UTSA®

The University of Texas at San Antonio

Department of Criminology & Criminal Justice

A Multi-Method Investigation of Officer Decision-Making and
Force Used or Avoided in Arrest Situations:
Tulsa, Oklahoma Police Department Administrative Data Analysis Report

December 2019

Michael Smith, J.D., Ph.D.
Rob Tillyer, Ph.D.
University of Texas at San Antonio

Robin S. Engel, Ph.D.
Jennifer Calnon Cherkauskas, Ph.D.
IACP / UC Center for Police Research and Policy

TABLE OF CONTENTS

LIST OF TABLES

EXECUTIVE SUMMARY

The overarching goal of this project was to provide a deeper and more contextualized understanding of how and why police use or desist from the use of force and to identify policy, training, or other ways that law enforcement agencies can reduce the need for force, lower the rate of injuries or deaths to civilians, and reduce police victimization when interacting with members of the public under stressful or uncertain conditions. To conduct this work, the *IACP / UC Center for Police Research and Policy,* sponsored by the Laura and John Arnold Foundation (LJAF), partnered with a research team from the University of Texas at San Antonio (UTSA). The research team partnered with police executives from the Tulsa Police Department (TPD) and the Cincinnati Police Department (CPD) to review arrest and use of force encounters over a multiyear period within each community. This *Tulsa Report* provides the findings for one site – Tulsa, Oklahoma. An additional forthcoming report will document findings from Cincinnati, Ohio.

This research study used various data sources and a series of convergent analytic approaches to address the following research questions:
- How and why do some arrests turn violent while most do not?
- What factors or combination of factors contribute to injuries to civilians and the victimization of police officers during arrests?
- How can law enforcement agencies minimize conflict to reduce force, lower injuries and victimizations, and improve outcomes during arrests and similar encounters with civilians?

The arrest analyses detailed in the report covered a 30-month period (Jan 1, 2016 – Jun 30, 2018) and included 31,950 in-custody arrests. **The key dependent variable from the arrest data was whether or not any officer used force during the execution of a custodial arrest**. This variable allowed for a comparison between arrests that involved the use of force and those that did not. Of the 31,950 arrests in the database, **551 incidents involved a reportable use of force that occurred during the 30-month period.**

In addition to the arrest analyses, the research team conducted a series of separate analyses on the 642 use of force cases that contained useable information provided by the TPD from its Blue Team use of force reporting system during the 30-month period. These use of force incidents were used to examine the factors that predict three outcome measures: (1) citizen injuries, (2) officer injuries, and (3) officer force relative to civilians' levels of resistance.

The primary analytic approach to addressing the research question involved multivariate modeling. Logistic and linear regression models with robust standard errors were estimated that accounted for a variety of factors related to the civilians involved in the incidents, the officers

making arrests and using force, characteristics of the incidents themselves, and contextual factors in the neighborhoods where the incidents took place.

Findings

During the period covered by this study, the TPD made approximately 32,000 arrests and used force in approximately 1.7% of them. The data revealed that most TPD use of force occurred during arrests for less serious crimes, which also made up the bulk of total arrests. The Gilcrease division lead the agency in the number of arrests made, and also led the patrol divisions in the percentage of use of force cases (28%) followed by Mingo Valley (17%) and Riverside (16%). Examining force at the squad level revealed that the Canine Unit alone accounted for 28% of the force cases reported, which was almost three times higher than the next highest squad (Baker) at 9.7% of force cases reported. The average civilian against whom force was used was 33 years year old. From a purely descriptive perspective, force was used against males about three times more often than against females during arrests. Force rates by race were relatively similar; Whites were the subjects of force in 1.7% of arrests, Blacks 1.8%, Hispanics 2.0%, Asians 2.2%, and Native Americans 1.4%. Young, Black males (18 and under) had forced used against them in 1.9% of arrests. Importantly, there were no statistical differences in the frequency of force used against minority civilians (Black, Hispanic, Asian, Native American) compared to Whites. In fact, young, Black males were slightly less likely to have force used against them than other civilians.

Black officers were less likely to use force than White officers, but there was no difference between Hispanic, Native American, or Asian officers when compared to White officers. More experienced officers were slightly more likely to use force than less experienced officers, while male and female officers used force at about the same rate. The most important predictor of use of force in arrests was assignment to a canine unit. Community characteristics such as calls for service seriousness, violent crime rate, and the percentage of young people living in a geographic area covered by a TPD squad had no effect on the frequency of force used during arrests.

Overall, the model predicting the use of force during arrests was relatively weak, in part because suspect resistance was unavailable to be measured. With the exception of officer canine assignment, civilian gender, and officer race, the other variables included model were either non-significant or significant but substantively weak.

Turning to injuries of officers and civilians, female civilians were less likely to be injured than males during an arrest, while Native American civilians were more likely to be injured than Whites. Other racial groups experienced injuries at statistically similar rates to Whites. Arrests made by Native American officers alone less were likely to result in civilian injury, while arrests made by those holding the rank of police officer (as compared to officers of higher rank) were

somewhat more likely to result in an injury to a civilian. The type of force used by the police was associated with civilian injury; the odds of injury to a civilian increased more than five-fold when officers used physical control tactics compared to hard-hand tactics while the likelihood of civilian injury went down significantly when officers used pepper spray compared to hard-hand control. By their very nature, canine bites were significantly more likely to produce injury than any other force option. Interestingly, the odds of civilian injury associated with the use of firearms by the police were about the same as with the use of physical control tactics, and higher than hard-hand control. Given limitations in how injury data were collected by the TPD, the analysis did not examine the severity of injury associated with these force options only whether a civilian was injured or not. Finally, squad areas with higher percentages of younger residents (18-24 years of age) were more likely to experience civilian injuries, while squads operating in areas with less disadvantage also experienced more civilian injuries.

With respect to officers, the resistance level of the subject was positively associated with injuries to officers. Each level change in resistance increased the odds of an officer being injured by almost 40 percent. Conversely, arrests made by officers were about 50 percent less likely to result in injuries to the officers than arrests made by officers of higher rank. Moreover, the type of force or force tactic used by officers also was correlated with injuries to officers. The odds of officers being injured were significantly reduced when pepper spray or a TASER was used compared to hard-hand control (striking) tactics. The use of canines and firearms also was negatively associated with officer injuries.

Analyzing force used by police relative to civilian resistance (a "Force Factor" analysis) yielded little additional information. Arrests involving Native American citizens were characterized by lower levels of force compared to resistance. Other racial or ethnic groups experienced neither higher nor lower levels of force relative to resistance compared to Whites.

Recommendations

1. Expand Use of Force Data Collection

The TPD should change its use of force reporting policy to require officers to report force any time they use *more than a firm grip* to control a civilian. Presently, the TPD does not mandate use of force reporting unless a police weapon is used, a K9 bite occurs, an officer strikes a subject with his/her fist, knee, etc., or an injury or complaint of injury occurs (TPD Policy 31-101A, December 2018). This relatively high threshold for reporting leaves the majority of force unreported. This "best practice" in force reporting will provide for a better and more complete picture of force used by the TPD and will provide additional transparency to the Tulsa community.

2. Improve Documentation of Force, Injuries, and Civilian Demeanor

A. The TPD should improve the way in which it collects and documents the use of force by its officers. Every instance of reportable force should be fully documented on a TRACIS report, and the details of the force itself should be captured in Blue Team. Finally, the associated TRACIS number should be correctly entered in Blue Team, and the Blue Team record ID (a unique number generated from every Blue Team entry) should be cross-referenced as a data field (not in the narrative) in TRACIS. Finally, supervisors reviewing TRACIS and Blue Team reports should routinely check that these numbers have been correctly entered by the officers completing them and should return them for correction if not.

B. TPD should investigate the possibility of customizing its instance of Blue Team to include a drop-down list of injuries from which officers could choose when documenting injuries to themselves or civilians. Alternatively, the TPD should systematize the injury categories that it uses (e.g., complaint of pain, bruise/contusion, abrasion / laceration / puncture, fracture/dislocation, etc.) in the freeform text fields available in Blue Team and train all officers and supervisors in the use of these terms.

C. The TPD should begin documenting suspected alcohol/drug use, mental health status, and the demeanor of all arrested subjects in TRACIS. Ideally, these data points would be added as drop-down fields on the "Suspect Supplemental" portion of the TRACIS report. Adding these fields would improve use of force analysis and may suggest avenues for improved training and intervention by the TPD among substance-involved populations or those exhibiting signs of mental illness.

3. Capture Instances When Deadly Force Could Have Been Used But Was Not

The TPD should modify its use of force data collection protocols to capture instances when, under the totality of the circumstances, deadly force was authorized by law and TPD policy but was not used. Significant concern exists among some Tulsa constituencies over the use of deadly force by the TPD and whether that force is used fairly and appropriately. Nationally, data on the use of deadly force is quite limited and almost never includes information on cases where deadly force was authorized by law and policy but where police chose not to use it. Yet these "counter-factual" cases are crucial to properly estimating rates of deadly force across populations. Over time, this data collection strategy will produce a reliable data source against which TPD deadly force cases can be compared.

4. Review the Training and Force Practices of the Police Canine Unit

The TPD should specifically review the training and force-related practices of its Canine Unit. Across TPD squads, the Canine Unit was responsible for 28% of force incidents analyzed in the current study. Due to the inherent nature of a canine bite, the odds of civilian injury are more than *60 times* higher when a canine is used in a force-related incident compared to "hard-hand" striking tactics. The TPD Use of Force policy classifies a police canine bite as "advanced force" in the same category as personal impact strikes to the head, conducted electrical weapons, and the carotid restraint hold. However, the TPD injury findings show a *dramatically* higher likelihood of civilian injury associated with a canine bite compared to other "advanced force" options (e.g., CEWs or batons), perhaps suggesting that canines are misplaced on the TPD use of force continuum. A key question for the TPD to consider is whether such an "advanced force" application is reasonable to apprehend *all* fleeing subjects or whether the use of a canine in those circumstances should be limited to certain types of fleeing subjects. The TPD should research best practices in the use of canines nationally and benchmark its policies and practices against those standards.

5. Review Use of Force Policy and Training

The TPD should conduct a comprehensive review of its current use of force policy and training and compare it to the IACP National Consensus Policy on Use of Force, the Guiding Principles on Use of Force from the Police Executive Research Forum, and other best practices as reflected in the research and policy literature. The department should continue to analyze and review its use of force activities, policies, and training to identify patterns and trends that suggest needed changes or revisions. When needed, the TPD should engage with outside research partners or consultants to assist in this review. Upon conclusion of that review, the TPD should make necessary adjustments and updates to both its policy and training. Officers should receive training regarding any updates to the policy.

I.   INTRODUCTION

With the August 2014 shooting death of Michael Brown by Officer Darren Wilson in Ferguson, Missouri and additional publicized incidents of deadly force, protests and concerns about police use of force erupted into the Black Lives Matter movement and evoked memories of the 1960s Civil Rights Movement. Spurred by the recent deaths of young minority individuals at the hands of the police, the national discussions of use of force have been dominated by the argument that racial minorities are disproportionately subject to police actions (Donner, Maskaly, Piquero, & Jennings, 2017; Fridell, 2017; Stroshine & Brandl, 2019). Furthermore, police use of force can have devastating consequences in terms of injuries to both officers and civilians and can lead to broader societal unrest (Alpert & Dunham, 2010). As a result, use of force by the police arguably poses the greatest threat to police and community relationships (Smith, 1995). At this critical juncture in policing, it is imperative to better understand what factors influence use of force decisions and what characteristics of encounters are related to increased injuries to officers and civilians.

The overarching goal of this research study is to provide a deeper and more contextualized understanding of how and why police use or desist from the use of force. From these findings, law enforcement agencies can identify the appropriate policies, training, employee screening and monitoring, and other concrete ways to improve officer decision-making and reduce the use of force during encounters with civilians. The study is built upon a solid foundation of previous research, while making improvements to the research methods, data sources, and analytic tools necessary to properly address how and why some arrests turn violent, or even lethal, while most do not. The research design employs both quantitative and qualitative methodologies to analyze a large sample of arrests from two jurisdictions – Tulsa, Oklahoma and Cincinnati, Ohio – to compare the context of those arrest situations that did not involve the use of force with those that did. This study's data and findings address important gaps in our knowledge of police decision-making during critical events and provide a detailed picture of the multi-level interactions between a large number of situational, civilian, officer, organizational, and environmental characteristics associated with the decisions by officers to use or desist from the use of force.

To conduct this work, the *IACP / UC Center for Police Research and Policy,* sponsored by the Laura and John Arnold Foundation (LJAF), partnered with a research team from the University of Texas at San Antonio (UTSA). The research team partnered with police executives from the Tulsa Police Department (TPD) and the Cincinnati Police Department (CPD) to review arrest and use of force encounters over a multiyear period within each community.

This *Tulsa Report* provides the findings for one site –Tulsa, Oklahoma. An additional forthcoming report will document findings from Cincinnati, Ohio.

This report is organized into five sections. In Section II, previous studies of police use of force are reviewed to describe the major trends in how researchers have measured and analyzed use of force, and the primary factors that are significantly associated with use of force. In Section III, the current study's research sites, methodology, data, and analytical plan are described. Section IV presents the findings from the statistical analyses of the quantitative data for TPD. Section V of the report summarizes the findings and provides the TPD with actionable recommendations for use of force data collection, training and policy.

