his or her hands from the rear, using handcuffs, flexcuff, and/or a Ripp-Hobble.

When it is necessary to four-point restrain a subject, members shall not "cinch" down the handcuffs, flexcuffs, or hobble. The feet should not be brought past a 90-degree angle to the body. This will provide the safest method of utilizing this restraint technique.

Two members should transport a four-point-restrained subject for officer and subject safety, when possible. The passenger member must monitor the subject, as well as aid in loading and unloading.

4. WEAPONS

Only weapons (lethal and non-lethal) and ammunition meeting Agency approval are to be used in the performance of an employee's duty (both on and off-duty). (4.05a) A record on each approved firearm, Department or personally owned, will be maintained by the Training Unit. (4.06a,c) Employees are restricted from carrying any weapon (lethal and non-lethal) with which they have not proven proficiency. (4.05b, 4.07) Furthermore, Department members shall not carry any weapons (lethal or non-lethal) that have not been authorized, reviewed, inspected, and approved by proper authority (4.07a). A list of approved firearms may be obtained from the Department range officer. All employees that carry weapons will be issued copies of and instructed on the Agency's Use of Force policy before they are assigned and authorized to carry the weapon. (4.02) A list of approved non-lethal weapons may be obtained from the Training Section Commander. (4.07b) Supervisors will inspect, on a yearly basis, the condition of all non-lethal weapons carried by their employees and to ensure that expiration dates are not exceeded. Each employee should also ensure that the expiration dates of their non-lethal weapons are not exceeded. (4.07c) NOTE: A common pocket knife is not considered a weapon as per this policy.

4.1 CHEMICAL AGENTS

Department-issued chemical agents may be used only in accordance with the Department's "Resistance and Response Continuum." The purpose of the chemical agent is to minimize the potential threat of resistance by the subject. Chemical Agents will cause burning and tearing of the eyes, heavy discharge from the nose, difficulty in breathing, disorientation, panic, and uncontrollable sneezing. The use of chemical agents or munitions in an area treatment or direct application is considered a use of force and will require a defensive tactics report.

Chemical agents should only be used in a direct application in those situations in which an arrest is likely. If an arrest is not made, the watch commander shall be notified as soon as possible and an Incident Report shall be completed concerning the incident.

Members and civilian personnel (CSOs, and CSTs) will be trained in the use of chemical agents prior to them being issued. Civilian personnel supervisors will be required to maintain these training records.

All sworn members, CSOs, and CSTs will carry the approved chemical agent while performing their assigned duties. Members who wear civilian clothes and members in limited duty status will carry their approved chemical agent, concealed, while performing their assigned duties. The only exceptions to this rule are administrative and undercover personnel who are not required to carry a chemical agent. The approved chemical agent will be carried in any off-duty work assignment. Members may carry their chemical agent in an off-duty status. Civilian personnel shall not carry their chemical agent in an off-duty status. (4.05a)

4.1.1 CLEAR OUT

"Clear Out" is a non-lethal, non-flame creating chemical irritant that is contained in an aerosol canister. Clear Out is designed to be used in a confined area to induce a subject to vacate the area. The Clear Out canister is armed by depressing a tab on top of the can and then simply tossing the canister into the target area.

Clear Out is approved for use in situations wherein the target individual is the only anticipated recipient of its use. Prior to dispensing Clear Out, officers will conduct a thorough investigation to determine the number and identity of occupants within the site that will receive the chemical irritant.

The sole purpose of using Clear Out is to induce a suspect that is subject to arrest to vacate a structure or vehicle. It is to be used when verbal methods of persuasion have failed and there is an anticipated danger to officers if Clear Out is not used to extract the suspect. The authorization to use Clear Out shall be given by a section commander, acting section commander, or higher authority.

The decision to use Clear Out may be based on the physical sighting of a subject in a structure, on eye witness statements to the fact that a subject was sighted in the structure, or any other information which establishes a high degree of likelihood that a subject is inside, i.e., Sonitrol. In incidents where Clear Out is used and the subject does not come out, the structure must be aerated for approximately fifty (50) minutes before a K-9 officer and his dog can enter the structure for a search. In incidents where the likelihood of a suspect present is not known, K-9 should be used for the building search. If K-9 is unavailable or in situations where K-9 is impractical, at least two officers will search the structure utilizing gas masks.

The suspect must be offered an exit, not "locked" in a structure.

It may be necessary to utilize two or more cans in a structure. Allow sufficient time for the gas to expand throughout the structure, at least 5 minutes.

A unit of Clear Out at 70 degrees Fahrenheit should empty out in approximately 28 seconds. About one minute after activation, the gas in the can will have expanded sufficiently to treat 23,000 cubic feet at a high enough concentration to cause extreme discomfort. (A house 50' x 50' with an 8 foot ceiling is 20,000 cubic feet.) While one unit will be effective in a large volume, it is recommended that at least two units be employed for maximum effectiveness. Clear Out is not recommended for large open space buildings, such as warehouses.

The mist produced by Clear Out is a strong irritant. It will cause burning and tearing of the eyes, heavy discharge from the nose, difficulty in breathing, disorientation, panic, and uncontrollable sneezing. Central air conditioning systems should be turned off prior to use or the vapor will enter the return system and affect an entire building. Officers should be aware that Clear Out will seep out of loose window sills, around doors, etc., and will affect officers standing too close to these openings.

To decontaminate, no special equipment, chemicals, or washing is necessary. The effects of the vapor will disappear by evaporation in 40 to 50 minutes, leaving no perceptible residue. Decontamination time may be reduced significantly by directing a fan into the effected area. The Orlando Fire Department may be summoned to "air out" a structure or dwelling if time is limited or at the request of the owner.

4.1.2 PYROTECHNIC GRENADES

A pyrotechnic grenade is a device that releases a chemical agent into the atmosphere through the burning of a chemical compound. The types of chemical agents available are smoke (HC) and CS (Orthochlorobenzalmalononitrile). The grenade burns at 750-800 degrees Fahrenheit and is specially designed for outdoor use in crowd control situations **only**. Pyrotechnic grenades **shall not** be deployed onto rooftops, in crawl spaces, or indoors due to its fire producing capability. The grenades shall be used primarily for the purpose of dispersing illegally assembled crowds or to protect lives and property when the circumstances indicate that the use of chemical agents would be the most effective manner of accomplishing the objective. Smoke grenades may be used to determine wind direction, as a carrier agent for CS munitions, or to conceal the movements of mobile field force personnel.

The use of pyrotechnic grenades will only be done with the authorization of the incident commander. The incident commander will establish the protocol or parameters in advance concerning the extraordinary use of chemical agents in accordance with a Level 1 Mobile Field Force event in the Department's current issue of P&P 1302, Civil Disturbances.

Only those members who have completed the Department-approved training will be permitted to deploy pyrotechnic grenades. The incident commander should have Communications check all channels for any on-duty ERT Chemical Team grenadier(s) to respond since they have specialized training and may have a variety of chemical munitions readily available.

Chemical munitions packs are located in the Supply vault at OPH and SECPO. Each pack contains six CS grenades, two aerosol burst dispensers, six Clear Out foggers, one Clear Out keyholer, one auto injector, and two smoke grenades. These packs must be signed out with the approval of the watch commander. Each pack contains three CS grenades, two aerosol dispensers, and one smoke grenade. These packs must be signed out with the approval of the incident commander. The Patrol Services Bureau Commander or designee will be responsible for chemical munitions packs.

4.2 ELECTRONIC CONTROL DEVICES (ECD)

An ECD is an electronic device that transmits electrical impulses to override the central nervous system and control the skeletal muscles. It is designed to incapacitate a target from a distance without causing death or permanent injury. The TASER M26 and X26 are the electronic control devices approved by the Department.

Department members may not carry a TASER unless it has first been reviewed, inspected, and approved by the Department's lead TASER instructor. (4.06a) Officers shall complete the Department's training course and demonstrate proficiency prior to carrying the TASER. (4.05b) Officers may carry their assigned TASER while off duty. While off duty the TASER must be concealed and carried in an approved holster. Civilian employees are not authorized to carry the TASER. (4.05a)

The TASER is a less than lethal weapon and is not intended to replace the firearm as the primary tool used when there is a potential for the use of deadly force. The TASER shall not be intentionally aimed at a person's head, neck, or groin. The TASER shall not be used on a subject who has swallowed illegal drugs when the sole method of their resistance is the refusal to spit the illegal drugs out of their mouth. The TASER shall not be used on subjects operating bicycles or motor vehicles except in cases of aggressive resistance.

In cases where a subject is struck with a probe in the face, throat, groin, female breast, or male nipple area, OFD must respond to the scene to treat the injury. (4.09) However, OFD will not be responsible for removing probes. The subject, when struck in any of these areas, must be transported to a hospital for probe removal. Only officers certified to use a TASER are authorized to remove probes that have struck the subject in any area other than those listed above. TASER probes should be removed as soon as the officer determines that the potential for further resistance has subsided. Since the TASER probes are a biohazard, they must be treated as such. Consequently, latex gloves must be used when removing TASER probes. The probes must be packaged as evidence in accordance with the current issue of P&P 1301, Significant Exposure and Control Plan.

Digital or 35mm photographs will be taken of the location where the TASER probes struck the body. Officers taking photographs of subjects must do so out of public view if the probes strike private areas of the subject's body.

The air cartridge number used will be entered on the Defensive Tactics form in the appropriate block and the spent air cartridge will be submitted into evidence. Managers approving replacement cartridges must ensure that the circumstances surrounding the discharging of a TASER are properly documented. Replacement air cartridges, for used or damaged air cartridges, will be issued by Supply with a requisition signed by a member with the rank of Lieutenant or above.

No changes, alterations, modifications, or substitutions shall be made to the TASER. An authorized vendor shall make all repairs to the TASER. Any TASER that is not functioning properly shall be given to the Department's lead TASER instructor, who will have it repaired/replaced by an authorized vendor. (4.06b,c)

The Training Section will be responsible for tracking TASER data port information annually during Block Training. In the event of a questionable discharge, or one that leads to serious injury or death, the TASER's data port information will be downloaded as soon as possible.

After discharging a TASER and securing the subject, officers shall contact their supervisor. If their supervisor is not readily available, an on-duty supervisor/sergeant will be contacted. The supervisor will respond and initiate a Defensive Tactics Form. In the event of an accidental discharge where there are no reported injuries, a Defensive Tactics Form will not be needed. However, a supervisor must be notified of an accidental discharge and ensure that the Incident Report is completed. The spent air cartridge will be placed into Property and Evidence. The supervisor will forward a copy of the Incident Report to the Internal Affairs Unit where it will be retained on file.

4.3 IMPACT WEAPONS

4.3.1 BATON

The baton, the primary police impact weapon, should be utilized by members to protect themselves or others from potential or actual bodily harm in the course of their assigned duties. The Department-approved baton shall be carried by members on their person while in uniform. Members may carry their batons concealed when on-duty working in civilian clothes, working off-duty in civilian clothes, and when off duty. (4.05a)

The baton shall be used within the "Resistance and Response Continuum." The purpose of using the baton is to stop active resistance. Using the baton to target the spine, solar plexus, groin, kidneys, and/or areas above the shoulders (Attachment B) should be in response to deadly force resistance, only.

The flashlight is designed to be used as an illumination device. Its use as a defensive impact instrument shall be prohibited except in cases of aggressive resistance when the baton is not practical. When the flashlight is used as an impact instrument, within the guidelines of this policy, the same techniques utilized with the baton shall apply.

4.3.2 SAGE SL6

The SAGE SL6 is a secondary police impact instrument and should be utilized by trained members to protect themselves or others from potential or actual bodily harm. The SAGE SL6 may also be used in situations where the baton or other control techniques are either impractical or unsafe.

When using the SAGE SL6, only areas designated in Attachment B will be targeted. Members may strike other areas in response to deadly force resistance.

When practical, every effort will be made by members deploying the SAGE SL6 to inform other members prior to its deployment.

The use of SAGE SL6 is authorized against animals that pose a threat to public or member safety.

Only members who have completed the Department-approved Sage SL6 training class and demonstrated proficiency may utilize this weapon. (4.05b) Members **trained/certified** to carry and deploy the SAGE SL6 shall inspect their designated weapon prior to each tour of duty. SAGE SL6 shall not be used or carried in an off-duty status. (4.05a)

4.4 FIREARMS

Members of the Department may discharge an approved firearm only under the following circumstances:

- a. When the subject poses an imminent danger of death or great bodily harm to members or others.
- b. When the member has probable cause a subject has committed a forcible felony (as outlined in this directive) and the subject's escape would pose an imminent danger of death or great bodily harm to members or others.
- c. For firearm practice at an approved gun range.
- d. For the purposes of test firing.
- e. To give an alarm, or to call for assistance, for an important purpose when no other means is possible and the round may be fired into the ground safely.

- f. To kill a dangerous animal, or one that humane consideration requires release from further suffering, when no other means of disposition is available.
- g. When a moving vehicle is involved, the use of deadly force by discharging a firearm is dangerous, can be ineffective, and should only be considered as a last resort to protect the officer or another against an immediate threat of death or serious physical injury. Sworn members shall not discharge a firearm at a moving vehicle without first evaluating the particular conditions as a means to assess the risk of injuring or killing person(s) against whom force is not being directed. Discharging a firearm shall be avoided when there is an unreasonable risk to the safety of persons other than the intended subject or the danger to the public outweighs the likely benefits of its use. The use of deadly force by discharging a firearm at/into moving vehicle is authorized only when:
 - 1. The officer has probable cause to believe the occupant of the vehicle poses an imminent threat with a firearm or fires upon an officer or another, or
 - 2. The officer has probable cause to believe that an occupant is using the vehicle in a manner that poses an imminent threat of death or serious physical injury to the officer or to another person and there is no reasonable avenue of escape for intended victim.
- h. Members may not use deadly force to apprehend escapees or other wanted individuals based solely on the individual's original charges or convictions.

4.4.1 PROHIBITIONS

The following practices are strictly forbidden:

- a. Firing into or over the heads of crowds.
- b. Firing warning shots. (4.04)
- c. Firing into buildings, enclosures, or through doors when a subject is not visible.
- d. Firing at vehicles solely for the purpose of disabling a moving vehicle.
- e. Cocking the hammer of a weapon except to improve aim immediately prior to firing.
- f. Firing from a moving vehicle, unless being fired upon.

4.4.2 HANDGUNS

The Department-approved handgun may be utilized when a member perceives imminent danger.

When the handgun is outside the holster in a tactical situation, the weapon shall be pointed down at a 45-degree angle (ready gun position), trigger finger outside the trigger guard, until there is a need to fire or the member is at risk.

4.4.3 SHOULDER-FIRED WEAPONS (SHOTGUNS, AR-15s, MP-5s and others)

Shoulder-fired weapons are to be considered supplemental weapons and may be utilized in those situations where the **trained/certified** members deem such use necessary and prudent.

Some factors to be considered when deciding on the use or deployment of shoulder-fired weapons are:

- a. Whether deadly force is appropriate in the situation.
- b. Shoulder-fired weapons are by design, more accurate than the handgun.
- c. Most shoulder-fired weapons have lights mounted on them for use in low light areas.
- d. The probability of hitting an intended target is much higher when using a shoulder-fired weapon.

Some factors that might make carrying a shoulder-fired weapon impractical are:

- a. Foot pursuits.
- b. Close quarters where maneuvering with the weapon is a disadvantage.
- c. Climbing over obstacles where controlling the weapon may prove difficult.

Shotguns and AR-15 rifles shall not be placed in the vehicle weapon rack with a round in the chamber.

Only members who have completed Department-approved shoulder-fired weapon training classes and demonstrated proficiency may utilize these weapons. (4.05b) Members **trained/certified** to carry and deploy the shoulder-fired weapons shall inspect their designated weapons prior to each tour of duty. Shoulder-fired weapons shall not be used or carried in an off-duty status. (4.05a)

4.5 TIRE DEFLATION DEVICES

Tire deflation devices such as Stop Sticks, Piranha, Terminator, Barracuda and Road Spike, are devices comparable to a **Hard Control** response to **Level IV – Active Resistance** on the Resistance and Response Continuum.