II.   PREVIOUS STUDIES

Measuring Force

Police use of force is action taken by police that threatens, attempts, or employs physical force to compel compliance from an unwilling subject (Garner, Schade, Hepburn, & Buchanan, 1995; Henriquez, 1999). Most studies find that it is a rare occurrence, with approximately 1-5% of police-civilian encounters resulting in force (Davis, Whyde & Langton, 2018; Friedrich, 1980; Garner, Hickman, Malega & Maxwell, 2018). The prevalence of police use of force, however, depends upon how it is measured (Terrill, 2003). Unfortunately, most use of force studies do not clearly define the concept of force and vary in its measurement; similarly, reporting requirements differ across police agencies (Garner et al. 2002, 2018; Hickman, Piquero, & Garner, 2008; Pate, Fridell, & Hamilton, 1993; Terrill, Paoline, & Ingram, 2018).[1] Some actions are nearly always conceptualized and documented as force: weaponless physical force, physical restraints, chemical spray, tactics and nonlethal weapons (TASER), and firearm threat or use (Klahm, Frank & Liederbach, 2014). Whether verbal commands and handcuffing should be included as force is debated (Fridell, 2017; Klahm et al., 2014; Klinger, 1995; Terrill, 2003) and other scholars note that verbal force is frequently not reported by police agencies (Willits & Makin, 2018; Wolf, Mesloh, Henych, & Thompson, 2009). These differences in how force is measured are critical to understand because the characteristics that predict police use of force frequently vary by how it is measured (Garner et al., 2002). The prevalence of force also depends on whether the sample is all police-civilian encounters or just arrestees, with a higher rate of force and more serious force for those arrested (Davis et al., 2018; Garner et al., 1995; Hickman et al., 2008). Recent data from the Police Public Contact Survey indicate that less than 2% of all police-civilian contacts result in force compared to 20% of arrests (Davis et al., 2018; Hickman et al., 2008).

In order to interpret rates of police use of force, the percent of various racial/ethnic groups who experience force are often compared to the same groups' representation in population statistics; known as a "benchmark," the comparison group data is supposed to represent similarly situated

---

[1] For a comprehensive review summarizing how police use of force has been conceptualized and measured, as well as the methodological limitations of previous research, see Hollis (2018). For a review of the strengths and weaknesses of various use of force data sources, see Garner, Maxwell, & Heraux (2002).

people at risk of experiencing force assuming no bias exists (Engel & Calnon, 2004a; Tillyer, Engel & Cherkauskas, 2010). The difficulty with this type of comparison is that Census data do not measure the types of characteristics that research shows put individuals at risk of experiencing force, including a number of legal and extra-legal characteristics but especially *civilians' legally relevant behaviors* like civilian resistance, presence of a weapon, and criminal behavior. **Simply stated, aggregate level comparisons of coercive police outcomes (e.g., stops, arrests, use of force) to Census population figures by racial/ethnic group do not consider the complexity of police-citizen interactions and should not be used (Engel, Calnon & Bernard, 2002; Nix, Campbell, Byers, & Alpert, 2017a).** Rather, a rigorous and methodologically sound study of use of force provides a stronger mechanism to examine and control for context at the police-civilian encounter level.

Studies note that when force does occur, it most commonly includes low levels of hands-on force only (Bayley & Garofalo, 1989; Garner et al., 1995, 2018; Klinger, 1995; Terrill, 2003; Torres, 2018). For example, a recent study found that use of force incidents involved "physical force only" 75% of the time, and physical force in combination with other types of force in another 12% of incidents (Stroshine & Brandl, 2019). Despite weaponless physical force being the most commonly used type of force, it is also the least studied, which is problematic for several reasons. First, it has been argued that force that falls on the lower end of a force continuum has the most potential for abuse due to the greater discretion and lower visibility of these incidents (Lawton, 2007). Second, physical force is associated with a higher likelihood of both officer and civilian injury in comparison to other types of force (Stroshine & Brandl, 2019). Finally, there is empirical evidence that the factors that influence the frequency and severity of force are different; this highlights the importance of capturing the dependent variable in multiple ways to better understand the complexities of these encounters (Lautenschlager & Omori, 2019).

The study of police use of force has evolved considerably since the early studies of Westley (1953, 1970). Historically, force was measured as a simple dichotomous variable (e.g., force/no force, deadly force/nondeadly force), which makes no distinctions based on severity of force (Crawford & Burns, 1998; Garner et al., 1995, 2002). Studies then began to measure and analyze force as a continuum, which better captures the policy, training and legal requirements for officers to use only the force that is proportionate to what is used against them or which is necessary to obtain compliance. Most studies of this type still only capture the most severe type of force used, and they usually do not capture multiple types of force occurring in the same encounter (Alpert & Dunham, 1999; Garner et al., 1995; Terrill & Paoline, 2012; Terrill et al., 2018). In order to better disentangle the micro-level interactions between officers and civilians, a number of researchers explored content-rich data sources like observations, report narratives, body worn camera footage, and interviews with officers and civilians to examine the "force factor" (i.e., the level of civilian resistance subtracted from the officer level of force), and other measures like time to force and duration of force (Alpert & Dunham, 1999; Rojek, Alpert, &

Smith, 2012; Terrill, 2005; Willits & Makin, 2018). In summary, the last several decades of use of force research are characterized by increased empirical attention to advanced statistical techniques, varied study designs, and greater focus on the sequential actions and reactions between officers and civilians during these encounters. The current study builds upon these advancements to continue to better understand police use of force.

Understanding Use of Force

A body of scholarly research has emerged that identifies and measures the impact that multiple factors have on use of force during officer-civilian interactions. Typically, studies have identified four general groupings of factors that may potentially influence officers' decisions regarding the use of force and its severity: situational/legal, individual (civilian and officer characteristics), organizational, and community characteristics. This research is reviewed and summarized below and shows how these factors influence when police-civilian interactions may escalate to force and particularly what prompts officers to decide to use force. The research findings related to force and injuries to officers and civilians is also reviewed.

> ### *Situational and Legal Characteristics*

Situational factors refer to the details and characteristics of the situation involving the use of force. These situational factors may include both legal and extralegal considerations regarding the immediate context of police-civilian encounters. The body of evidence that has accumulated on officer decisions to use force has consistently found that several situational and legal factors are the strongest predictors of officers' decisions to use force and the severity of the force used. **In particular, across varied study designs and measures of officer use of force, civilians' resistance is the single most important factor explaining whether force is used and the severity of that force (e.g., Fridell & Lim, 2016; Gau, Mosher, & Pratt, 2010; Lawton, 2007; Stroshine & Brandl, 2019; Terrill & Mastrofski, 2002).** For example, Rossler and Terrill (2017) found that civilians who were non-resistant or simply failed to comply experienced significantly lower levels of force compared to civilians who were defensively resistant (physically struggling to avoid arrest); likewise, civilians who displayed aggressive physical resistance or deadly resistance were significantly more likely to experience even more serious levels of force than those who were engaged in defensive resistance alone. In short, the vast majority of studies find that officers' use and severity of force is directly correlated with civilians' resistance during encounters with police. These findings are not surprising given that officers are trained to escalate or de-escalate force in response to resistance, and the Supreme Court has interpreted the Fourth Amendment to permit police to use only the amount of force that is reasonable under the circumstances (*Graham v. Connor*, 1989). Some studies further report that the size and statistical significance of the effects of other variables, including civilian race, change once resistance is controlled (Garner et al., 2002).

Other situational variables also are consistently found to be strong predictors of police use of force (for review, see Bolger, 2015; Klahm & Tillyer, 2010). Specifically, researchers have found that the presence or use of a weapon, evidence of criminal behavior (particularly violent crime), and incidents involving arrests or pursuits, are all positively and significantly associated with the use of force and level of force used (e.g., Garner et al., 2002; Jennings et al., 2019; McCluskey & Terrill, 2005; Morrow, White, & Fradella, 2017). For example, Crawford and Burns (1998) found that when there was a weapon present, officers were nine times more likely to use chemical agents and six times more likely to use or threaten the use of firearms than when there was no weapon present. Kramer and Remster (2018) found that when the suspect was involved in a violent crime, the odds of force being used were 2.4 times higher than if a crime was non-violent, while the odds of a gun being drawn were almost 5 times higher. Stroshine and Brandl (2019) noted that, when a foot pursuit was involved in the incident, officers were two times more likely to use physical force alone. Although encounters involving arrests are significantly and positively related to use of force, this may be a product of how some studies have measured force—that is, whether handcuffing was considered force (Klahm & Tillyer, 2010; Terrill & Mastrofski, 2002).

Other encounter characteristics have a less clear impact on police use of force. Engel and colleagues (2000), reported that the police were more likely to use force against a suspect as the number of bystanders increased. The majority of studies examining whether the presence of other civilians influences use of force, however, found no significant relationship or mixed findings depending on the type of force (for review, see Klahm & Tillyer, 2010). For example, Crawford and Burns (1998) found that bystanders increased the likelihood of using physical restraints but had no influence on the use of chemical agents, nonlethal weapons, or firearms (see also Garner et al., 2002; Paoline & Terrill, 2005). The evidence for the relationship between the presence of other officers and use of force is also mixed, as some studies note a significant, positive relationship between the two (Brandl & Stroshine, 2017; Garner et al., 2002; Terrill, 2005), while others find a relationship in the opposite direction (Lawton, 2007) or no significant relationship (Engel et al., 2000). **Collectively, the evidence suggests that studies examining officers' use of force that fail to control for relevant situational and contextual variables are limited in their ability to explain police decision-making regarding the use of force and should be interpreted with caution.**

Individual Characteristics (Civilian and Officer)

Beyond these legal and situational considerations, researchers have also explored the influence of non-legal predictors of the use of force by police, including both civilian and officer characteristics. **The body of evidence for these characteristics is generally mixed, with some civilian and officer characteristics showing consistent relationships with use of force, but most showing inconsistent findings across studies. Overall, civilian and officer**

characteristics are not as consistently associated with force compared to legal and situational factors. These findings are described in in more detail below.

Civilian Characteristics

Gender is one of the most consistent civilian-level predictors of the use of force with only a few studies showing mixed findings or no relationship (Engel et al., 2000). Researchers generally find males are more likely than females to experience force and more severe force (Garner et al., 2002; Gau et al., 2010; Kaminski et al., 2004; Terrill & Mastrofski, 2002) and less likely to experience less severe types of force (Crawford & Burns, 1998; Stroshine & Brandl, 2019). Willits and Makin (2018) found that officers were significantly slower to apply force to females; however, gender did not predict escalation to higher levels of force (i.e., escalating from a push to a strike or CED). The impact of civilian age, while a weaker predictor than gender, is generally negatively and significantly related to use of force, with younger civilians more likely to experience force than their older counterparts (Crawford & Burns, 1998; Hickman et al., 2008; Terrill & Mastrofski, 2002; c.f. Engel et al., 2000; Garner et al., 2002).

Scholars also have explored the relationship between police use of force and various types of civilian impairment, including drug use and/or alcohol intoxication, as well as mental health issues; the findings, however, do not provide a clear picture of their impact (Kaminski et al., 2004). Some studies found that drug and alcohol impairment were positively and significantly related to force (Engel et al., 2000; Kaminski et al., 2004; Lawton, 2007; Terrill & Mastrofski, 2002), while others found no significant differences (Rossler & Terrill, 2017; Stroshine & Brandl, 2019) or mixed results depending on the type of force (Crawford & Burns, 1998). Similarly, some studies indicate that officers use force more frequently and at higher levels against civilians with mental illness (Brandl & Stroshine, 2017; Lawton, 2007; Rossler & Terrill, 2017), while others find the opposite (Gill, Jensen, & Cave, 2018) or no relationship (Terrill & Mastrofski, 2002). These negative and null findings are consistent with research on arrest that indicates civilians with mental illness were either less likely to be arrested than those without mental health issues or mental illness did not significantly predict arrest (Engel & Silver, 2001; Novak & Engel, 2005). Johnson (2011) noted that once violent behavior, resistance, and possession of a weapon were statistically controlled, civilians with a mental disorder were *not* more likely to experience use of force. Morabito and colleagues (2017) recently suggested that it may be the combination of these types of impairment that is most salient for predicting the use of force. They found that civilians with comorbid issues (behavioral health *and* substance use) were more likely to experience police use of force than with mental illness or impaired by drugs or alcohol. They suggest this finding may be related to officers' increased perception of violent resistance by these civilians.

Most research finds that civilian demeanor is a strong predictor of officers' use of force (for review, see Engel, Tillyer, Klahm, & Frank, 2012); civilians who are more disrespectful are

more likely to experience force and more severe force (Engel et al., 2000; James, James, & Vila, 2018; Sun & Payne, 2004; c.f. Terrill & Mastrofski, 2002). For example, Crawford and Burns (1998) found that suspects who had an angry or aggressive demeanor were more than nine times as likely to have chemical agents used against them and almost six times as likely to have physical control tactics or nonlethal weapons employed against them. Nix and colleagues (2017b) found that officers perceive disrespectful suspects as a greater threat to them. It is important to note, however, that civilian demeanor is one of the most difficult characteristics to reliably measure. Some research highlights that civilian demeanor often changes during the course of an officer-civilian interaction and may do so in response to officer demeanor or behavior (Dunham & Alpert, 2009; Reisig et al., 2004). Other research finds that measures of demeanor almost exclusively rely on observers' perceptions of disrespect, rather than the officers' (Donovan, Tillyer & Klahm, 2018). Engel and colleagues (2012), however, found that officer perceptions of demeanor varied by their race as well as civilian race. Therefore, it is unknown if studies that failed to find a significant effect of demeanor are due to measurement issues associated with this variable or whether the impact of demeanor may be significant for some types of force but not others (Klahm & Tillyer, 2010).

The broad political and public debate that has followed high profile shootings of minority civilians is reflective of the idea that specific types of civilians are at a disproportionate risk of experiencing police use of force. The research, however, has not found consistent support for racial bias in shootings (Correll et al., 2007; Cox et al., 2014; James, Klinger, & Vila, 2014; Nix et al., 2017a). The influence of civilians' race in non-lethal force events has similarly revealed mixed results on whether such bias is present in officer decisions to use force (for comprehensive reviews, see Klahm & Tillyer, 2010; Hollis & Jennings, 2018; Smith, Rojek, Petrocelli, & Withrow, 2017). Even theoretical predictions of the influence of civilians' race on police use of force are contradictory. As summarized by Fridell and Lim (2016), the implicit bias theory suggests that officers' unconscious biases should result in greater likelihood of use of force against minority suspects, while the counter bias perspective suggests less use of force for minority suspects since officers are sensitive to the possibility of negative consequences for a use of force incident with a minority suspect.

A number of studies find no significant racial or ethnic differences on police use of force across a variety of measures and types of force (see for example: Brandl & Stroshine, 2017; Engel et al., 2000; Garner et al., 2002; Jennings et al., 2019; Terrill, 2005). Other studies find mixed results, with racial differences for certain minority groups, but not others (Engel & Calnon, 2004b; Gau et al., 2010; Lee, 2016). For example, Gau and colleagues (2010) found that officers were more than twice as likely to use TASERS on Hispanic suspects compared to White suspects, but there was no significant difference for Black suspects. These findings highlight the need for researchers to separately examine racial and ethnic groups whenever possible, as simple White/non-White dichotomies may mask between-group differences among racial and ethnic minorities.