4.5.1 STOP STICKS

The deployment of Stop Sticks will be based on the following:

- a. **Felony vehicles** – the decision to deploy Stop Sticks will be at the discretion of any officer who can safely deploy the device, excluding the sole charge of felony "Fleeing and Eluding."
- b. **Misdemeanor vehicles** – Stop Stick deployment requires the approval of a supervisor or manager.

As a reminder, once a subject vehicle that has been "Stop Sticked" takes evasive action in an effort to distance itself from the police, the officer shall immediately discontinue following the vehicle unless it meets the criteria for a vehicle pursuit as described in the current issue of OPD P&P 1120, Vehicle Pursuits.

Furthermore, any subsequent use of Stop Sticks after the first attempt to stop the vehicle with this device, must be approved by a supervisor except in a situation that meets vehicle pursuit criteria.

The use of tire deflation devices requires the documentation on a Defensive Tactics Form (Section 7.1).

Only officers who are trained by the Training Unit in the use of Stop Sticks will deploy/activate them.

Officers must make every effort to avoid collateral damage to citizens' property that could result from the target vehicle's impact with tire deflation devices.

When deploying Stop Sticks on roadway as a part of a pursuit, the deploying officer will notify Communications of the intended location and specific lanes of travel targeted for deployment. Communications will notify units and agencies involved in the pursuit, as well as the on-duty watch commander.

Before deploying Stop Sticks on roadways, officers must accomplish the following:

- a. Select a location with minimal anticipated and actual pedestrian and bystander presence.
- b. Position officers and bystanders in a safe location away from the point of impact and potential flying debris.

NOTE: Stop Sticks will not be deployed on motorcycles or bicycles.

When used in a pursuit, officers other than those operating the primary and secondary pursuit vehicles will be responsible for deployment of Stop Sticks and should deploy the devices in the roadway ahead of the target vehicle they are attempting to stop.

Position Stop Sticks to minimize the ability of the target vehicle to avoid or evade the device.

Deploy Stop Sticks as a single unit or in combination of two or more sets depending on the width of the roadway to be covered and available time to deploy them.

Assisting officers will prevent traffic from entering the target roadway and redirect civilian traffic on the target roadway away from the deployment area.

Deploying officers can use their patrol vehicles to channel the fleeing vehicle toward the path of the Stop Sticks provided the following:

- a. Emergency equipment is activated.
- b. At least two traffic lanes are available for the target vehicle and pursuing officers without crossing a grass or elevated concrete median.
- c. Officers have exited their patrol vehicles and assumed a safe position.

Deploying officers should immediately remove Stop Sticks from the roadway when no further need for deployment exists and it is safe to do so.

The assigned supervisor will ensure a Tire Deflation Device Deployment Reporting Form (Attachment D) is completed and turned in to Supply with the damaged Stop Sticks by the end of their tour of duty.

4.5.2 PIRANHA, TERMINATOR, BARRACUDA, AND ROAD SPIKE

These tire deflation devices may be used by specialized units (i.e., MBI, DED, TAC, SOD) or Patrol members as a pursuit prevention measure for stationary vehicles or vehicles traveling less than 25 miles per hour (speed limit does not apply to Road Spike). They may be used for the following:

- a. Control driver's license/DUI checkpoints.
- b. Suspect surveillance.
- c. Buy/Bust drug operations.
- d. Warrant Service.
- e. Other situations where the movement of a stationary vehicle must be prevented.

Only officers who are trained by the Training Unit in the use of the listed tire deflation devices will deploy/activate them.

4.6 DYNAMIC VEHICLE TAKEDOWN

Dynamic Vehicle Takedowns are a pre-planned coordinated effort utilizing multiple vehicles and officers who are trained in this tactic to "block" a vehicle and arrest a felony suspect. Dynamic vehicle takedowns are used on suspect vehicles that are stationary (parked in a parking lot, stopped at an intersection) and should not be used on moving vehicles or for routine traffic stops. This tactic should only be used by officers who have been trained and who receive continuous training in this technique to include DED, Patrol TAC, MBI, FIU, and SWAT.

Officers that are not assigned to DED, Patrol TAC, MBI, FIU or SWAT may not utilize the dynamic vehicle takedown, or any modified version of this technique.

4.7 VEHICLE BLOCK

Blocking a vehicle on a traffic stop is a tactic sometimes used to prevent a vehicle from fleeing. Blocking may only be used on a suspect vehicle when the officer believes that the suspect vehicle may attempt to flee, but does not include Fleeing and Eluding traffic charges. This tactic may only be used during a traffic stop using emergency equipment. Once the emergency equipment has been activated, position the primary patrol vehicle behind the suspect vehicle. When the suspect vehicle comes to a stop, the secondary patrol vehicle may pull in front of the suspect vehicle blocking its path. Officers should communicate with each other and confirm that this tactic will be used. Blocking may not be used on moving vehicles.

5. DEADLY FORCE

An employee is justified in the use of deadly force only if he or she reasonably believes that such force is necessary to prevent imminent death or great bodily harm to the employee or another, has probable cause that the subject is

responsible for having committed a forcible felony, or to prevent the imminent commission of a forcible felony. The application of deadly force is not limited to the use of a firearm.

Any employee whose actions result in death or serious bodily injury will be temporarily removed from the line of duty until a preliminary administrative review is conducted. The employee will remain on relief of duty for no less than one week (seven calendar days). Upon clearance from EAP, the employee's Division Commander may grant additional time off in a relief of duty status for reasons related to the death or serious bodily injury of another person caused by the employee. Refer to the current issue of P&P 1604, Discipline, and the current issue of P&P 1617, Relief of Duty, Alternative Duty, and Limited Duty, for additional information. (4.11)

Deadly force shall not be used when there is a likelihood of serious injury being inflicted upon persons other than the individual against whom the member is authorized to use deadly force. The safeguarding of other human lives shall outweigh all other considerations.

6. MAINTAINING PROFICIENCY

Members shall maintain and demonstrate proficiency with Department-authorized techniques, restraining tools, and weapons as determined by the Training Section Commander. Less-lethal weapon training will be conducted annually on the following less-lethal weapons: ASP baton, chemical agent, Sage SL6. (14.11d,e)

Firearms Training will be conducted at least twice annually or as mandated by the F.O.P. Agreement. (14.11b) The Training Unit shall be responsible for establishing standards of proficiency, ensuring compliance by all members, and maintaining proficiency records.

Failure of a member to demonstrate and maintain acceptable standards of proficiency shall be cause for remedial training. Remedial training shall be coordinated with the Training Section and shall be completed within seven days. A member's continued inability to maintain proficiency standards shall cause the member to be placed on an alternative assignment pending a final determination as to their job fitness, in accordance with the current issue of P&P 1617, Relief of Duty, Alternative Duty, and Limited Duty.

Members who are unable to participate in those training and/or evaluation sessions which qualify them to carry weapons and employ force (e.g., during an extended leave of absence, physical disability, etc.) shall be restricted as to their use of police authority in accordance with the current issue of P&P 1619, Restricted Duty Assignments, or the current issue of P&P 1617, Relief of Duty, Alternative Duty, and Limited Duty. Prior to resuming full duty status, members must demonstrate proficiency in all areas, to the satisfaction of the Training Unit. (4.06b)

7. REPORTING REQUIREMENTS

Once a use of force has occurred, the involved employee will notify his or her immediate supervisor **as soon as possible**. If it occurs off duty, the employee's chain needs to be aware. If the employee's immediate supervisor is not available, another supervisor will be assigned. In those instances where the involved employee is a supervisor, another uninvolved on-duty **sergeant** will be contacted to respond.

Once notified the supervisor shall respond to the scene **as soon as possible** and interview all involved employees, witnesses, and subjects. (17.03) The supervisor will be responsible for reviewing and obtaining copies of all reports, affidavits, and/or witness statements for inclusion in the defensive tactics package.

In all situations, employees responding to resistance with physical force or weapons will be required to complete an Incident Report or in misdemeanor cases an Affidavit **by the end of their tour of duty**. (4.08c,d) Supervisors will ensure these reports are completed within the prescribed time frame. A copy of the reports will be sent to the employee's section commander.