Still other studies find racial or ethnic differences in particular types of force, but not others (Fridell & Lim, 2016; Fryer, 2019). Lawton (2007) suggested that racial differences may be more prevalent at lower levels of force when officers have higher discretion, and some empirical evidence supports this proposition (Fryer, 2019; Kaminski et al., 2004; Morrow et al., 2017). For example, Crawford and Burns (2008) found that officers were more likely to use verbal commands with Hispanic suspects and were more likely to use weaponless tactics or less than lethal weapons against Black suspects; there were, however, no significant racial/ethnic differences in the use of chemical agents or deadly force.

Other research contradicts this proposition and finds that Black civilians experience more serious types of force but finds no differences among less severe types of force (Fridell & Lim, 2016; Kramer & Remster, 2018;). Still other studies have found that minority suspects were more likely than Whites to experience any type of police use of force or to experience more serious types of force (Alpert, Dunham, & Macdonald, 2004; Kramer & Remster, 2018; Terrill & Mastrofski, 2002; Terrill & Paoline, 2017). It is important to note, however, that among studies showing mixed or positive relationships between civilians' race and the use of force, the size of these effects is often small, particularly compared to situational variables like civilians' resistance (e.g., Bolger, 2015; Kramer & Remster, 2018).

Finally, the impact of race on police use of force mixed and is confounded by its relationship with other civilian characteristics or behaviors, as well as officer and neighborhood characteristics. For example, Kahn and her colleagues found that Black and Latino suspects were more likely than Whites to receive a higher increase in force for an equivalent increase in resistant behavior (Kahn et al., 2017), while another study found that experimental participants were more likely to shoot unarmed Blacks in stereotypically threatening attire than similarly dressed Whites (Kahn & Davies, 2017). The latter study also found, by contrast, that there was no difference in the participants' likelihood to shoot unarmed Black and White individuals in safe attire. Nevertheless, this line of research suggests that when other factors related to suspect characteristics or behaviors indicate a threat, these may disproportionately affect minorities' likelihood of experiencing force because they are consistent with established stereotypes.

Other researchers have explored how the interactions of suspect and officer race may influence police use of force and noted some significant differences between White and minority officers based on civilian race or ethnicity (Jetelina et al., 2017; Paoline et al., 2018). Finally, several studies found interactions between suspect race and neighborhood racial or ethnic composition, neighborhood crime rate, and other measures of disadvantaged or threatening neighborhood contexts, whereby minority civilians may experience more force simply because of the types of neighborhoods in which they encounter police (Terrill & Reisig, 2003; Lee, 2016). In contrast, Fridell and Lim (2016) found no racial differences in the use of TASER in high violent crime areas, but they did find Blacks were more likely to experience the use of TASER in non-high

violent crime areas (see also Correll, Wittenbrink, Park, Judd, & Goyle, 2011). These findings underscore the importance of examining police use of force with multilevel models when possible to explore, cross-level interactions between neighborhood measures and individual or situational characteristics. Further exploration of these should lead to a better understanding of what impact, if any, suspect race/ethnicity has on police decisions to use force.

In summary, the body of evidence available demonstrates mixed findings regarding the impact of civilians' race on police use of force. Further, when civilians' race is found to predict police use of force, the impact of race is often mitigated once other factors (e.g., civilians' behavior, neighborhood characteristics, etc.) are considered; any remaining race effects are typically small in magnitude compared to other factors.

Officer Characteristics

Similar to the hypothesis that certain types of civilians may be more likely to experience use of force is the hypothesis that individual characteristics of officers, including their experiences, personality traits, and attitudes, affect officers' use of force (Brandl & Stroshine, 2013; Terrill & Mastrofski, 2002; Worden, 1996). While significant scholarly attention has been given to examining the influence of these factors, the findings demonstrate inconsistent evidence that they influence police use of force (for reviews, see Bolger, 2015; Klahm & Tillyer, 2010).

There is some empirical support that officers with higher levels of education and more experience are less likely to use force (Chapman, 2012; McElvain & Kposowa, 2004; Paoline & Terrill, 2007; Rydberg & Terrill, 2010; Terrill & Mastrofski, 2002), but a number of studies fail to find significant effects for these variables (Klahm, Frank, & Brown, 2011; Lawton, 2007). Research has generally not found officer race or gender to significantly predict use of force (for reviews, see Bolger, 2015; Brandl & Stroshine, 2013; Paoline & Terrill, 2005; Schuck & Rabe-Hemp, 2007), although there are exceptions, including studies related to involvement in shootings. For example, two studies found that Black officers were significantly more likely to be involved in shootings than White officers (Donner, Maskaly, Piquero, & Jennings, 2017; Ridgeway, 2016), while McElvain and Kposowa (2008) found that White officers were more likely to shoot than Hispanic officers.

Furthermore, more recently, research suggests that officers with lower self-control are significantly more likely to be involved in an officer-involved shooting and, in experimental manipulation, were more likely to engage in aggressive behavior earlier than officers in the control condition (Donner et al., 2017; Staller, Christiansen, Zaiser, Körner, & Cole, 2018). Exploring the impact of patrol workgroups, Ingram and colleagues (2018) found that officers in workgroups who valued aggressive patrol tended to use force at higher rates compared to officers from less aggressive workgroups. **Collectively, this body of research suggests that officers' characteristics are weak predictors of use of force, but may influence some types of force**

9

more than others (Crawford & Burns, 1998; Klahm & Tillyer, 2010; Mcelvain & Kposowa, 2008; Schuck & Rabe-Hemp, 2007).

Organizational characteristics

Despite the large literature base examining police use of force, there has been a limited number of studies examining organizational characteristics and use of force (Lim & Lee, 2015; Nowacki, 2015). **The scant evidence that exists from studies on agency size, policy, supervision, training, and technology suggests that these characteristics may influence use of force, but further research is needed to better understand the impact of many of these factors, particularly across different types and severity of force.**

Limited research suggests that agency size (i.e., number of sworn police officers) is positively related to use of deadly force (Nowacki, 2015; Willits & Nowacki, 2014). Further, Willits and Nowacki (2014) found that the influence of other organizational characteristics on lethal force, while significant in both large and small cities, were more important in departments in large cities as compared to small city departments (Willits & Nowacki, 2014). One exception they noted, however, is that stringent recruitment practices were associated with fewer deadly force incidents and that this is a stronger effect in small city departments.

Officer behavior, including the use of force, may be influenced by organizational characteristics that regulate police discretion, particularly agency policy and first-line supervision. Generally, agencies with more restrictive policies—those that set a high threshold of civilian resistant behavior that justifies the use of more severe types of force—are associated with a decreased rate of police use of less lethal force and lethal force (Bishopp, Klinger, & Morris, 2015; Ferdik, Kaminski, Cooney, & Sevigny, 2014; Nowacki, 2015; Terrill & Paoline, 2017). Note, however, that Nowacki (2015) found that while administrative policy significantly predicted the overall number of lethal force incidents, as well as incidents involving only Black civilians, policy was not significantly related to the number of lethal force incidents against Whites.

First-line supervisors not only set expectations for their subordinate officers but also play an active role in the actual implementation of use of force policies (e.g., responding to the scene to provide oversight, reviewing officers' use of force, and ensuring completion of reports). The few studies that have examined supervisors' impact on officers' use of force suggest they influence whether officers view use of force policies and restrictions as fair, and they influence the likelihood of their use of less lethal force (Ingram, Weidner, Paoline, & Terrill, 2014; Lim & Lee, 2015; Van Craen & Skogan, 2017). Lim and Lee (2015) specifically found that the amount of use of force training supervisors received and whether supervisors were college graduates was associated with a decreased likelihood of officers using more severe levels of force. The effect of police training on use of force has otherwise been relatively unexplored, and the little research that has been conducted surprisingly does not find consistent significant effects on officer use of

force. For example, Terrill and Mastrofski (2002) did not find an effect for verbal mediation training on use of force while Lee and colleagues found the level of training at the police academy was not associated with officers' use of force (Lee, Jang, Yun, Lim, & Tushaus, 2010). The impact of de-escalation training is currently being tested by several research teams in various cities across the country, including Tuscon, Arizona, Fayetteville, North Carolina, and Tempe, Arizona among others.

Community Characteristics

Criminologists have long known that the environment in which police-civilian interactions take place can influence the decisions that officers make, including decisions regarding the use of force (Smith, 1986; Terrill & Reisig, 2003). The theoretical proposition is that officers are more likely to use force and at higher levels when they perceive greater danger or threats to their safety; these threats may be related to community characteristics (Lee, Vaughn, & Lim, 2014; Lersch, Bazley, Mieczkowski, & Childs, 2008). There appears to be less empirical consensus, however, on the particular community characteristics that are predictive of variations in this regard.

In one of the earliest studies of the influence of neighborhood characteristics, Smith (1986) found that police were more likely to use or threaten force against suspects encountered in primarily Black or racially mixed neighborhoods regardless of the race of the person encountered (see also Lersch et al., 2008; Lee, 2016). Interestingly, Lautenschlager and Omori's (2019) research suggests that neighborhood racial and ethnic composition has different effects depending on the type of measure of force used. Specifically, they found that as racial and ethnic heterogeneity increases, the *frequency* of use of force incidents decreases but the *severity* of force increases. The authors suggest that the use of force in more heterogeneous neighborhoods may be limited to cases of serious offenses, in which higher severity might be warranted.

Researchers have also explored the influence of neighborhood concentrated disadvantage, crime rates, and socioeconomic status on use of force. A number of studies find that more serious types of force are used against civilians encountered in disadvantaged neighborhoods (e.g., Sun, Payne, & Wu, 2008; Terrill & Reisig, 2003). Interestingly, however, Lautenschlager and Omori (2019) found that although more use of force incidents occurred in neighborhoods with higher concentrated disadvantage, the average severity of force was lower. Similarly, neighborhood crime levels, particularly the violent crime rate, also exert a significant and positive effect on police use of force (Fridell & Lim, 2016; Fyfe, 1980; Lee et al., 2014; Terrill & Reisig, 2003). Lautenschlager and Omori (2019), however, again note a difference in the relationship between this community-level predictor and different measures of use of force, with the crime rate being positively related to incidence of police use of force, but negatively related to the severity of force.

Nevertheless, some studies find that community characteristics were either very weak or not statistically significant predictors of police use of force (Kramer & Remster, 2018; Lawton, 2007; Morrow et al., 2017). Lee and colleagues (2014), found that the effect of some community characteristics varied depending on the level of aggregation, suggesting that using levels of aggregation larger than neighborhoods may obscure real neighborhood differences because there are likely differences within police districts and other more aggregate level Census measures. The differences in the level of geographic aggregation for community characteristics could contribute to the varied findings across studies (Shjarback, 2018).

Civilian and Officer Injuries during Use of Force

Police use of force can result in injuries to both civilians and officers, though estimates of the prevalence of these injuries varies widely by how injury is defined and the data sources used (Kaminski, Engel, Rojek, Smith, & Alpert, 2015; Stroshine & Brandl, 2019; Terrill & Paoline, 2012). The injury rates for civilians are consistently higher than those for officers (Morabito & Socia, 2015; Stroshine & Brandl, 2019; Wolf, Mesloh, & Henych, 2008). One study found that only 16.6% of officers were injured compared to 56.3% of suspects (Smith, Kaminski, Rojek, Alpert, & Mathis, 2007), while others found injuries to officers were about half as common as injuries to suspects (Morabito & Socia, 2015; Taylor, Alpert, Kubu, Woods, & Dunham, 2011). Most injuries are relatively minor (e.g., bruises, lacerations, etc.), with significant injuries occurring rarely (Bozeman et al., 2018; Stroshine & Brandl, 2019; Wolf et al., 2008).

Civilian and officer injuries are clearly related to the type of force used by officers. Studies consistently show that when officers use conducted energy weapons as compared to other types of force, civilian injury, severity of civilian injuries, and officer injuries are less likely (Alpert & Dunham, 2010; Kaminski et al., 2015; MacDonald, Kaminski, & Smith, 2009; Smith et al., 2007; Taylor & Woods, 2010; Stroshine & Brandl, 2019). Similarly, some evidence suggests reductions in injuries to officers and civilians during incidents where OC spray was used as compared to "hands-on" force or other force incidents when OC spray was not used (Alpert & Dunham, 2010; Kaminski, Edwards, & Johnson, 1998; Morabito & Doerner, 1997; Smith et al., 2007; Stroshine & Brandl, 2019). On the other hand, the use of canines is significantly related to increased likelihood of civilian injury and more severe injury (Bozeman et al., 2018; Smith et al., 2007). Finally, the use of physical force is associated with higher levels of injury to both civilians and officers (MacDonald et al., 2009; Smith et al., 2007; Stroshine & Brandl, 2019).

Despite considerable research examining the factors that influence officer and civilian injuries, there is only consensus on the impact of a few predictor variables (Stroshine & Brandl, 2019). Civilian physical resistance increases the likelihood of officer and civilian injury (Castillo, Prabhakar, & Luu, 2012; Jetelina, Reingle Gonzalez, & Bishopp, 2018; Lin & Jones, 2010; Morabito & Socia, 2015; Paoline, Terrill, & Ingram, 2012). Smith and colleagues (2007) found

that active aggression was one of the strongest predictors of officer and civilian injury. Further, encounters that involved relatively less force by the officer in comparison to civilian resistance were more likely to result in officer injuries than encounters with similar force and resistance levels (Hine et al., 2018; Wolf et al., 2009). Wolf and colleagues (2008) found that injuries to civilians and officers increased as the conflict continued in duration. Finally, several studies found that civilians are more likely to be injured when they are armed with a weapon or display life threatening behavior than civilians who are passively resistant or without a weapon (Lin & Jones, 2010; Morabito & Socia, 2015; Rossler & Terrill, 2017), but these factors do not necessarily increase the likelihood of officer injury (Morabito & Socia, 2015; Paoline et al., 2012; Stroshine & Brandl, 2019). Note, however, that other research found the odds of officer injury did increase when faced with a civilian threatening deadly force (Smith et al., 2007).

Officer characteristics (e.g., gender and race) generally do not significantly predict resulting injuries (Covington et al., 2014; Hine et al., 2018; Paoline et al., 2012; Smith et al., 2007). There is, however, evidence that civilian injuries are more likely for males and Whites compared to their female and minority counterparts (Castillo et al., 2012; Lin & Jones, 2010; Macdonald et al., 2009; Morabito & Socia, 2015; Rossler & Terrill, 2017; Smith et al., 2007). In terms of officer injuries and civilian characteristics, the evidence is mixed, with some authors finding no effect of civilian sex and race on officer injury (Morabito & Socia, 2015; Paoline et al., 2012; Smith et al., 2007) and others finding contradictory effects of civilian gender on officer injury (Covington et al., 2014; Macdonald et al., 2009). The impact of civilians' substance abuse and mental illness is unclear due to contradictory findings (Castillo et al., 2012; Morabito & Socia, 2015; Rossler & Terrill, 2017).

Summary

The body of literature on police use of force has extensively explored the influence of situational, civilian, officer, organizational, and community characteristics on use of force, but leaves many questions unanswered. While it is clear that civilians' resistance is consistently the strongest predictor of police use of force, the findings regarding the impact of other factors is considerably more varied. Several comprehensive reviews of studies of police use of force in the last two decades have noted that this body of research is marked by a number of methodological concerns that may explain the inconsistent and even contradictory estimates of both the frequency of the use of force and the reported effects of relevant predictor variables like civilian race (Garner et al., 2002; Hollis, 2018; Hollis & Jennings, 2018; Klahm et al., 2014; Klahm & Tillyer, 2010). As Fridell (2017) notes, "variations in findings could reflect variation in the actual phenomenon across agencies and/or geographic areas or could reflect different research methods used to study the same phenomenon" (p. 511).

III. METHODOLOGY

This research study used various data sources and a series of convergent analytic approaches to address the following research questions:

- How and why do some arrests turn violent while most do not?
- What factors or combination of factors contribute to injuries to civilians and the victimization of police officers during arrests?
- How can law enforcement agencies minimize conflict to reduce force, lower injuries and victimizations, and improve outcomes during arrests and similar encounters with civilians?

The Tulsa Police Department (TPD) has a sworn strength of approximately 750 sworn officers who serve the 400,669 residents of Oklahoma's second-largest city.[2] The population of the City of Tulsa is approximately 55% White, 15% Black, 16% Hispanic, 4% Native American, and 3% Asian. The TPD is a full-service law enforcement agency with accreditation from the Commission on Accreditation for Law Enforcement Agencies (CALEA). The TPD makes approximately 15,000 arrests per year and reports approximately 250 use of force cases per year. The TPD reports, on average, eight officer-involved shooting incidents per year. TPD Officers are equipped with body-worn cameras.

The TPD Use of Force policy emphasizes the preservation of life and the objective reasonableness of all force used; it strictly defines the circumstances under which deadly force is and is not authorized. The policy includes a Use of Force Continuum "as a guide in the appropriate use of force" (p. 1). Table 1 below displays the Use of Force continuum included in TPD's use of force policy. As shown, TPD Officers are equipped with pepper spray and are approved to carry TASERs and collapsible batons in addition to firearms. Although the continuum is illustrated as a hierarchy, the policy recognizes that in rapidly changing situations "officers are not required to move in a hierarchical fashion through all the levels of control, but instead, should use that level of force which is appropriate and reasonable under existing circumstances" (p. 1).

In 2018, the TPD policy was updated from its previous 2014 policy to remove the Lateral Vascular Neck Restraint (LVNR) from the use of force continuum and incorporate the Carotid Restraint Control Hold (CRCH). Additional revisions at that time included updates for CALEA standards and related to Use of Force report distribution. The most notable revision is the incorporation of the expectation that officers will use de-escalation tactics before resorting to force whenever possible and appropriate, to allow for attempts to stabilize the situation without

---

[2] Population figures are based on July 1, 2018 estimates from the US Census: https://www.census.gov/quickfacts/fact/table/tulsacityoklahoma,US/PST045218.

the need for force or to minimize the severity of force needed. Although the impact of de-escalation training is still being empirically tested, it has nevertheless been recommended for police agencies by both the Police Executive Research Forum (2015) and the President's Task Force on 21st Century Policing (2015). Finally, the TPD policy has a fairly high reporting threshold. Officers are required to document and report uses of force that involve a weapon, injury (to officers or civilians), or complaint of injury. Conversely, they are not required to report low-level force that does not involve the use of a weapon or an injury.

Table 1: Tulsa Police Department Use of Force Continuum

DEADLY FORCE		
All Deadly Force Applications	Likely to produce great bodily injury or death	Calculated to Incapacitate (STOP)
ADVANCED FORCE		
Police Canine Bite, Launched Chemical Munitions, 37/40mm Launcher, 12-Gauge Flexible Baton, Carotid Restraint Control Hold, Personal Impact Strikes to Head, Conducted Electrical Weapon, Impact Weapons, Flash Sound Diversionary Devices, Direct Impact Pepperball,	Low expectation of great bodily injury or death, some possibility of injury, involves some pain compliance techniques	Calculated to Control and/or Overcome
INTERMEDIATE FORCE		
Personal Impact Strikes, Physical Control Holds, Area Saturation Pepperball, Vehicle Containment, Chemical Munitions, OC Spray	Less possibility of injury than Advanced Force, involves some pain compliance techniques	Calculated to Control and/or Overcome
LOW FORCE		
Firm Grip or Gesture, Verbal Commands, Uniform Presence	Little to no expectation of injury, low visual impact	Calculated to Gain Compliant Behavior

Data Sources

This project makes use of incident and arrest-related fields from the Records Management Systems (RMS) of the TPD, as well as data contained within the TPD use of force reporting systems.[3] These systems contain data elements available from the agency's incident reports and can be exported for analysis. Each time an officer makes a custodial arrest, an incident report is generated that is captured in the RMS. These reports contain information on the date, time, and location of the offense, the officer's badge number or other unique identifier, information about the civilian(s) such as gender, age, race, height and weight, and the crime(s) for which the

---

[3] The TPD uses the IAPro Blue Team use of force software system.

individual was arrested, information about the number of witnesses or bystanders present, and a written narrative describing what took place and the details of any force that was used. Likewise, each time that an incident results in a reportable use of force, an officer must complete a use of force report that is captured in the use of force data repository.

The research team obtained electronic data on all police-civilian interactions that resulted in a physical, in-custody arrest for a 30-month time period: January 1, 2016 – June 30, 2018. All use of force incidents occurring within this time frame were also accessed from the TPD data repositories.

Previous research reports varying estimates of arrests involving force from approximately 2.4 percent in Seattle (Hickman, Atherley, Lowery, & Alpert, 2015) to as high as 22 percent (Garner et al., 2002) in the six cities that comprised Garner's sample from the mid-1990s. In combined data from the Police Public Contact Survey and the Survey of Inmates in Local Jails, Hickman and his colleagues (2008) found that approximately 20% of arrestees experienced police use of force, compared to only 1.5% of all police-civilian encounters that resulted in force. It is important to note that the variation in rates of force may, at least partially, be due to the differences in how force is defined and reported across agencies.

To facilitate an examination of the research questions, three distinct databases were developed: (1) all arrest incidents; (2) use of force incidents, and (3) narrative (i.e., text) descriptions of use of force incidents. The arrest and force incident data were merged with employee data files that provided officers' characteristics (e.g., officers' race, sex, age, assignment, rank, etc.). Crime and demographic information gleaned from the 2018 U.S. Census data for the neighborhoods where arrests and uses of force took place also were merged into the primary data set for analysis. The narrative data was coded and will be analyzed and reported separately.

Arrest Data

The TPD supplied two sources of arrest data: CitiSource data and TRACIS data. The CitiSource data contained 124,195 individual charges stemming from an arrest and the TRACIS data included 123,687 individual charges resulting from an arrest. Importantly, these cases reflect individual charges, not in-custody arrests, which is the key unit of interest. Based on discussions with the TPD, the TRACIS data were used as the prime source data. Merging these data resulted in a database containing 124,391 unique charges. Thereafter, 11,148 cases were removed due to either an unknown type of arrest and/or non-physical/custodial arrests, and a further 298 cases were eliminated due to inconsistencies between the CitiSource and TRACIS data; likewise, 2,412 cases were removed due to missing information on a variable of interest. The resulting database contained 110,533 charges resulting from an arrest during the time period of interest. These data were aggregated to the arrest level, and included 35,532 in-custody arrests occurring in Tulsa during a 30-month period (Jan 1, 2016 – Jun 30, 2018). Of note, 3,582 of the 35,532 in-

custody arrests (10.1%) could not be matched to individual officer characteristics. **As a result, 31,950 in-custody arrests were included in analyses.[4]**

The key dependent variable from the arrest data was whether or not any officer used force during the execution of a custodial arrest (dichotomous, yes or no variable). This variable allowed for a comparison between arrests that involved the use of force and those that did not. The use of force data exported from the Blue Team database (described in detail below) contained 713 incidents of officer force. However, only 551 of these use of force reports could be matched with the appropriate arrest data.[5] As a result, analyses examining use of force are based on **551 incidents involving a reportable use of force occurring in Tulsa during a 30-month period (Jan 1, 2016 – Jun 30, 2018).**

Arrest Data: Additional measured incident characteristics:
- Indicators of time (year, month, day of week, time of day)
- Offense seriousness[6]
- Organizational indicators (TPD division, squad, and beat)
- Civilian characteristics
    - Age (measured in years)
    - Sex (male or female)
    - Race /ethnicity (White, Black, Hispanic, Asian, Native American, other)
    - Combined age, sex, and race (e.g., young (aged 12-24), Black, male)
- Officer characteristics[7]
    - Age (measured in years, averaged if multiple officers involved)
    - Length of service (measured in years of service, averaged if multiple officers involved)
    - Sex (measured as male, female, or mixed if multiple officers of different sex)

---

[4] See Appendix A (Table 9) for a summary of missing data.

[5] Unfortunately, the TPD arrest database does not include information on whether force was used during the execution of the arrest. This information is only available in a separate use of force database. This required a complicated and timely process to merge data, as only a small portion of the unique identifiers in the arrest database matched the unique identifiers in the use of force database. After an initial matching process using the unique identifiers, cases were subsequently matched based on a series of variables including the date, time, location, officer identifier, and civilian name.

[6] The NCIC code supplied in the TRACIS data was re-categorized into three groups based on the ICE Criminal Offense Levels. Level 1 includes the most serious offenses including aggravated assaults, burglaries, etc.; level 2 include offenses such as embezzlement, extortion, etc.; level 3 reflects all other lesser offenses. For each arrest, the most serious level was retained, which is similar to the application of the hierarchy rule in the UCR data.

[7] The TPD also agreed to share de-identified information on all officers who appeared in the incident report sample described above (including officers who used force and those who did not). The arresting officer may not necessarily have been the same officer who used force, although that was usually the case. For arrests involving use of force, officer characteristics reflect the officer(s) engaged in the use of force. For incidents involving multiple officers using force, officers' characteristics were averaged. Officer education was not electronically available for officers involved in use of force incidents and therefore is not included in the model.

- o Race /ethnicity (measured as White, Black, Hispanic, Asian, Native American, Other, or mixed if multiple officers of different race/ethnicity)
- o Rank (measured as Officer, Corporal, Sergeant, Major, or Captain, or mixed if multiple officers of differing ranks)
- Contextual characteristics[8]
  - o Calls for service[9]
  - o Violent crime[10]
  - o Census Variables[11]
    - Population
    - Percent population aged 18-24
    - Percent Black residential population
    - Percent Unemployment
    - Percent Poverty (population below poverty line)
    - Residential mobility (percent population living in same house for at least one year)

Use of Force Data (Incidents)

Aggregated use of force data for the 30-month study period resulted in 713 use of force incidents.[12] A number of these incidents contained missing information on variables of interest, which resulted in 642 use of force incidents available for analyses. Please see the Appendix (Table 11) for a summary of missing. Note that these data were measured and analyzed at the incident level; multiple individuals could have force used against them within a single incident, and multiple officers may have engaged in uses of force during a single incident. These use of force incidents were used to examine the factors that predict three outcome measures: (1) citizen injuries, (2) officer injuries, and (3) officer force relative to civilians' levels of resistance.

---

[8] Of the TPD organizational units (i.e., divisions, squads, and beats), the squad was chosen as the most appropriate and informative for examining the influence of community variables on arrests and use of force outcomes (see Appendix C). All variables were examined in multivariate models, but only the percent population aged 18-24 and the violent crime rate were included in the final analyses due to issues associated with multicollinearity.

[9] Calls for service within each squad were used based on their priority level defined by the TPD. This scale ranges from 0 to 9 with lower numbers indicating more serious calls for service, which allowed for creating an average call for service priority level for each squad.

[10] Crime incidents were categorized into a violent crime category (i.e., aggravated assault, murder, rape, and assault). The count of these incidents over a two-year period (i.e., 2016-17) were averaged and divided by the total population in the squad based on the most recent Census estimates. This resulted in a violent crime rate per 100,000 civilians in each squad.

[11] Census measures were calculated at the squad through a process of summing all Census tracts within each squad. In the case of a squad bisecting a Census tract, the proportion of surface area within the squad was calculated and the proportionate amount of the variable of interest was appended to the squad.

[12] The TPD gathers information regarding use of force incidents using a Blue Team database. These data were extracted and provided to the research team in Excel files across a number of sub-datasets linked through a series of unique identifiers.