The supervisor shall notify the involved employee's section commander of the circumstances requiring the initiation of a defensive tactics report. If the employee's section commander is not immediately available, the supervisor will notify the on-duty watch commander. Notifications shall be accomplished as soon as possible, but no later than the end of their tour of duty, and the name of the manager notified shall be documented in the Defensive Tactics Form with a copy to the employee's section commander.

7.1 DEFENSIVE TACTICS FORMS

A supervisor shall complete a Defensive Tactics Form under the following circumstances: (4.08 b,c,d)

(NOTE: A sworn supervisor shall complete Defensive Tactics Forms for CSOs and CSTs.)

- a. Use of chemical agent (4.08c)
- b. Use of tire deflation devices
- c. Use of impact weapons (baton, SAGE SL6, etc.) (4.08c)
- d. K-9 dog bites, other than accidental (4.08d)
- e. Use of electronic control devices (TASER) (4.08c)
- f. Forearm/knee/open and closed hand strikes (4.08d)
- g. Kicks
- h. Use of any technique or the application of any weapon that results in actual or claimed (evident or non-evident) injury (4.08b)

(NOTE: When a firearm is discharged, or a member applies any technique or weapon that results in death, an Initial Notice of Inquiry shall be generated in lieu of the Defensive Tactics Form. The only exception is when a member utilized deadly force in the killing of an animal for humane reasons. In this case the member shall complete an Incident Report in lieu of a Defensive Tactics Form.) (4.08a)

The supervisor shall ensure that photographs are taken of any injury, actual or claimed, by either the subject or the employee which result from an application of force by the employee in response to a subject's resistance. A CST or Forensic Photographer will take the photographs of all injuries which require hospitalization and/or treatment at a medical facility. Photos of incidents involving physical apprehension by police-trained canines shall be taken by a CST and be maintained by them in accordance with their standard policies regarding crime scene photos. In those instances where the assigned supervisor photographs the injury, the supervisor will only utilize a digital or 35mm camera. The photographs will document the reported injury as well as the overall condition and/or appearance of the subject. The film or disk will be submitted to the OPD Forensic Imaging Unit Photo Lab for processing, printing, and archiving. (35.05b) A Technical Service Photo Request Order form (Attachment E) shall be completed. The disk shall be placed in an evidence envelope and the request order shall be stapled to the envelope (Attachment F). The envelope and request order shall be placed in the Forensic Imaging Unit Photo Lab Drop Box located in the Outgoing Squad/Forms Room at OPH and/or the evidence room at each substation. A request shall also be logged in the Forensic Imaging Unit Photo Lab Request Book located near each drop box. The OPD Forensic Imaging Unit Photo Lab will forward one copy of the photos to the In-Service Training Unit Supervisor to be placed with the Defensive Tactics Form and another set of photographs to Internal Affairs as soon as possible. Defensive Tactics Forms are maintained in Internal Affairs. Users that have been issued an account to the Forensic Imaging Unit Digital Download Terminal may submit the images directly into the image server for secure storage. Users requesting an account must contact the Forensic Imaging Unit Supervisor. All personnel capturing digital images must adhere to the current issue of Departmental P&P 1902, Digital Cameras.

A Defensive Tactics Form shall not be required when there is no claimed or evident injury and either of the following conditions exist: (4.08d)

- a. The sole method of active resistance is taking flight and the sole technique used to stop the subject is a tackle or takedown; or,
- b. Pressure points were utilized.

The Defensive Tactics Form is structured except for the narrative section. The supervisor shall separate the employees involved into two categories: Principal employees and assisting employees.

A principal employee is any employee who encounters physical resistance from a subject and must use force to overcome it.

Assisting employees shall be listed and are defined as those using controlling techniques or restraint holds while assisting the principal employee.

The narrative portion is to be completed by the supervisor and should include:

- a. The specific resistance the employee encountered and the specific response of the member.
- b. How the injuries were incurred and a description of the extent of the injuries. This includes both employees and subjects. Additionally indicate whether the injuries were treated and by whom.
- c. Synopsis of employees who were witnesses, any independent witnesses, and subject statements, if any.
- d. A statement by the supervisor indicating whether the employee's response was in keeping with Department policy.

(NOTE: The Defensive Tactics Form is not a substitute for an internal investigation. If the supervisor determines that an inquiry is necessary, it is his or her responsibility to initiate the INOI.)

The supervisor shall forward the Defensive Tactics Form, copies of the incident report and/or the Arrest Affidavit, and statements, to the In-Service Training Unit Supervisor by his or her end of tour of duty; unless such time is extended by a manager. The In-Service Training Unit Supervisor shall evaluate the appropriateness of the techniques and tactics used. Upon review by the In-Service Training Unit Supervisor, the package will be forwarded to the Training Section Commander and then through the member's chain of command for review. Upon final review by the Bureau Commander, the Defensive Tactics package shall be forwarded to the Internal Affairs Section for review and filing. Any recommendations by the Training Unit shall be forwarded to the affected section commander. (4.10)

Supervisors shall review Defensive Tactics files of their assigned members as directed by Internal Affairs. Reviews will only be conducted of principal members. Purging of these files is handled by Internal Affairs in accordance with current records retention laws. The Defensive Tactics package shall be filed in the Internal Affairs Section.

At the conclusion of each calendar year, the In-Service Training Unit Supervisor will prepare an annual analysis of all information collected from Defensive Tactics Forms and forward it to the Chief of Police for review. (4.12)

ATTACHMENT "A"