The measures for both officer and civilian injuries are dichotomous injury/no injury variables. In contrast, the civilian resistance and officer use of force measures are captured using resistance and force seriousness hierarchy variables developed based on prior research (Alpert & Dunham, 1999; Alpert & Smith, 1999; Hickman et al., 2015; Terrill, Alpert, Dunham, & Smith, 2003). As previously noted, more than one civilian or officer could be involved in a use of force incident, and/or multiple levels of civilian resistance and officer use of force could occur within a single incident. To capture this level of variation within an incident, civilian resistance and officer use of force were measured as an average and a maximum.[13]

Finally, an overall "force factor" (i.e., civilian resistance relative to police use of force) was created based on the civilian resistance and use of force hierarchical scales (Terrill et al. 2003).[14] Using both the civilian resistance and use of force measures, the force factor is a single measure with a possible range from -5 to +5 for each incident (see Table 2 below). The force factor is created by subtracting the level of civilian resistance from the level of officer force, resulting in possible negative or positive scores. A **negative force factor** value reflects higher levels of civilian resistance compared to officer force. Conversely, a **positive force factor** value indicates higher levels of officer force compared to civilian resistance. A zero values represents a level of civilian resistance that is matched by the level of officer force.[15]

---

[13] For example, an incident that involved civilian resistance at the following levels: 1, 3, 5, and 7 was recorded as an average of 4 and a maximum of 7. One limitation to the average is that the final measure for a specific incident may not reflect an actual level of resistance offered by a civilian. As such, the maximum level of resistance is used in the subsequent analyses.

[14] The creation of this measure is based on the maximum civilian resistance and officer level of force in each incident regardless of how many civilians or officers were involved or how many actions were taken by each party within the incident.

[15] For example, a force factor of -2 indicates the civilian used two levels of resistance higher than the officer used force; conversely, a +2 value shows the officer used force at two levels higher than civilian resistance.

Table 2: Civilian Resistance and Officer Force Coding

Category	Civilian Resistance	Officer Use of Force	Force Factor	
			Resistance	UOF
1	No resistance; subject is compliant	No actions taken; consensual conversation	1	1
2	Non-compliance: verbal resistance without threats; subject ignores officer or refuses to comply	Issuance of lawful announcements, warnings, orders, or commands	2	2
3	Passive physical resistance (e.g., "dead weight")	Physical touch not exceeding a firm grip	2	2
4	Moved away from officer; fleeing or attempting to flee	Handcuffing	3	3
5	Verbal or physical threats (e.g., fighting stance, reaching for possible weapon, other furtive movements) from officers' perspective	Physical control tactics; pain compliance techniques; hair pulling; joint locks and come-alongs; open-handed strikes; take-downs	3	4
6	Defensive resistance to include pushing/pulling/tensing to avoid physical control or handcuffing	Hard hand control, including punches, kicks, elbow or knee strikes	3	4
7	Unarmed assaultive physical resistance; subject strikes or attempts to strike officer with hands, feet, elbows, knees or other body parts; includes kicking at officer to avoid control or handcuffing; **no apparent attempt to kill or seriously injure officers**	Use of lateral vascular neck restraint	4	4
8	Use of hands, fists, feet, etc. **with apparent attempt to cause death or serious bodily injury to officer**	Draw or display of weapon; Identify weapon (e.g., firearm, TASER, pepper spray, pepper ball, tear gas, or other chemical irritant, baton, knife, other)	5	5
9	Display of weapon; Defensive posturing with instrument; Identify weapon (rock/brick/bottle, stick/club/blunt instrument, knife or edged weapon, TASER, pepper spray/chemical irritant, firearm, explosive device, other)	Pointing of a weapon or other threatened use of a weapon; Identify weapon (e.g., firearm, TASER, pepper spray, pepper ball, tear gas, or other chemical irritant, baton, knife, other)	6	5
10	Pointing of a weapon; other Imminent threat with weapon; aggressive movement with weapon; Identify weapon (rock/brick/bottle, stick/club/blunt instrument, knife or edged weapon, TASER, pepper spray/chemical irritant, firearm, explosive device, other)	Use of weapon; Identify weapon (e.g., firearm, TASER, pepper spray, pepper ball, tear gas, or other chemical irritant, baton, other);	6	6
11	Use of weapon; subject strikes or attempts to strike officer with weapon; subject fires or discharges weapon at officer; Identify weapon (rock/brick/bottle, stick/club/blunt instrument, knife or edged weapon, TASER, pepper spray/chemical irritant, firearm, explosive device, other)	N/A	6	--

Use of Force Data: Additional measured incident characteristics:
- Indicators of time (year, month, day of week, time of day)
- Arrest (dichotomous measure – based on match to arrest database)
- Organizational indicators (TPD division, squad, and beat)
- Civilian characteristics
  - Age (measured in years, averaged if multiple civilians involved)
  - Sex (male or female, mixed if multiple civilians of different sex)
  - Race /ethnicity (White, Black, Hispanic, Asian, Native American, other, or mixed if multiple civilians of different race/ethnicity)
  - Combined age, sex, and race (e.g., young (aged 12-24), Black, male)
  - Criminal arrest history (measured on three-point seriousness scale; 1=most serious, 2=medium seriousness, 3= least serious)
  - Total previous charges (sum of criminal arrests)
- Officer characteristics[16]
  - Officer assignment (Administrative, Investigations, Operations)
  - Officer Division
  - Officer Squad
  - Age (measured in years, averaged if multiple officers involved)
  - Experience (measured in years of service, averaged if multiple officers involved)
  - Sex (measured as male, female, or mixed if multiple officers of different sex)
  - Race /ethnicity (measured as White, Black, Hispanic, Asian, Native American, Other, or mixed if multiple officers of different race/ethnicity)
  - Rank (measured as Officer, Corporal, Sergeant, Major, or Captain, or mixed if multiple officers of differing ranks)
- Contextual characteristics[17]
  - Calls for service[18]

---

[16] The TPD also agreed to share de-identified information on all officers who appear in the incident report sample described above (including officers who used force and those who did not). The arresting officer may not necessarily have been the same officer who uses force. For arrests involving use of force, officer characteristics reflect the officer(s) engaged in the use of force. For incidents involving multiple officers using force, officers' characteristics were averaged. Officer education was not electronically available for officers involved in use of force incidents, and therefore is not included in the model.

[17] Of the TPD organizational units (i.e., divisions, squads, and beats), the squad was chosen as the most appropriate and informative for examining contextual level. All variables were examined in multivariate models, but only the percent population aged 18-24 and the violent crime rate were included in the final analyses due to issues associated with multicollinearity.

[18] Calls for service within each squad were used based on their priority level defined by the TPD. This scale ranges from 0 to 9 with lower numbers indicating more serious calls for service, which allowed for creating an average call for service priority level for each squad.

- o Violent crime[19]
- o Census Variables[20]
  - ▪ Population
  - ▪ Percent population aged 18-24
  - ▪ Percent Black residential population
  - ▪ Percent Unemployment
  - ▪ Percent Poverty (population below poverty line)
  - ▪ Residential mobility (Percent population living in same house for at least one year)

Narrative Use of Force Data - coded

The final data source explored for this research were the officer narrative descriptions of each use of force incident. In Tulsa, the narratives are written by the officer who engaged in the use of force. Every available use of force narrative was reviewed and coded based on a pre-defined coding structure developed by the research team. This coding structure was loosely based on prior research by Hickman and colleagues (2015) and recently employed by the U.S. Department of Justice, Office of Community Oriented Policing Services research team in the San Francisco Police Department Collaborative Reform analysis.

The key and substantive contribution of this approach is the ability to trace the incident through a series of time-ordered actions in order to understand the nature of how these incidents unfolded and how actions changed during the course of the interaction. Such an approach is unique and offers an ability to dissect the incident into its component parts and understand the sequential processes (i.e., action-reaction) that occurred between civilians and officers. Key variables of interest include the types of force used by the officer(s), the level of effectiveness when a weapon was used, and the levels of resistance offered by the civilian(s).

Initially, a small number of narratives (e.g., 10) were used as a pilot test to specify the processes used to code the narratives. This involved several independent assessments of the test narratives to refine and finalize the coding structure. Once the coding instrument was finalized, each narrative was coded based on the actions of the officer, civilian, or canine. Every action by one of these three subjects was coded using the structure summarized in Table 2 (see above). Moreover, each action taken was attributed to a specific target, and actions were coded in the order they occurred as described in the narrative. If actions occurred simultaneously by more

---

[19] Crime incidents were categorized into a violent crime category (i.e., aggravated assault, murder, rape, and assault). The counts of these incidents over a two-year period (i.e., 2016-17) were averaged and divided by the total population in the squad based on the most recent Census estimates. This resulted in a violent crime rate per 100,000 civilians in each squad.

[20] Census measures were calculated at the squad through a process of summing all Census tracts within each squad. In the case of a squad bisecting a Census tract, the proportion of surface area within the squad was calculated and the proportionate amount of the variable of interest was appended to the squad.

than one officer or civilian at different levels of force or resistance, or an officer and civilian engaged in actions simultaneously, the actions were coded sequentially in the order in which they were described in the narrative. Importantly, if multiple levels of resistance were offered by the same civilian at the same time, only the highest level of resistance offered by that civilian was coded. Similarly, if multiple levels of force were used by the same officer at the same time, only the highest level of force by that officer was coded. Weapon use by officers or civilians was also coded to indicate the specific type of weapon (e.g., a firearm, TASER, etc.). In addition, the number of times the weapon was used/deployed/fired was coded. If a range was provided (fired 6-10 rounds), the highest number in the range was coded. Finally, the effectiveness of a police canine or police weapon was coded on a three-level ordinal scale ranging from ineffective (i.e., weapon had little to no effect on resistance or compliance by civilian), to partially effective (i.e., weapon produced noticeable reduction in resistance by civilian but did not end resistance and/or resulted in only partial compliance), to completely effective (i.e., weapon ended all resistance and/or produced total or nearly total compliance by civilian).

This methodology resulted in the coding of 713 use of force incident narratives from Tulsa. Analyses of the coded narratives is in process, and findings from these analyses will be reported in a separate report scheduled for delivery in spring 2020.

Analysis Plan

The analytic plan allows for a scientific assessment of whether incident, civilian, officer, and/or contextual characteristics predict the use of force during an arrest, and, if those factors interact to produce undesirable outcomes such as higher levels of force and/or injuries to officers and civilians. Initially, a data audit was undertaken to assess the quality of the data, primarily focusing on the amount of missing data across the variables of interest. This is a critical initial step to both understand and finalize the data prior to data analyses. Thereafter, descriptive statistics were produced to summarize the frequency and range of all variables within the datasets. Frequencies, percentages, means, and standard deviations were used to describe the data. In the bivariate analyses, the dependent variables of force used during arrests and level of force (including a force factor) were compared against the primary independent variables grouped by incident, civilian, officer, and contextual characteristics. Importantly, bivariate analyses do not offer conclusive evidence regarding the research questions, but they do offer an initial assessment of relationships between individual variables and the outcomes of interest; they are a foundational step required for the final analytic stage, multivariate modeling.

The primary analytic approach to addressing the research question involved multivariate modeling. Multivariate analysis is a key technique for observing the effects of each independent variable (Hanushek & Jackson, 1977) by identifying the impact of a single variable on a dependent variable while considering the effect of all other variables simultaneously.

Importantly, the arrest and use of force data included variables that cross units of analysis (i.e., nested data), and the use of multilevel modeling was considered. For example, the prime unit of analysis is an arrest, but potential predictors exist at the incident (Level 1), officer (Level 2), and contextual (Level 3) levels. Practically, a single officer may conduct more than a single arrest, and multiple arrests occur within any single contextual unit (i.e., a squad). In sum, arrest incidents are nested within officers which are nested within larger, contextual units. A review of these data indicated that multilevel modeling was unnecessary/impractical for these data for a number of reasons. The infrequent number of force incidents among the arrests rendered a limited amount of variation on the dependent variable across these higher unit of aggregation (i.e., officers and the squad). For the use of force incidents, this problem was heightened by the limited variation in injury and levels of force. Given these restrictions, logistic and linear regression models with robust standard errors were estimated. For the arrest data examining use of force, logistic regression with robust standard errors was implemented. This modeling approach was also used for identifying predictors of civilian and officer injury. The model examining the force factor was estimated using linear regression with robust errors given the metric measurement of the dependent variable. The use of robust standard errors provides a more conservative test of relationships between the independent variables and the dependent variables given the nested nature of these data.

For the arrest and use of force models, predicted probabilities were estimated to indicate the probability of an outcome occurring when variables are at their average or vary based on a change in values of certain independent variables (Long & Mustillo, 2017). The regression coefficients in binary logistic regression are not expressed as the outcome's probability. Generally, conclusions incorporating probabilities are more useful than conclusions about the similarity of regression coefficients in the binary regression model because regression coefficients do not indicate the substantive size of an effect. The advantage of a predicted probability is that the size of the effect depends on the values of other variables in the model which allows for more informative, although more complex, conclusions. In contrast, regression coefficients do not depend on the values of other variables in the model and simply provide information about the effects of a predictor variable on an outcome independent of the effects of the other variables. Section IV provides the results of the descriptive, bivariate, and multivariate analyses as well as the predicted probabilities of the arrest and use of force data for TPD.

IV.   FINDINGS

Arrest Data
  Descriptive and bivariate statistics

The analyses included 31,950 arrests made by the TPD between January 1, 2016 and June 30, 2018. Of these arrests, officers used force in approximately 551 arrests (1.7%).[21] Of the arrest incidents, 86.4% involved lesser offenses (level 3 seriousness[22]). The Gilcrease division led the agency in the number of arrests made (43.2%), followed by Mingo Valley (29.4%). The average age of civilians who were arrested during the time period was 33.3 years ($SD = 11.5$). Most arrests included civilians who were male (72.8%) and who were White (54.7%). For officers making arrests, the average age was 36.9 years ($SD = 8.2$); they had an average of 8.1 years of service ($SD = 8.2$). The majority of arrests involved only male officers (88.5%) and involved only White officers (74.7%). In 1.3% of arrests, the arresting officer was assigned to the canine unit. Table 3 summarizes these variables and Table 10 in the Appendix reports additional descriptive statistics (e.g., month, day of the week, and organizational beat).

---

[21] This percentage reflects the number of reported use of force cases (n=551) that could be matched to an arrest in the arrest database with no missing data. There were a total of 713 use of force cases reported during the study period. For analyses that relied solely on use of force cases and were not matched to arrests, 71 cases were removed because of missing data, leaving 642 UOF cases available for analysis.

[22] The NCIC code supplied in the TRACIS data was re-categorized into three groups based on the ICE Criminal Offense Levels. Level 1 includes the most serious offenses including aggravated assaults, burglaries, etc.; level 2 include offenses such as embezzlement, extortion, etc.; level 3 reflects all other lesser offenses. For each arrest, the most serious level was retained which is similar to the application of the hierarchy rule in the UCR data.

Table 3: Descriptive Statistics I – All Arrests (N=31,950)

	% or Mean	SD	Min.	Max.
Dependent Variable				
Use of force	1.7%	--	0.00	1.00
Independent Variables				
Incident Characteristics				
Year				
2016 (Jan-Dec)	40.8%	--	0.00	1.00
2017 (Jan-Dec)	38.7%	--	0.00	1.00
2018 (Jan-Jun)	20.4%	--	0.00	1.00
Weekend	29.0%	--	0.00	1.00
Nighttime	52.0%	--	0.00	1.00
Offense seriousness				
Level 1	7.7%	--	0.00	1.00
Level 2	5.9%	--	0.00	1.00
Level 3	86.4%	--	0.00	1.00
Division				
Gilcrease	43.2%	--	0.00	1.00
Mingo Valley	29.4%	--	0.00	1.00
Riverside	27.4%	--	0.00	1.00
Squad				
Adam	9.6%	--	0.00	1.00
Baker	23.3%	--	0.00	1.00
Charlie	10.3%	--	0.00	1.00
David	15.0%	--	0.00	1.00
Edward	9.1%	--	0.00	1.00
Frank	5.3%	--	0.00	1.00
George	10.0%	--	0.00	1.00
Henry	7.8%	--	0.00	1.00
Ida	9.6%	--	0.00	1.00
Civilian Characteristics				
Average age	33.3	11.5	1.00	85.00
Adult (aged 19+)	93.0%	--	0.00	1.00
Male	72.8%	--	0.00	1.00
Female	27.2%	--	0.00	1.00
White	54.7%	--	0.00	1.00
Black	34.2%	--	0.00	1.00
Hispanic	4.7%	--	0.00	1.00
Asian	0.6%	--	0.00	1.00
Native American	5.8%	--	0.00	1.00
Young, Black, Male	7.7%	--	0.00	1.00
Officer Characteristics				
Average age	36.9	8.7	20.00	67.00
Length of service	8.1	8.2	0.00	38.00

Male only	88.5%	--	0.00	1.00
Female only	11.4%	--	0.00	1.00
Mixed gender	0.1%	--	0.00	1.00
White only	74.7%	--	0.00	1.00
Black only	8.0%	--	0.00	1.00
Hispanic only	5.0%	--	0.00	1.00
Asian only	1.1%	--	0.00	1.00
Native American only	10.6%	--	0.00	1.00
Other race/ethnicity only	0.3%	--	0.00	1.00
Multiple race/ethnicity officers	0.3%	--	0.00	1.00
Rank				
Police officer	95.0%	--	0.00	1.00
Sergeant	1.2%	--	0.00	1.00
Corporal	3.6%	--	0.00	1.00
Major	0.0%	--	0.00	1.00
Captain	0.0%	--	0.00	1.00
Mixed rank officers	0.2%	--	0.00	1.00
Assignment: Canine	1.3%	--	0.00	1.00
Contextual Characteristics (Squad, N=9)				
Calls for service (Priority Level 0-9)	3.8	0.1	3.63	3.96
Violent crime rate	1,226.3	386.9	459.58	1,915.91
Concentrated disadvantage	0.0	1.0	-1.42	2.01
% Population 18-24 Years of Age	9.4	0.9	7.74	10.90

Concentrated disadvantage is a cumulative measure of the percentage of the population that is non-White, below the poverty line, the unemployment rate, and female-headed households.

Examining the bivariate relationships between the independent variables and use of force is another approach to identifying relationships between these variables. For example, Table 4 reveals that force was used against males about three times more often than against females during arrests. In other words, of the arrests involving males, 2.1% of those incidents resulted in use of force; conversely, of the arrests involving females, only 0.7% of those incidents resulted in use of force. Force rates by race/ethnicity were relatively similar; White civilians were the subjects of force in 1.7% of arrests, Blacks 1.8%, Hispanics 2.0%, Asians 2.2%, and Native Americans 1.4%. Young, Black males (18 and under) had forced used against them in 1.9% of arrests. White officers used force more frequently (1.6%) than Black officers (0.6%).

Table 4 also summarizes the bivariate relationships between other incident and officer characteristics and use of force occurrence. For example, use of force was most frequently used in incidents with lower levels of seriousness (e.g., Level 2, 2.5% and Level 3, 1.8%). Organizationally, the rates of force were relatively equal across districts, but were more prevalent in Adam and Charlie squads and less frequent in Baker and Ida squads. Finally, canine officers were more likely to be involved in incidents that included force compared to other organizational units.

Table 4:IV Bivariate Analysis - Arrests & Force (N=31,950)

	N	No Force	Force
Overall Force	31,950	98.3%	1.7%
Incident Characteristics			
Weekend	9,264	98.4%	1.6%
Nighttime	16,605	98.3%	1.7%
Offense seriousness			
Level 1	2,446	99.3%	0.7%
Level 2	1,897	97.5%	2.5%
Level 3	27,607	98.2%	1.8%
Division			
Gilcrease	13,799	98.3%	1.7%
Mingo Valley	9,404	98.1%	1.9%
Riverside	8,747	98.4%	1.6%
Squad			
Adam	3,081	97.3%	2.7%
Baker	7,439	99.2%	0.8%
Charlie	3,279	97.4%	2.6%
David	4,793	97.9%	2.1%
Edward	2,904	98.1%	1.9%
Frank	1,707	98.6%	1.4%
George	3,185	98.0%	2.0%
Henry	2,488	98.3%	1.7%
Ida	3,074	98.8%	1.2%
Civilian Characteristics			
Average age	31,950	33.3	32.2
Adult (19+)	29,704	98.3%	1.7%
Male	23,254	97.9%	2.1%
Female	8,696	99.3%	0.7%
White	17,474	98.3%	1.7%
Black	10,938	98.2%	1.8%
Hispanic	1,492	98.0%	2.0%
Asian	181	97.8%	2.2%
Native American	1,865	98.6%	1.4%
Young, Black, Male	2,476	98.1%	1.9%
Officer Characteristics			
Average age	31,950	36.8	38.3
Average length of service	31,950	8.1	10.9
Male only	28,291	98.3%	1.7%
Female only	3,628	99.3%	0.7%
Mixed gender	31	0.0%	100.0%
White only	23,858	98.4%	1.6%
Black only	2,546	99.4%	0.6%
Hispanic only	1,613	98.4%	1.6%
Asian only	341	97.7%	2.3%
Native American only	3,396	99.0%	1.0%
Other race/ethnicity only	103	100.0%	0.0%
Mixed race/ethnicity	93	0.0%	100.0%

Rank			
Police officer	30,347	98.6%	1.4%
Sergeant	397	88.9%	11.1%
Corporal	1,179	94.7%	5.4%
Major	11	100.0%	0.0%
Captain	15	80.0%	20.0%
Assignment: Canine	416	63.5%	36.5%

Multivariate analyses

While bivariate analyses can offer an initial indication of statistical relationships, multivariate analyses are the appropriate technique from which to draw conclusions. Multivariate analyses revealed that force was less likely to occur during arrests for more serious offenses (e.g., Level 1) compared to less serious offenses (Level 3). Younger civilians were slightly more likely to have force used against them, and male civilians were three times more likely than female civilians to have force used against them during arrests. Importantly, the **race of the suspect was NOT a statistically significant predictor of the use of force after controlling for other factors.** Black, Hispanic, Native American, and Asian civilians were no more or less likely to have force used against them during arrest relative to White civilians under the same circumstances. Young, Black males, in particular, were actually less likely to have force used against them relative to any other civilian group (e.g., age, gender, and race/ethnicity).

Officers with more experience were slightly more likely to use force than officers with less experience. Black officers were less likely to use force than White officers, but there were no differences in the force rates of Hispanic, Asian, or Native American officers compared to White officers. There also were no differences in the rates of force used between male and female officers. Patrol officers were less likely to use force than supervising officers. The Canine unit was also significantly more likely to use force than other assignments, and this was by far the most impactful variable in the model. The predicted probability of use of force during an arrest where all included measures were set to their average was 0.3%. **When the canine unit was involved, the predicted probability of the use of force during an arrest was 14.8% when all other measures were held at their average.** Finally, community characteristics such as the seriousness of calls for service, the violent crime rate, and the percentage of young people living in a geographic area covered by a TPD squad had no effect on the likelihood of force used during arrests. Table 5 summarizes all results from this model.

Table 5: Logistic Regression of Force in Arrests (N=31,950)

	B	Robust SE	OR
Intercept	-9.40	6.56	--
Incident Characteristics			
Weekend	0.07	0.11	--
Nighttime	0.23	0.17	--
Offense seriousness			
Level 1	-0.98***	0.23	0.37
Level 2	0.04	0.19	--
Civilian Characteristics			
Average age	-0.01**	0.00	0.99
Male	1.15***	0.10	3.15
Black	0.20	0.14	--
Hispanic	0.00	0.16	--
Asian	0.12	0.39	--
Native American	-0.07	0.12	--
Young, Black, Male	-0.57**	0.21	0.57
Officer Characteristics			
Length of service	0.04***	0.01	1.04
Male	-0.25	0.15	--
Black	-0.65***	0.18	0.52
Hispanic	0.33	0.25	--
Asian	0.26	0.24	--
Native American	-0.39	0.37	--
Rank: Police Officer	-1.74***	0.15	0.17
Assignment: Canine	3.85***	0.44	49.13
Contextual Characteristics (Squad, N=9)			
Calls for service (Priority Level 0-9)	1.49	1.75	--
Concentrated disadvantage	0.28	0.15	--
% Population 18-24 Years of Age	0.02	0.11	--
Explained Variance		**20.1**	

***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$

Reference categories: No force, NCIC Level 3, Female civilian, White civilian, Female officer, White officer, and officers with a higher rank than police officer. Arrests involving officers of mixed genders, officers of other race/ethnicity, and officers of mixed race/ethnicity were excluded by the model estimation process. Officer age was dropped due to multicollinearity with officer length of service. Significance levels are based on robust standard errors.

NOTE: Concentrated disadvantage is a cumulative measure of the percentage of the population that is non-White, below the poverty line, the unemployment rate, and female-headed households. Models were also tested with the violent crime rate, but concentrated disadvantage and the violent crime rate are highly correlated and could not be included in the same model. Models were also tested with civilian age dichotomized into juvenile vs. adults, but the results were substantively unchanged.

Use of Force Data (Incidents)

Analyses were also conducted on the use of force incidents independent of whether they were connected to an arrest or not. Originally, 713 use of force cases were extracted from the Blue Team database. A number of these incidents contained missing information on variables of interest, which resulted in 642 use of force incidents available for analyses. Please see the Appendix (Table 11) for a summary of missing data.

Descriptive and bivariate statistics

Descriptive and bivariate analyses reveal the following patterns within the use of force incidents. With respect to the dependent variables, civilians averaged a value of four on an 11-point scale of resistance, while officers averaged a value of nine on a 13-point scale.[23] Civilians experienced injuries in 54% of all use of force incidents, while officers experienced injuries in 12% of those incidents. Finally, the force factor scale, which compares the level of civilian resistance to officer use of force by collapsing the independent scales to a comparable six-point scale, reveals a nearly equal use of force by officers compared to civilian resistance (e.g., 0.36 on a scale from -4.0 to 3.0).

Roughly a quarter of these force incidents occurred on the weekend (e.g., 26.8%), while a slight majority occurred between 7PM and 7AM (e.g., 52.2%). Also, over 85% of the incidents resulted in an arrest, which is supported by the previous analyses of the arrest data.

Descriptive statistics for civilians indicate that the average age of civilians in use of force incidents was 32.8 years (*SD* = 11.0), with a majority of these incidents involving adults (91.0%). A majority of incidents occurred with male civilians only (88.6%) and occurred with White civilians only (52.3%). Less than five percent of civilians involved in these incidents possessed significant criminal histories (e.g., Level 1 = 3.4%). Finally, less than 10 percent of all civilians were young, Black males (e.g., 8.6%).

Officers involved in these incidents were drawn primarily from the Support (28.3%) and Gilcrease (27.9%) Divisions. Related, the canine unit was involved in 27.9% of all the use of force incidents, which was almost three times higher than the next highest squad (Baker) at 9.7% of force cases reported. Adam and Charlie squads accounted for 9% and 8.1% of force cases respectively. The most common rank was a patrol officer (79.0%), the average length of service for officers involved in use of force incidents was 11.9 years, and the average officer age was 28.9 years. Male officers were most commonly involved in the use of force (91.4%), and force incidents most frequently involved only White officers (71.5%). Officers most frequently used a TASER (e.g., 32.1%) or a canine (e.g., 28.3%) in force incidents, while firearms were one of the

---

[23] Please see Table 2 for a comprehensive description of the coding instrument.

31

least common options employed (e.g., 4.4%). Table 6 summarizes descriptive data for the use of force incidents; Table 12 in the Appendix summarizes additional incident characteristics (e.g., year, month, day of week).

Table 6: Descriptive Statistics I - Use of Force Incidents (n=642)

	% or Mean	SD	Min.	Max.
Dependent Variable				
Civilian Resistance – Average	4.2	1.6	1.00	11.00
Civilian Resistance – Maximum	5.6	2.2	1.00	11.00
Civilian Injury	54.0%	--	0.00	1.00
Officer Force – Average	9.6	2.5	1.00	13.00
Officer Force – Maximum	10.3	2.4	1.00	13.00
Officer Injury	12.0%	--	0.00	1.00
Force Factor (6 category scale)[24]	0.4	1.2	-4.00	3.00
Independent Variables				
Incident Characteristics				
Weekend	26.8%	--	0.00	1.00
Nighttime	52.2%	--	0.00	1.00
Arrest (Based on Blue Team)	85.2%	--	0.00	1.00
Civilian Characteristics				
Average age	32.8	11.0	12.00	73.00
Adult (aged 19+)	91.0%	--	0.00	1.00
Male Only	88.6%	--	0.00	1.00
Female Only	10.0%	--	0.00	1.00
Mixed Gender	1.4%	--	0.00	1.00
White Only	52.3%	--	0.00	1.00
Black Only	35.2%	--	0.00	1.00
Hispanic Only	8.6%	--	0.00	1.00
Asian Only	0.5%	--	0.00	1.00
Native American Only	2.6%	--	0.00	1.00
Other Race/Ethnicity Only	0.3%	--	0.00	1.00
Mixed Race/Ethnicity	0.5%	--	0.00	1.00
Criminal History				
Level 1	3.4	4.3	0.00	28.00
Level 2	2.9	3.4	0.00	20.00
Level 3	28.2	40.9	0.00	335.00
Total	34.4	45.4	0.00	349.00
Young, Black Male	8.6%	--	0.00	1.00
Officer Characteristics				
Organizational Unit				
Detective Division	2.2%	--	0.00	1.00
Gilcrease Division	27.9%	--	0.00	1.00

---

[24] Based on Terrill et al., (2003) in PQ.