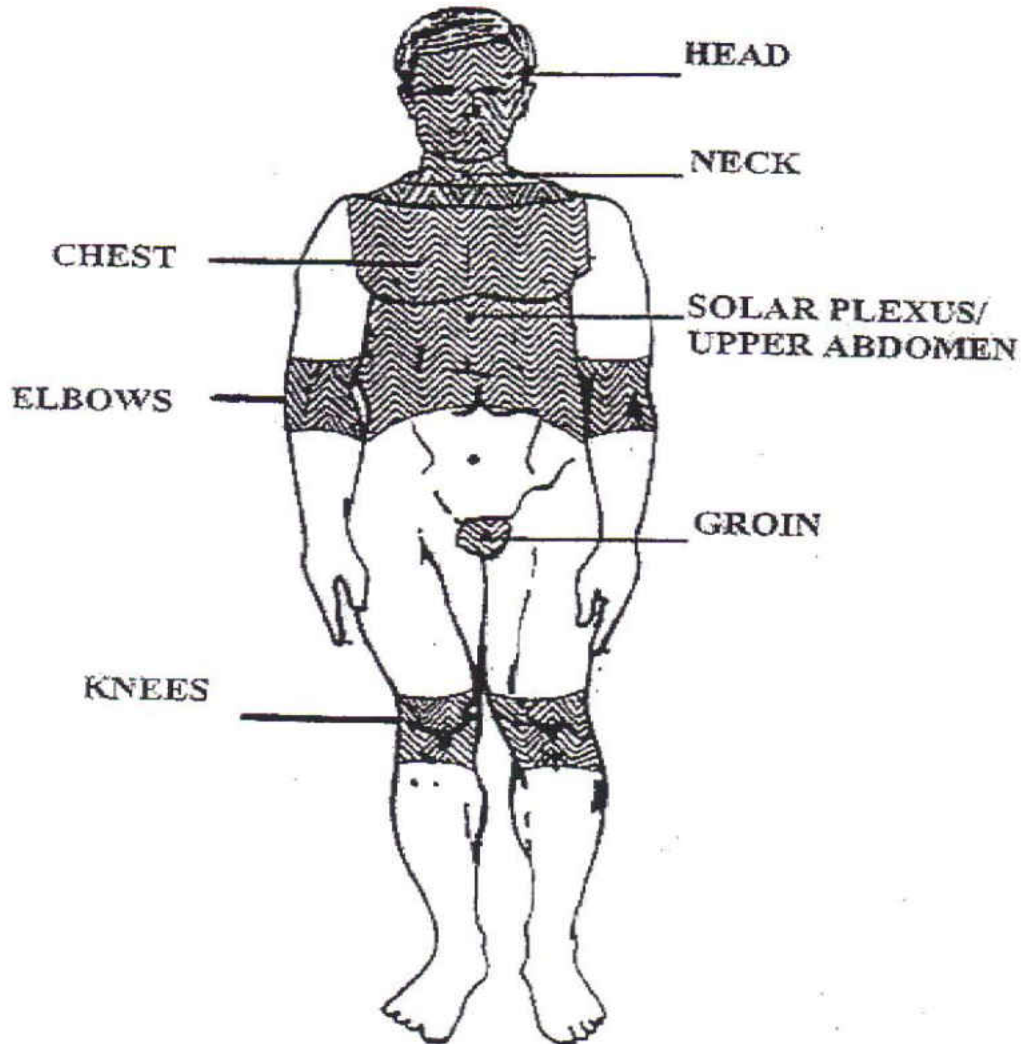
RESISTANCE AND RESPONSE CONTINUUM

SUSPECT'S RESISTANCE	EMPLOYEE'S RESPONSE
<p>LEVEL I – INDICATORS OF RESISTANCE Non-verbal cues indicating subject's demeanor and attitude coupled with an apparent readiness to resist.</p>	<p>EMPLOYEE'S PRESENCE The employee's attitude and demeanor and their lawful right to be where they are.</p>
<p>LEVEL II – VERBAL RESISTANCE The subject's verbal responses indicating non-compliance and unwillingness to cooperate</p>	<p>VERBAL DIRECTIONS The employee's verbal communications that specifically direct the actions of the subject and offer the opportunity for compliance.</p>
<p>LEVEL III – PASSIVE RESISTANCE The subject fails to obey verbal direction preventing the member from taking lawful action.</p>	<p>SOFT CONTROL The employee applies techniques that have a minimal potential for injury to the subject, if the subject resists the technique.</p>
<p>LEVEL IV – ACTIVE RESISTANCE The subject's actions are intended to facilitate an escape or prevent an arrest. The action is <u>not</u> likely to cause injury.</p>	<p>HARD CONTROL The member applies techniques that could result in greater injury to the subject, if the subject resists their application by the member.</p>
<p>LEVEL V – AGGRESSIVE RESISTANCE The subject has battered, or is about to batter a person/member and the subject's action is likely to cause injury.</p>	<p>INTENSIFIED TECHNIQUES Those techniques necessary to overcome the actions of the subject, short of deadly force. If the subject resists or continues to resist these techniques there is a strong probability of injury being incurred by the subject.</p>
<p>LEVEL VI – DEADLY FORCE RESISTANCE The subject's actions are likely to cause death or great bodily harm to the member or another person</p>	<p>DEADLY FORCE Member's actions may result in death or great bodily harm to the subject.</p>

**ATTACHMENT "A" (Continued)
RESISTANCE AND RESPONSE CONTINUUM (TECHNIQUE GUIDELINES)**

EMPLOYEE'S PRESENCE	<ul style="list-style-type: none"> ◆ Lawful presence ◆ Attitude and demeanor ◆ Identification of authority
VERBAL DIRECTIONS	<ul style="list-style-type: none"> ◆ Commands to direct subject action ◆ Notification of arrest ◆ Opportunity to comply
SOFT CONTROL TECHNIQUES	<ul style="list-style-type: none"> ◆ Techniques having minimal potential of injury if resisted by a subject <ul style="list-style-type: none"> • Pressure points • Wrist locks • Arm bars • Compression techniques • Chemical agents • Diversionary Device
HARD CONTROL TECHNIQUES	<ul style="list-style-type: none"> ◆ Techniques having a greater potential of injury if resisted by a subject <ul style="list-style-type: none"> • Forearm/knee/open and closed hand strikes • Strikes with the baton • Kicks • Takedowns • Head locks • Impact weapons • Tire deflation devices • Electronic control devices (TASER) <p>*Hard control techniques shall not target shaded areas indicated in Attachment B.</p>
INTENSIFIED TECHNIQUES	<ul style="list-style-type: none"> ◆ Techniques necessary to overcome actions of a subject short of deadly force. <p>*Intensified techniques may target shaded areas indicated in Attachment B</p>
DEADLY FORCE	<ul style="list-style-type: none"> ◆ Techniques that may result in death or great bodily harm to the subject. ◆ The application of deadly force is not limited to the use of a firearm and may include application of other techniques and/or weapons.
EMPLOYEE/SUBJECT FACTORS AND SPECIAL CIRCUMSTANCES	
EMPLOYEE/SUBJECT FACTORS TO BE CONSIDERED: <ul style="list-style-type: none"> • Age • Sex • Size • Skill level • Multiple subjects or employees 	SPECIAL CIRCUMSTANCES: <ul style="list-style-type: none"> • Mental incapacity • Close proximity to firearm or weapon • Special knowledge • Injury or exhaustion (member/suspect) • Disability • Imminent danger • Availability of weapons • Arrestee's level of agitation • Alcohol/drug influence • Arrestee handcuffed

ATTACHMENT B
ANATOMICAL ILLUSTRATION
(FOR USE OF HARD CONTROL TECHNIQUES, INTENSIFIED TECHNIQUES, AND DEADLY FORCE)



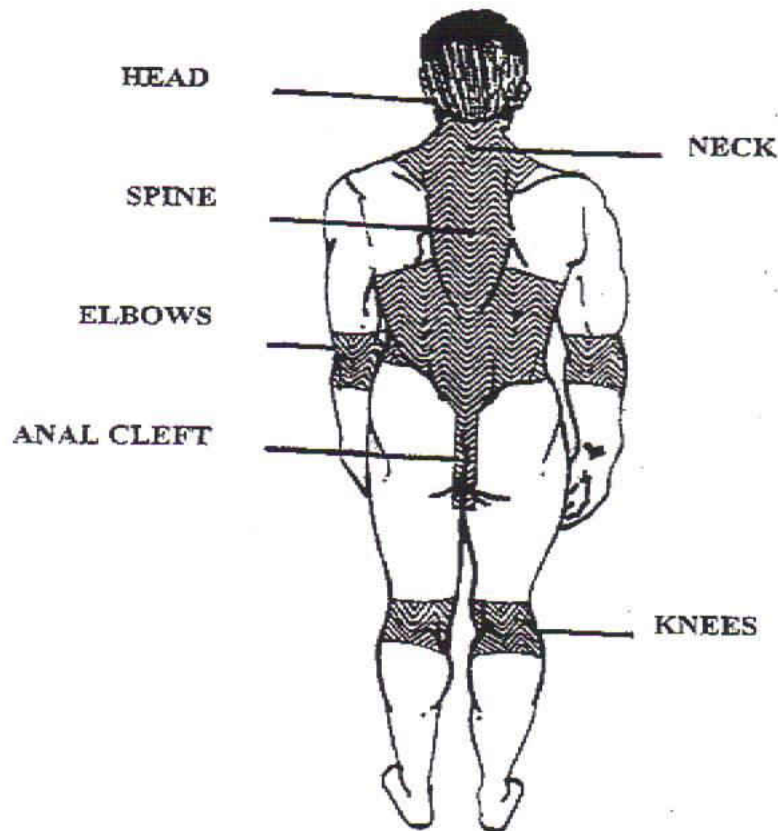
Avoid indicated shaded areas unless intensified techniques or deadly force is warranted.

Hard control techniques shall not be targeted above the shoulders, to the spine, or the solar plexus.

For TASERS, the shaded areas are approved for probe targeting. A person's head, neck, or groin areas shall not be targeted with probes. TASER Stun techniques (contact/pressure) are approved in all areas except the head and groin areas when hard control is warranted. TASER Drive Stun techniques in shaded areas below the head are approved when intensified techniques are warranted.

Targeting the head or neck with the baton or SAGE SL6 projectiles is acceptable in deadly force situations only.

ATTACHMENT B (continued)
ANATOMICAL ILLUSTRATION
(FOR USE OF HARD CONTROL TECHNIQUES, INTENSIFIED TECHNIQUES, AND DEADLY FORCE)



Avoid indicated shaded areas unless intensified techniques or deadly force is warranted.