Mingo Valley Division	17.1%	--	0.00	1.00
Riverside Division	16.2%	--	0.00	1.00
Special Investigations	7.8%	--	0.00	1.00
Support Division	28.3%	--	0.00	1.00
Training Division	0.5%	--	0.00	1.00
Squad				
Adam	9.0%	--	0.00	1.00
Baker	9.7%	--	0.00	1.00
Charlie	7.3%	--	0.00	1.00
David	8.1%	--	0.00	1.00
Edward	5.8%	--	0.00	1.00
Frank	2.5%	--	0.00	1.00
George	4.8%	--	0.00	1.00
Henry	7.2%	--	0.00	1.00
Ida	3.7%	--	0.00	1.00
Gang Unit	4.0%	--	0.00	1.00
Canine	27.9%	--	0.00	1.00
Vice/Narcotics	3.6%	--	0.00	1.00
Warrants	1.4%	--	0.00	1.00
Miscellaneous (Traffic, Investigations, etc.)	5.0%	--	0.00	1.00
Rank				
Police officer	79.0%	--	0.00	1.00
Sergeant	6.4%	--	0.00	1.00
Corporal	5.9%	--	0.00	1.00
Mixed rank officers	8.7%	--	0.00	1.00
Length of service	11.9	7.6	1.00	35.00
Average age	38.9	7.5	23.5	63.00
Male Only	91.4%	--	0.00	1.00
Female Only	4.0%	--	0.00	1.00
Mixed gender	4.5%	--	0.00	1.00
White Only	71.5%	--	0.00	1.00
Black Only	2.6%	--	0.00	1.00
Hispanic Only	4.8%	--	0.00	1.00
Asian Only	1.6%	--	0.00	1.00
Native American Only	7.0%	--	0.00	1.00
Other race/ethnicity Only	0.0%	--	0.00	1.00
Multiple race/ethnicity officers	12.5%	--	0.00	1.00
Type of force				
Physical Control	5.0%	--	0.00	1.00
Hard Hands	11.4%	--	0.00	1.00
Pepper Spray	16.8%	--	0.00	1.00
TASER	32.1%	--	0.00	1.00
Baton	1.1%	--	0.00	1.00
Canine	28.3%	--	0.00	1.00

Firearm	4.4%	--	0.00	1.00
Other	1.0%	--	0.00	1.00
Contextual Characteristics (Squad, N=9)				
Calls for service (Priority Level 0-9)	3.75	0.10	3.63	3.96
Violent crime rate	1,281.86	399.65	459.58	1,915.91
Concentrated Disadvantage	0.00	1.00	-1.58	1.6
% Population 18-24 Years of Age	9.56	0.91	7.78	10.90

Concentrated disadvantage is a cumulative measure of the percentage of the population that is non-White, below the poverty line, the unemployment rate, and female-headed households.

Bivariate analyses were also estimated for civilian injury, officer injury, and the force factor. Civilian injury occurred in 54.0% of all use of force incidents, and the rate of injury did vary across several incident, civilian, and officer characteristics. Of note, rates of civilian injury were much lower when using pepper spray or a TASER; in contrast, civilian injury rates were elevated when the officer used physical control, a baton, a canine, or a firearm. Officer injury occurred in 11.8% of all use of force incidents and varied across several incident, civilian, and officer characteristics. Of note, officer injury was more prevalent when hard hands (32.9%), physical control (15.6%), or a TASER (17.5%) were used. Finally, the average force factor was slightly above zero (0.36) indicating that officers, on average, used slightly more force relative to civilian resistance in use of force incidents. This comparison measure varied across incident, civilian, and officer characteristics. Please see Tables 13-15 in the Appendix for a comprehensive summary of all bivariate relationships.

Multivariate analyses – civilian injuries

The strongest predictors of civilian injuries were the types of force used by police (see Table 7 below). The odds of injury to a civilian increased more than five-fold when officers used physical control tactics compared to hard-hand tactics (odds ratio = 5.87), while the likelihood of civilian injury went down significantly when officers used pepper spray compared to hard-hand control (odds ratio = 0.39). Compared to hard-hand tactics, the use of a TASER or a baton neither increased nor decreased the odds of civilian injury. However, the use of a canine was significantly more likely to produce civilian injury than hard-hand tactics (odds ratio = 62.05), and use of a firearm increased the likelihood of civilian injury roughly five times compared to hard-hand tactics. Other factors associated with civilian injury include a slightly elevated risk of injury among older civilians, Native American civilians, and when the officer involved held the rank of police officer. Conversely, incidents involving female civilians and those involving only Native American officers reduced the likelihood of civilian injury. Finally, civilian injuries varied slightly by the level of concentrated disadvantage and the age of the population.

The predicted probability of civilian injury during a use of force incident where all included measures were set to their average was 66.4%. In use of force cases with only Native American civilians, the predicted probability of civilian injury was 86.0% when all other measures were at

their average. In use of force incidents involving a canine, the predicted probability of civilian injury was 97.0%, incidents involving a firearm produced a predicted probability of 90.0%, and in incidents when physical control techniques were used the predicted probability was 91.0%.

Table 7: Logistic Regression of Civilian and Officer Injury (N=642)

	Civilian Injury			Officer Injury		
	B	RSE	O.R.	B	RSE	O.R.
Intercept	-4.45	2.59	--	1.96	9.16	--
Incident Characteristics						
Weekend	0.20	0.23	--	-0.45	0.35	--
Nighttime	-0.03	0.22	--	0.51	0.42	--
Civilian Characteristics						
Average age	0.02**	0.01	1.02	-0.02*	0.01	0.98
Female Only	-0.82**	0.30	0.44	0.33	0.55	--
Mixed Gender	-1.18	0.88	--	--	--	--
Black Only	-0.39	0.30	--	0.08	0.44	--
Hispanic Only	0.29	0.42	--	-0.72	0.65	--
Asian Only	-1.29	1.05	--	--	--	--
Native American Only	1.28**	0.46	3.58	-1.79	0.95	--
Mixed Race/Ethnicity	-0.82	0.97	--	--	--	--
Total Criminal History	-0.00	0.00	--	-0.00	0.00	--
Resistance Level	0.08	0.05	--	0.30***	0.06	1.36
Young, Black Male	-0.69	0.39	--	-0.02	0.68	--
Officer Characteristics						
Length of service	-0.03	0.02	--	0.03	0.03	--
Female Only	-0.36	0.43	--	0.90	0.64	--
Mixed Gender	-0.34	0.61	--	0.22	0.38	--
Black Only	-0.08	0.33	--	-0.80	1.21	--
Hispanic Only	-0.77	0.48	--	0.01	0.72	--
Asian Only	-0.23	0.76	--	0.25	1.18	--
Native American Only	-0.70*	0.28	0.50	-0.76	0.55	--
Mixed race/ethnicity	-0.14	0.27	--	0.41	0.33	--
Rank: Police Officer	0.29*	0.14	1.33	-0.76*	0.33	0.47
Type of Force						
Physical Control	1.72***	0.35	5.60	-0.89	0.62	--
Pepper Spray	-0.96**	0.33	0.39	-1.80***	0.46	0.17
TASER	-0.48	0.31	--	-0.90*	0.38	0.41
Baton	1.20	0.68	--	--	--	--
Canine	4.13***	0.42	62.05	-3.15**	0.95	0.04
Firearm	1.62*	0.66	5.08	-2.90***	0.68	0.05
Contextual Characteristics (N=9)						
Calls for service	0.45	0.67	--	-0.32	2.26	--
Concentrated disadvantage	-0.14*	0.06	0.87	0.15	0.26	--
% Population 18-24 Years	0.16*	0.06	1.17	-0.27*	0.14	0.76
Explained Variance		**36.6**			**21.7**	

***p≤0.001, **p≤0.01, *p≤0.05

Reference categories: Male civilian only, White civilian only, Male officer only, White officer only, officers with a higher rank than police officer, and hard hands (type of force). Officer age was dropped due to multicollinearity with officer length of service. Significance levels was based on robust standard errors.

NOTE: Concentrated disadvantage is a cumulative measure of the percentage of the population that is non-White, below the poverty line, the unemployment rate, and female-headed households. Models were also tested with the violent crime rate, but concentrated disadvantage and the violent crime rate are highly correlated and could not be added in the same model. Models were also tested with civilian age dichotomized into juvenile vs. adults, but the results were substantively unchanged.

Multivariate analyses – officer injuries

Table 7 also reports the predictors of officer injury. Younger civilians and those with higher levels of resistance were positively associated with injuries to officers. Conversely, incidents with police officers were less likely to result in injuries to the officers than incidents with officers of higher rank. The type or force tactic used by officers also was related to injuries to officers. Much like the findings for civilian injuries, the odds of officers being injured were significantly reduced when pepper spray (odds ratio = 0.17) or a TASER (odds ratio = 0.41) was used compared to hard-hand control (striking) tactics. The use of canines (odds ratio = 0.04) and firearms (odds ratio = 0.05) also were negatively associated with officer injuries. Squads with higher percentage of younger residents (18-24 years of age) were less likely to experience officer injuries (odds ratio = 0.76). For use of force incidents, the predicted probability of officer injury where all measures were held at their average was 50.6%. In incidents when a TASER was used, the predicted probability of officer injury was 35.7% and the predicted probability of injury was 18.4% in incidents involving pepper spray. Finally, the predicted probability of officer injury in incidents involving a canine was 9.6%, and it was 6.0% in incidents involving a firearm.

Multivariate analyses – force factor

Table 8 reports the findings from the force factor analysis. Incidents involving Native American civilians were characterized by lower levels of force compared to resistance, and civilians with a previous criminal history were associated with a positive force factor (i.e., higher level of police force compared to civilian resistance).

Table 8: Linear Regression of Force Factor (N=634)

	B	RSE
Intercept	0.97	1.74
Incident Characteristics		
Weekend	-0.04	0.10
Nighttime	0.09	0.07
Civilian Characteristics		
Average age	-0.01	0.00
Female Only	-0.01	0.12
Mixed Gender	0.02	0.15
Black Only	-0.01	0.09
Hispanic Only	-0.04	0.13
Native American Only	-0.80**	0.18
Total Criminal History	0.00*	0.00
Young, Black Male	0.05	0.22
Officer Characteristics		
Length of service	0.01	0.01
Female Only	0.27	0.27
Mixed Gender	-0.19	0.37
Black Only	-0.62	0.41
Hispanic Only	0.30	0.22
Asian Only	-0.33	0.31
Native American Only	-0.20	0.19
Mixed race/ethnicity	-0.35	0.17
Rank: Police Officer	-0.12	0.09
Contextual Characteristics (Squad, N=9)		
Calls for service	-0.31	0.41
Concentrated disadvantage	0.00	0.04
% Population 18-24 Years of Age	0.08	0.04
Explained variance	**6.7**	

***p≤0.001, **p≤0.01, *p≤0.05

Reference categories: Male civilian only, White civilian only, Male officer only, White officer only, and officers with a higher rank than police officer. Officer age was dropped due to multicollinearity with officer length of service. Significance levels was based on robust standard errors. Eight cases were dropped due to low representation of Asian, and Mixed race/ethnicity civilians.

NOTE: Concentrated disadvantage is a cumulative measure of the percentage of the population that is non-White, below the poverty line, the unemployment rate, and female-headed households. Models were also tested with the violent crime rate, but concentrated disadvantage and the violent crime rate are highly correlated and could not be added in the same model. Models were also tested with civilian age dichotomized into juvenile vs. adults, but the results were substantively unchanged.

V.   CONCLUSIONS & RECOMMENDATIONS

Summary

This research project analyzed administrative data provided by the Tulsa Police Department (TPD) from January 1, 2016 through June 30, 2018 for the purpose of identifying patterns and trends in TPD arrests, use of force, and related injuries to officers and civilians. Data came primarily from the TPD records management system and the Blue Team use of force database. These data were supplemented with information on TPD officers (age, race, rank, years of service), calls for service, and community-level characteristics (crime and demographic indicators) to develop a comprehensive set of data that served as the basis for a series of descriptive, bivariate, and multivariate analyses.

During the period covered by this study, the TPD made approximately 32,000 arrests and used force in approximately 1.7% of them.[25] This relatively low rate of force is partially explained by the relatively high reporting threshold in TPD policy for reporting force(see Appendix B for the TPD use of force policy details).[26] The TPD does not capture in its Blue Team use of force data system low levels of force (pushing, pulling, wrestling) that do not result in injury. Prior research suggests that this type of low-level force makes up the majority (70-80%) of force used by the police (Alpert & Dunham, 1999). Unless force of this type produces an injury, it is not captured in Blue Team and was not available to the research team for analysis.

The data revealed that most TPD use of force occurred during arrests for less serious crimes, which also made up the bulk of total arrests. The Gilcrease division lead the agency in the number of arrests made, and also led the patrol divisions in the percentage of use of force cases (28%) followed by Mingo Valley (17%) and Riverside (16%). Examining force at the squad level revealed that the Canine Unit alone accounted for 28% of the force cases reported, which was almost three times higher than the next highest squad (Baker) at 9.7% of force cases reported. The average civilian against whom force was used was 33 years year old. From a purely descriptive perspective, force was used against males about three times more often than against females during arrests. Force rates by race were relatively similar; Whites were the subjects of force in 1.7% of arrests, Blacks 1.8%, Hispanics 2.0%, Asians 2.2%, and Native Americans 1.4%. Young, Black males (18 and under) had forced used against them in 1.9% of arrests. Importantly, there were no statistical differences in the frequency of force used against

---

[25] This percentage reflects the number of reported use of force cases (n=551) that could be matched to an arrest in the arrest database with no missing data. There were a total of 713 use of force cases reported during the study period. For analyses that relied solely on use of force cases, 71 cases were removed because of missing data, leaving 642 UOF cases available for analysis.