Hard control techniques shall not be targeted above the shoulders, to the spine, or the solar plexus.

For TASERS, the shaded areas are approved for probe targeting. A person's head, neck, or groin areas shall not be targeted with probes. TASER Stun techniques (contact/pressure) are approved in all areas except the head and groin areas when hard control is warranted. TASER Drive Stun techniques in shaded areas below the head are approved when intensified techniques are warranted.

Targeting the head or neck with the baton or SAGE SL6 projectiles is acceptable in deadly force situations only.

**ORLANDO POLICE DEPARTMENT
DEFENSIVE TACTICS FORM**

NOTE: FOR INTERNAL USE ONLY – UNDER NO CIRCUMSTANCES SHALL THIS FORM BE FILED IN CENTRAL RECORDS.

TO: CHIEF OF POLICE ORLANDO POLICE DEPARTMENT	Complaint # _____ Sector: _____ District #: _____ Grid #: _____
FROM: _____ <small style="margin-left: 40px;">Name</small>	_____ <small style="margin-left: 40px;">Employee #</small>

INVOLVED EMPLOYEE'S SECTION MANAGER: _____

1. Incident Location: _____ Date: _____ Time: _____
2. Time Supervisor Notified: _____ On Scene: _____ Other: _____
 Name of Manager Notified: _____ Time Notified _____
 Type Incident: _____
3. Offense Charged: _____

Offender #1 Name: _____

- A. Race _____ Sex _____ DOB _____ Height _____ Weight _____
- B. Address _____ City _____ State _____
- C. Physical condition prior to incident (i.e., intoxication, prior injuries):

- D. Subsequent apparent injuries: _____
- E. Photographs of injuries: Digital Image 35 mm
 None taken Why? _____
- F. Medical treatment of offender: Yes No Refused
 If Yes, where? _____ By whom? _____
 Date: _____ Time: _____

Offender #2 Name: _____

- A. Race _____ Sex _____ DOB _____ Height _____ Weight _____
- B. Address _____ City _____ State _____
- C. Physical condition prior to incident (i.e., intoxication, prior injuries):

- D. Subsequent apparent injuries: _____
- E. Photographs of injuries: Digital Image 35 mm
 None taken Why? _____
- F. Medical treatment of offender: Yes No Refused
 If Yes, where? _____ By whom? _____
 Date: _____ Time: _____

NOTE: If additional offenders, please use attached Supplement.

DEFENSIVE TACTICS FORM - continued

4. Employees involved: _____ # Battered: _____ # Injured: _____

List principal employees in order of their degree of physical involvement:

Note: For the purposes of this policy and procedure, a principal employee is: "Any employee who encounters physical resistance from a subject and must use greater force than controlling techniques or restraint holds to overcome it."

	Name	R/S	DOH	Age	Employee #
A.					
B.					
C.					
D.					

Attach copy of Charging Affidavit and/or Incident Report

5. Implements used by employees:

	ECC TASER Cartridge #	Chemical Agents	Impact Weapon	K9	Step Sticks/ Tire Deflation Device	Specify Implement and Explain Employee's Involvement
A.						
B.						
C.						
D.						

6. Physical technique used by employees.

	Tackle/ Take Down	Holds	Other	Specify Technique and Explain Employee's Involvement
A.				
B.				
C.				
D.				

7. List assisting employees and their physical involvement:

	Name	Employee #	Involvement
A.			
B.			
C.			
D.			

8. Witnesses

	Name	Address	Phone #
A.			
B.			
C.			
D.			

SUPERVISOR'S NARRATIVE (Include [1] general circumstances; [2] specific resistance encountered; [3] physical techniques utilized; [4] extent of injuries incurred; [5] who incurred and inflicted the injuries; [6] statement of witnesses; [7] when applicable, appropriate manager was notified, [8] supervisor's endorsement; and, [9] a statement whether the force used was in keeping with policy.)

	Approve	Disapprove (Attach Dissent)	
_____ Reporting Supervisor	<input type="checkbox"/>	<input type="checkbox"/>	Date _____
_____ Training Supervisor	<input type="checkbox"/>	<input type="checkbox"/>	Date _____
_____ Training Section Cmdr.	<input type="checkbox"/>	<input type="checkbox"/>	Date _____
_____ Employee's Supervisor <small>(if different than reporting supervisor)</small>	<input type="checkbox"/>	<input type="checkbox"/>	Date _____
_____ Section Commander	<input type="checkbox"/>	<input type="checkbox"/>	Date _____
_____ Division Commander	<input type="checkbox"/>	<input type="checkbox"/>	Date _____
_____ Bureau Commander	<input type="checkbox"/>	<input type="checkbox"/>	Date _____

Element - Defensive Tactics Form

Offender #3 Name: _____

- A. Race _____ Sex _____ DOB _____ Height _____
- B. Address _____ City _____
- C. Physical condition prior to incident (i.e., intoxication, prior injuries): _____

- D. Subsequent apparent injuries: _____
- E. Photographs of injuries: Digital Image 35 mm
None taken Why? _____
- F. Medical treatment of offender: Yes No Refused
If Yes, where? _____ By whom? _____
Date: _____ Time: _____

Offender #4 Name: _____

- A. Race _____ Sex _____ DOB _____ Height _____
- B. Address _____ City _____
- C. Physical condition prior to incident (i.e., intoxication, prior injuries): _____

- D. Subsequent apparent injuries: _____
- E. Photographs of injuries: Digital Image 35 mm
None taken Why? _____
- F. Medical treatment of offender: Yes No Refused
If Yes, where? _____ By whom? _____
Date: _____ Time: _____

Offender #5 Name: _____

- A. Race _____ Sex _____ DOB _____ Height _____
- B. Address _____ City _____
- C. Physical condition prior to incident (i.e., intoxication, prior injuries): _____

- D. Subsequent apparent injuries: _____
- E. Photographs of injuries: Digital Image 35 mm
None taken Why? _____
- F. Medical treatment of offender: Yes No Refuse
If Yes, where? _____ By whom? _____
Date: _____ Time: _____

Offender #6 Name: _____

- A. Race _____ Sex _____ DOB _____ Height _____
- B. Address _____ City _____
- C. Physical condition prior to incident (i.e., intoxication, prior injuries): _____

- D. Subsequent apparent injuries: _____
- E. Photographs of injuries: Digital Image 35 mm
None taken Why? _____
- F. Medical treatment of offender: Yes No Refused
If Yes, where? _____ By whom? _____
Date: _____ Time: _____

APPENDIX C: IRB APPROVAL LETTER



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Notice of Expedited Initial Review and Approval

From : UCF Institutional Review Board
FWA00000351, Exp. 10/8/11, IRB00001138

To : Michele Covington

Date : February 25, 2009

IRB Number: SBE-09-06087

Study Title: Violence Against Police Officers at the Orlando Police Department

Dear Researcher:

Your research protocol noted above was approved by expedited review by the UCF IRB Chair on 2/24/2009. The expiration date is 2/23/2010. Your study was determined to be minimal risk for human subjects and expeditable per federal regulations, 45 CFR 46.110. The category for which this study qualifies as expeditable research is as follows:

5. Research involving materials (data, documents, records, or specimens) that have been collected or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis).

All data, which may include signed consent form documents, must be retained in a locked file cabinet for a minimum of three years (six if HIPAA applies) past the completion of this research. Any links to the identification of participants should be maintained on a password-protected computer if electronic information is used. Additional requirements may be imposed by your funding agency, your department, or other entities. Access to data is limited to authorized individuals listed as key study personnel.

To continue this research beyond the expiration date, a Continuing Review Form must be submitted 2 – 4 weeks prior to the expiration date. Advise the IRB if you receive a subpoena for the release of this information, or if a breach of confidentiality occurs. Also report any unanticipated problems or serious adverse events (within 5 working days). Do not make changes to the protocol methodology or consent form before obtaining IRB approval. Changes can be submitted for IRB review using the Addendum/Modification Request Form. An Addendum/Modification Request Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at <http://iris.research.ucf.edu>.

Failure to provide a continuing review report could lead to study suspension, a loss of funding and/or publication possibilities, or reporting of noncompliance to sponsors or funding agencies. The IRB maintains the authority under 45 CFR 46.110(e) to observe or have a third party observe the consent process and the research.

On behalf of Tracy Dietz, Ph.D., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 02/25/2009 01:12:04 PM EST

IRB Coordinator

**APPENDIX D: COMPARISON OF SOCIAL DISORGANIZATION
VARIABLES FROM US CENSUS 2000 AND AMERICAN COMMUNITIES
SURVEY 3-YEAR ESTIMATES FROM 2006-2008 FOR CITY OF
ORLANDO**

	US Census 2000	ACS 2006-2008
POPULATION HETEROGENEITY		
--% White	61.1	57.8
EDUCATIONAL ATTAINMENT		
--% 25 & over with less than high school education	17.8	14.3
UNEMPLOYMENT		
--% 16 & over who were unemployed	3.4	5.3
POVERTY		
--% of HH* on public assistance**	2.9	1.4
--% of HH with income below poverty level	13.3	12.7
HOUSING STABILITY		
--% of renter-occupied housing units	59.2	57.9
--% of vacant housing units	8.6	15.8
FAMILY COMPOSITION		
--% of female-headed HH	15.4	17

Social Disorganization Variables for City of Orlando from Census 2000 and American Communities Survey 2006-2008 3-year Estimates

*households

**public assistance=general assistance including Temporary Assistance for Needy Families, but not including food stamps

APPENDIX E: SPSS LOGISTIC REGRESSION RESULTS

Logistic Regression

Notes

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Comments		
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	1812
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		LOGISTIC REGRESSION VARIABLES DUMMY_DV /METHOD=ENTER DTTASER, TIME93A, VIOLENT, NUMEMPL, NUMOFND, SUMMER, WEEKEND3, MSFORALCLIC /METHOD=ENTER OFF1_AGE, OFF_BMI, OFF1ALC, OFF1WHT, OFF1_SEX /METHOD=ENTER EMPL1AGE, EMPL1WHT, EMPL1SX /CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).
Resources	Processor Time	0:00:00.078

Notes

Output Created		28-Jun-2010 15:33:19
Comments		
Input	Data	C:\Documents and Settings\Michele\My Documents\UCF docs\DISSERTATION\SPSS files\WORKING_OPD_DATABASE.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	1812
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
Syntax		<pre> LOGISTIC REGRESSION VARIABLES DUMMY_DV /METHOD=ENTER DTTASER, TIME93A, VIOLENT, NUMEMPL, NUMOFND, SUMMER, WEEKEND3, MSFORALCLIC /METHOD=ENTER OFF1_AGE, OFF_BMI, OFF1ALC, OFF1WHT, OFF1_SEX /METHOD=ENTER EMPL1AGE, EMPL1WHT, EMPL1SX /CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5). </pre>
Resources	Processor Time	0:00:00.078
	Elapsed Time	0:00:00.079

[DataSet1] C:\Documents and Settings\Michele\My Documents\UCF docs\DISSERTATION\SPSS files\WORKING_OPD_DATABASE.sav

Case Processing Summary

Unweighted Cases ^a		N	Percent
Selected Cases	Included in Analysis	1678	92.6
	Missing Cases	134	7.4
	Total	1812	100.0
Unselected Cases		0	.0
Total		1812	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
NO BATTERY	0
BATTERY AGAINST 1 OR MORE OFFICERS	1

Block 0: Beginning Block

Classification Table^{a,b}

Observed			Predicted		Percentage Correct
			DID BATTERY ON AT LEAST ONE OFFICER OCCUR?		
	DID BATTERY ON AT LEAST	NO BATTERY		BATTERY AGAINST 1 OR MORE OFFICERS	
Step 0	DID BATTERY ON AT LEAST	NO BATTERY	1311	0	100.0

ONE OFFICER OCCUR?	BATTERY AGAINST 1 OR MORE OFFICERS	367	0	.0
Overall Percentage				78.1

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	-1.273	.059	464.792	1	.000	.280

Variables not in the Equation

	Score	df	Sig.
Step 0 Variables DTTASER	.183	1	.668
TIME93A	3.516	1	.061
VIOLENT	.620	1	.431
NUMEMPL	30.639	1	.000
NUMOFND	4.112	1	.043
SUMMER	1.275	1	.259
WEEKEND3	1.176	1	.278
MSFORALCLIC	7.805	1	.005
Overall Statistics	46.119	8	.000

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	45.568	8	.000
	Block	45.568	8	.000
	Model	45.568	8	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1717.251 ^a	.027	.041

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Classification Table^a

Observed			Predicted		
			DID BATTERY ON AT LEAST ONE OFFICER OCCUR?		Percentage Correct
			NO BATTERY	BATTERY AGAINST 1 OR MORE OFFICERS	
Step 1	DID BATTERY ON AT LEAST ONE OFFICER OCCUR?	NO BATTERY	1311	0	100.0
		BATTERY AGAINST 1 OR MORE OFFICERS	367	0	.0
Overall Percentage					78.1

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	DTTASER	.058	.121	.231	1	.631	1.060
	TIME93A	.179	.125	2.058	1	.151	1.196
	VIOLENT	-.146	.167	.764	1	.382	.864
	NUMEMPL	.663	.121	30.155	1	.000	1.942
	NUMOFND	.327	.233	1.963	1	.161	1.387
	SUMMER	-.139	.142	.970	1	.325	.870
	WEEKEND3	.068	.123	.309	1	.578	1.071
	MSFORALCLIC	.008	.003	6.089	1	.014	1.008
	Constant	-1.857	.155	142.950	1	.000	.156

a. Variable(s) entered on step 1: DTTASER, TIME93A, VIOLENT, NUMEMPL, NUMOFND, SUMMER, WEEKEND3, MSFORALCLIC.

Block 2: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	35.704	5	.000
	Block	35.704	5	.000
	Model	81.272	13	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1681.547 ^a	.047	.073

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1681.547 ^a	.047	.073

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Classification Table^a

Observed			Predicted		Percentage Correct
			DID BATTERY ON AT LEAST ONE OFFICER OCCUR?		
			NO BATTERY	BATTERY AGAINST 1 OR MORE OFFICERS	
Step 1	DID BATTERY ON AT LEAST ONE OFFICER OCCUR?	NO BATTERY	1299	12	99.1
		BATTERY AGAINST 1 OR MORE OFFICERS	355	12	3.3
Overall Percentage					78.1

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	DTTASER	.132	.127	1.090	1	.296	1.141
	TIME93A	.095	.132	.510	1	.475	1.099
	VIOLENT	-.171	.170	1.017	1	.313	.843
	NUMEMPL	.653	.123	28.222	1	.000	1.922
	NUMOFND	.276	.241	1.318	1	.251	1.318

SUMMER	-.146	.143	1.035	1	.309	.865
WEEKEND3	-.022	.126	.030	1	.862	.978
MSFORALCLIC	.007	.003	3.776	1	.052	1.007
OFF1_AGE	-.004	.006	.488	1	.485	.996
OFF_BMI	.044	.013	11.790	1	.001	1.045
OFF1ALC	.335	.144	5.440	1	.020	1.398
OFF1WHT	.151	.137	1.223	1	.269	1.163
OFF1_SEX	-.822	.201	16.754	1	.000	.439
Constant	-2.212	.406	29.749	1	.000	.109

a. Variable(s) entered on step 1: OFF1_AGE, OFF_BMI, OFF1ALC, OFF1WHT, OFF1_SEX.

Block 3: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	1.711	3	.634
	Block	1.711	3	.634
	Model	82.983	16	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1679.836 ^a	.048	.074

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Classification Table^a

Observed			Predicted		Percentage Correct
			DID BATTERY ON AT LEAST ONE OFFICER OCCUR?		
			NO BATTERY	BATTERY AGAINST 1 OR MORE OFFICERS	
Step 1	DID BATTERY ON AT LEAST ONE OFFICER OCCUR?	NO BATTERY	1299	12	99.1
		BATTERY AGAINST 1 OR MORE OFFICERS	355	12	3.3
Overall Percentage					78.1

a. The cut value is .500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a						
DTTASER	.120	.127	.891	1	.345	1.128
TIME93A	.097	.133	.527	1	.468	1.101
VIOLENT	-.171	.170	1.015	1	.314	.843
NUMEMPL	.650	.123	27.823	1	.000	1.916
NUMOFND	.289	.242	1.422	1	.233	1.335
SUMMER	-.146	.143	1.039	1	.308	.864
WEEKEND3	-.016	.126	.017	1	.896	.984
MSFORALCLIC	.007	.003	3.855	1	.050	1.007
OFF1_AGE	-.005	.006	.557	1	.455	.995
OFF_BMI	.044	.013	12.012	1	.001	1.045
OFF1ALC	.342	.144	5.643	1	.018	1.408
OFF1WHT	.154	.137	1.258	1	.262	1.166

OFF1_SEX	-0.794	.203	15.332	1	.000	.452
EMPL1AGE	-0.006	.009	.462	1	.496	.994
EMPL1WHT	-0.030	.141	.044	1	.833	.971
EMPL1SX	-0.332	.284	1.369	1	.242	.717
Constant	-1.686	.595	8.027	1	.005	.185

a. Variable(s) entered on step 1: EMPL1AGE, EMPL1WHT, EMPL1SX.

APPENDIX F: FIRST ORDER NEAREST NEIGHBOR ANALYSIS RESULTS

Nearest neighbor analysis:

Sample size.....: 367
 Measurement type...: Direct
 Start time.....: 05:02:00 PM, 02/06/2010

Mean Nearest Neighbor Distance ..: 640.27 ft
 Standard Dev of Nearest
 Neighbor Distance: 1249.97 ft
 Minimum Distance: 0.00 ft
 Maximum Distance: 92027.24 ft

Based on Bounding Rectangle:

Area: 5244620531.50 sq ft
 Mean Random Distance: 1890.14 ft
 Mean Dispersed Distance: 4062.02 ft
 Nearest Neighbor Index: 0.3387
 Standard Error: 51.57 ft
 Test Statistic (Z): -24.2346
 p-value (one tail): 0.0001
 p-value (two tail): 0.0001

Order	Mean Nearest Neighbor Distance (m)	Expected Nearest Neighbor Distance (m)	Nearest Neighbor Index
*****	*****	*****	*****
1	640.2657	1890.1402	0.33874

End time.....: 05:02:03 PM, 02/06/2010

APPENDIX G: K-ORDER NEAREST NEIGHBOR ANALYSIS RESULTS

Nearest neighbor analysis:

Sample size.....: 367
 Measurement type...: Direct
 Start time.....: 05:09:39 PM, 02/06/2010

Mean Nearest Neighbor Distance ...: 640.27 ft
 Standard Dev of Nearest
 Neighbor Distance: 1249.97 ft
 Minimum Distance: 0.00 ft
 Maximum Distance: 92027.24 ft

Based on Bounding Rectangle:

Area: 5244620531.50 sq ft
 Mean Random Distance: 1890.14 ft
 Mean Dispersed Distance: 4062.02 ft
 Nearest Neighbor Index: 0.3387
 Standard Error: 51.57 ft
 Test Statistic (Z): -24.2346
 p-value (one tail): 0.0001
 p-value (two tail): 0.0001

Order	Mean Nearest Neighbor Distance (m)	Expected Nearest Neighbor Distance (m)	Nearest Neighbor Index
*****	*****	*****	*****
1	640.2657	1890.1402	0.33874
2	1154.6359	2835.2102	0.40725
3	1529.2280	3544.0128	0.43150
4	1889.2978	4134.6816	0.45694
5	2100.4331	4651.5168	0.45156
6	2586.6202	5116.6685	0.50553
7	2884.6122	5543.0575	0.52040
8	3224.7118	5938.9902	0.54297
9	3492.2139	6310.1771	0.55343
10	3747.3059	6660.7424	0.56260
11	3934.1686	6993.7796	0.56252
12	4109.6161	7311.6786	0.56206
13	4336.6483	7616.3319	0.56939
14	4527.5845	7909.2678	0.57244
15	4677.5674	8191.7416	0.57101
16	4879.4958	8464.7997	0.57645
17	5061.9409	8729.3247	0.57988
18	5306.5336	8986.0695	0.59053
19	5422.5612	9235.6825	0.58713

20	5592.4115	9478.7268	0.59000
21	5745.6137	9715.6950	0.59137
22	6019.0096	9947.0211	0.60511
23	6163.8732	10173.0897	0.60590
24	6307.4145	10394.2438	0.60682
25	6442.4001	10610.7906	0.60716
26	6566.2761	10823.0064	0.60670
27	6665.0773	11031.1411	0.60421
28	6775.5019	11235.4215	0.60305
29	6880.8559	11436.0541	0.60168
30	7004.2635	11633.2274	0.60209
31	7165.3279	11827.1145	0.60584
32	7323.3502	12017.8744	0.60937
33	7426.3264	12205.6537	0.60843
34	7496.1714	12390.5879	0.60499
35	7606.7651	12572.8024	0.60502
36	7691.4162	12752.4139	0.60313
37	7772.1360	12929.5307	0.60112
38	7903.8108	13104.2541	0.60315
39	8005.0485	13276.6785	0.60294
40	8185.6870	13446.8923	0.60874
41	8380.6354	13614.9785	0.61555
42	8494.2895	13781.0148	0.61638
43	8624.0343	13945.0745	0.61843
44	8741.8469	14107.2265	0.61967
45	8883.9008	14267.5359	0.62267
46	9014.4293	14426.0641	0.62487
47	9085.9510	14582.8692	0.62306
48	9221.4266	14738.0061	0.62569
49	9383.0689	14891.5270	0.63009
50	9434.3735	15043.4813	0.62714
51	9505.4622	15193.9161	0.62561
52	9644.1935	15342.8761	0.62858
53	9722.4566	15490.4037	0.62764
54	9784.5692	15636.5396	0.62575
55	9858.6672	15781.3224	0.62470
56	9970.3532	15924.7890	0.62609
57	10036.9639	16066.9746	0.62470
58	10100.1237	16207.9130	0.62316
59	10204.0918	16347.6363	0.62419
60	10248.8528	16486.1756	0.62166
61	10313.9026	16623.5604	0.62044
62	10376.0572	16759.8191	0.61910
63	10482.8831	16894.9790	0.62047
64	10528.5444	17029.0661	0.61827
65	10586.1056	17162.1057	0.61683
66	10644.5991	17294.1219	0.61550
67	10718.9500	17425.1379	0.61514
68	10758.8799	17555.1763	0.61286

69	10806.2247	17684.2585	0.61106
70	10846.6147	17812.4053	0.60894
71	10907.2290	17939.6367	0.60800
72	10977.4604	18065.9722	0.60763
73	11013.2674	18191.4303	0.60541
74	11074.0605	18316.0292	0.60461
75	11151.2030	18439.7861	0.60474
76	11234.9613	18562.7180	0.60524
77	11295.8870	18684.8412	0.60455
78	11342.6988	18806.1713	0.60314
79	11416.2739	18926.7237	0.60318
80	11573.2875	19046.5131	0.60763
81	11718.1094	19165.5538	0.61142
82	11824.1937	19283.8597	0.61317
83	11896.8641	19401.4442	0.61319
84	11984.2872	19518.3204	0.61400
85	12087.1945	19634.5009	0.61561
86	12172.3382	19749.9979	0.61632
87	12258.0561	19864.8235	0.61707
88	12310.4812	19978.9891	0.61617
89	12385.1897	20092.5061	0.61641
90	12448.9659	20205.3854	0.61612
91	12507.0238	20317.6375	0.61557
92	12599.7185	20429.2729	0.61675
93	12664.7699	20540.3015	0.61658
94	12746.1281	20650.7333	0.61722
95	12784.4109	20760.5776	0.61580
96	12825.2034	20869.8438	0.61453
97	12909.1074	20978.5409	0.61535
98	12957.7597	21086.6777	0.61450
99	13016.8190	21194.2628	0.61417
100	13062.1492	21301.3045	0.61321

End time.....: 05:09:41 PM, 02/06/2010

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