[26] Under TPD policy, force is reportable if the officer used a weapon of any kind, struck a subject with the officer's fists, feet, etc., or if an injury (or complaint of injury) occurred to either the officer or the subject of the force (TPD Policy 31-101A).

minority civilians (Black, Hispanic, Asian, Native American) compared to Whites. In fact, young, Black males were slightly less likely to have force used against them than other civilians.

Black officers were less likely to use force than White officers, but there was no difference between Hispanic, Native American, or Asian officers when compared to White officers. More experienced officers were slightly more likely to use force than less experienced officers, while male and female officers used force at about the same rate. The most important predictor of use of force in arrests was assignment to a canine unit. Community characteristics such as calls for service seriousness, violent crime rate, and the percentage of young people living in a geographic area covered by a TPD squad had no effect on the frequency of force used during arrests.

Overall, the model predicting the use of force during arrests was relatively weak, in part because suspect resistance was unavailable to be measured. In previous research, one of the most consistent findings is that civilians' resistance is the most important factor explaining whether force is used (e.g., Fridell & Lim, 2016; Gau, Mosher, & Pratt, 2010; Lawton, 2007; Stroshine & Brandl, 2019; Terrill & Mastrofski, 2002). The possible predictors that were included in the model, with the exception of officer canine assignment, civilian gender, and officer race, were either non-significant or significant but substantively weak.

Turning to injuries of officers and civilians, female civilians were less likely to be injured than males during an arrest, while Native American civilians were more likely to be injured than Whites. Other racial groups experienced injuries at statistically similar rates to Whites. Arrests made by Native American officers alone less were likely to result in civilian injury, while arrests made by those holding the rank of police officer (as compared to officers of higher rank) were somewhat more likely to result in an injury to a civilian. The type of force used by the police was associated with civilian injury; the odds of injury to a civilian increased more than five-fold when officers used physical control tactics compared to hard-hand tactics while the likelihood of civilian injury went down significantly when officers used pepper spray compared to hard-hand control. By their very nature, canine bites were significantly more likely to produce injury than any other force option. Interestingly, the odds of civilian injury associated with the use of firearms by the police were about the same as with the use of physical control tactics, and higher than hard-hand control. Given limitations in how injury data were collected by the TPD, the analysis did not examine the severity of injury associated with these force options only whether a civilian was injured or not. Finally, squad areas with higher percentages of younger residents (18-24 years of age) were more likely to experience civilian injuries, while squads operating in areas with less disadvantage also experienced more civilian injuries.

With respect to officers, the resistance level of the subject was positively associated with injuries to officers. Each level change in resistance increased the odds of an officer being injured by almost 40 percent. Conversely, arrests made by officers were about 50 percent less likely to

result in injuries to the officers than arrests made by officers of higher rank. Moreover, the type of force or force tactic used by officers also was correlated with injuries to officers. The odds of officers being injured were significantly reduced when pepper spray or a TASER was used compared to hard-hand control (striking) tactics. The use of canines and firearms also was negatively associated with officer injuries.

Analyzing force used by police relative to civilian resistance (a "Force Factor" analysis) yielded little additional information. Arrests involving Native American citizens were characterized by lower levels of force compared to resistance. Other racial or ethnic groups experienced neither higher nor lower levels of force relative to resistance compared to Whites.

Recommendations

1. Expand Use of Force Data Collection

The TPD should change its use of force reporting policy to require officers to report force any time they use *more than a firm grip* to control a civilian. Garner et al. (2018) reported that the use of weaponless tactics was documented by more than 87 percent of law enforcement agencies nationwide. Common scenarios involving compliance holds, "come-alongs," pushing, pulling, or wrestling with a subject should be captured in Blue Team and made available for subsequent analysis. This "best practice" in force reporting will provide for a better and more complete picture of force used by the TPD and will provide additional transparency to the Tulsa community. As noted above, the TPD does not mandate use of force reporting unless a police weapon is used, a K9 bite occurs, an officer strikes a subject with his/her fist, knee, etc., or an injury or complaint of injury occurs (TPD Policy 31-101A, December 2018). This relatively high threshold for reporting leaves the majority of force unreported. Previous studies have demonstrated that most force used by the police involves hands-on attempts to control resistant subjects and that these cases disproportionately result in injury (Alpert & Dunham, 1999; Smith & Alpert, 2000; Stroshine & Brandl, 2019). Consistent with these findings, the odds of civilian injury increase substantially when physical control techniques are used by TPD officers when compared to "hard-hand" (physical strikes) force tactics used by the police. Because instances of relatively low-level force are currently documented only if an injury occurs, the TPD is probably not capturing as much as 50 percent of force used by the police.

2. Improve Documentation of Force, Injuries, and Civilian Demeanor

    A. The TPD should improve the way in which it collects and documents the use of force by its officers. Every instance of reportable force should be fully documented on a TRACIS report, <u>and</u> the details of the force itself should be captured in Blue Team. Finally, the associated TRACIS number should be correctly entered in Blue Team, and the Blue Team record ID (a unique number generated from every Blue Team entry) should be

cross-referenced as a data field (not in the narrative) in TRACIS. Finally, supervisors reviewing TRACIS and Blue Team reports should routinely check that these numbers have been correctly entered by the officers completing them and should return them for correction if not. The TPD uses the Blue Team module within the IAPro software system to document force used, civilian resistance, and injuries sustained. Blue Team is a popular, "off-the-shelf" software package used by many law enforcement agencies for this purpose. TPD's instance of Blue Team allows for the entry of an associated TRACIS (incident report) number that, in theory, can be used to link a use of force report in Blue Team to the full incident report archived in TRACIS. This linkage is necessary when attempting to merge the two sets of data (use of force and TRACIS incident data) for analysis purposes. Across the time period covered by this study (Jan 2016 – Jun 2018), the TPD documented 713 cases of force used by officers in Blue Team. However, the UTSA research team was able to match only 551 cases with an associated TRACIS report, resulting in a loss of 170 UOF cases (23%) in the arrest analysis. This slippage between the two sets of data reveals weaknesses in the TPD processes for documenting force-related incidents and/or in extracting data for analysis. In some cases, TRACIS numbers were missing from the Blue Team data, and in others TRACIS numbers were missing from the arrest data provided. It appears that TPD is not entering TRACIS incident numbers into Blue Team in all cases. Alternatively, it may be entering those numbers incorrectly, thus preventing the linkage of the two sets of data using TRACIS numbers, or it may not be documenting all UOF cases represented in Blue Team on an associated TRACIS incident report. Finally, the process of extracting arrest data from TRACIS may be flawed, and some instances of force documented in Blue Team may not have generated an arrest at all. While the UTSA team could not precisely diagnose the reasons why the Blue Team and arrest data did not match in 23% of the UOF cases, data improvements are needed in documenting force on TRACIS incident reports and in Blue Team and in ensuring those data sources are linkable with TRACIS and Blue Team ID numbers.

B. TPD should investigate the possibility of customizing its instance of Blue Team to include a drop-down list of injuries from which officers could choose when documenting injuries to themselves or civilians. Alternatively, the TPD should systematize the injury categories that it uses (e.g., complaint of pain, bruise/contusion, abrasion / laceration / puncture, fracture/dislocation, etc.) in the freeform text fields available in Blue Team and train all officers and supervisors in the use of these terms. Blue Team contains data fields capturing whether the subject or the officer (or both) were injured in a UOF incident. This field is a "Yes/No" option in Blue Team. In addition, Blue Team provides text fields and body diagrams for documenting what type of injury may have occurred and where it was located on the body. These text fields are not filled out consistently or systematically by TPD officers, which limits the ability to identify within the Blue Team data the nature and severity of injuries sustained by officers and civilians. Moreover,

because these are freeform text fields, additional and time-consuming coding would be needed to transform descriptions of injuries (even if available in the data) into analyzable categories. As a result, the UTSA research team was limited to analyzing injuries as a dichotomous "Yes/No" variable. An easily accessible drop-down injury menu in Blue Team would resolve this problem.

C. The TPD should begin documenting suspected alcohol/drug use, mental health status, and the demeanor of all arrested subjects in TRACIS. Ideally, these data points would be added as drop-down fields on the "Suspect Supplemental" portion of the TRACIS report. These factors are well-documented correlates of force and resistance, but they are not systematically captured on TRACIS incident reports. Adding these fields would improve use of force analysis and may suggest avenues for improved training and intervention by the TPD among substance-involved populations or those exhibiting signs of mental illness.

3. Capture Instances When Deadly Force Could Have Been Used But Was Not

The TPD should modify its use of force data collection protocols to capture instances when, under the totality of the circumstances, deadly force was authorized by law and TPD policy but was not used. We also recommend that when an officer involved in such an event makes the initial determination that deadly force was warranted but not used, a supervisor should respond to the scene and conduct a preliminary investigation of the officer's determination, document the results of his or her investigation, and indicate concurrence or disagreement with the officer's determination. In this way, the proper inclusion of the case in the counterfactual dataset is verified and the validity of the data is enhanced. Over time, this data collection strategy will produce a reliable data source against which TPD deadly force cases can be compared. Significant concern exists among some Tulsa constituencies over the use of deadly force by the TPD and whether that force is used fairly and appropriately. Nationally, data on the use of deadly force is quite limited and almost never includes information on cases where deadly force was authorized by law and policy but where police chose not to use it. Yet these "counter-factual" cases are crucial to properly estimating rates of deadly force across populations. The use of static Census population counts of identifiable racial and ethnic groups as a benchmark for police shootings is methodologically unsound and depends upon untenable assumptions (Cesario, Johnson, Terrill, 2019; Tregle, Nix, & Alpert, 2019). Instead, researchers need an estimate of those *at risk* for deadly force to compare against the population of persons against whom deadly force was used. Risk is not evenly distributed in society but rather is dependent on criminal involvement and exposure to the police among others. Risk for deadly force is best estimated by knowing the characteristics of those who might have been shot by the police but were not. The TPD, and most other law enforcement agencies nationwide, do not systematically collect this information, but it is vital and should be routinely collected as part of a comprehensive use of force data collection, analysis, and management program.

4. Review the Training and Force Practices of the Police Canine Unit

The TPD should specifically review the training and force-related practices of its Canine Unit. Across TPD squads, the Canine Unit was responsible for 28% of force incidents analyzed in the current study. This is a surprisingly high percentage for a single unit comprised of only a small percentage of total TPD officers. Due to the inherent nature of a canine bite, the odds of civilian injury are more than *60 times* higher when a canine is used in a force-related incident compared to "hard-hand" striking tactics. Discussions with TPD command staff personnel revealed that the TPD Canine Unit regularly uses its dogs to apprehend fleeing subjects and that it deploys its dogs "off-lead" in building searches involving large structures. The TPD Use of Force policy classifies a police canine bite as "advanced force" in the same category as personal impact strikes to the head, conducted electrical weapons, and the carotid restraint hold. However, the TPD injury findings show a *dramatically* higher likelihood of civilian injury associated with a canine bite compared to other "advanced force" options (e.g., CEWs or batons), perhaps suggesting that canines are misplaced on the TPD use of force continuum and should be placed in a category just below deadly force and above other, less injurious "advanced force" options. Regardless, a key question for the TPD to consider is whether such an "advanced force" application is reasonable to apprehend *all* fleeing subjects or whether the use of a canine in those circumstances should be limited to certain types of fleeing subjects (e.g., those wanted for violent felonies or suspected to be armed). The TPD should research best practices in the use of canines nationally and benchmark its policies and practices against those standards.

5. Review Use of Force Policy and Training

The TPD should conduct a comprehensive review of its current use of force policy and training and compare it to the IACP National Consensus Policy on Use of Force, the Guiding Principles on Use of Force from the Police Executive Research Forum, and other best practices as reflected in the research and policy literature. Consistent with the requirements of TPD Procedure 31-101A, the department should continue to analyze and review its use of force activities, policies, and training to identify patterns and trends that suggest needed changes or revisions. When needed, the TPD should engage with outside research partners or consultants to assist in this review. Upon conclusion of that review, the TPD should make necessary adjustments and updates to both its policy and training. Officers should receive training regarding any updates to the policy.

VI.   REFERENCES

Alpert, G. P., & Dunham, R. (1999). The force factor: Measuring and assessing police use of force and suspect resistance. Report to the National Institute of Justice. *Use of force by police: Overview of national and local data* (October-NCJ 176330; pp. 45 – 60). Washington, DC: U.S. Department of Justice.

Alpert, G. P., & Dunham, R. G. (2010). Policy and training recommendations related to police use of CEDs: Overview of findings from a comprehensive national study. *Police Quarterly, 13*(3), 235-259.

Alpert, G. P., Dunham, R. G., & MacDonald, J. M. (2004). Interactive police-citizen encounters that result in force. *Police Quarterly, 7*(4), 475-488.

Alpert, G., & Smith, M. (1999). Police use-of-force data: Where we are and where we should be going. *Police Quarterly, 2,* 57–78.

Bayley, D. H., & Garofalo, J. (1989). The management of violence by police patrol officers. *Criminology, 27*(1), 1-26.

Bishopp, S. A., Klinger, D. A., & Morris, R. G. (2015). An examination of the effect of a policy change on police use of TASERs. *Criminal Justice Policy Review, 26*(7), 727-746.

Bolger, P. C. (2015). Just following orders: A meta-analysis of the correlates of American police officer use of force decisions. *American Journal of Criminal Justice. 40*(3), 466-492.

Bozeman, W. P., Stopyra, J. P., Klinger, D. A., Martin, B. P., Graham, D. D., Johnson, J. C., Mahoney-Tesoriero, K., & Vail, S. J. (2018). Injuries associated with police use of force. *The Journal of Trauma and Acute Care Surgery, 84*(3), 466-472.

Brandl, S. G., & Stroshine, M. S. (2013). The role of officer attributes, job characteristics, and arrest activity in explaining police use of force. *Criminal Justice Policy Review, 24*(5), 551-572.

Brandl, S. G. & Stroshine, M. S. (2017). Oleoresin capsicum spray and TASERs: A comparison of factors predicting use and effectiveness. Criminal Justice Policy Review, *28*(3), 279-306.

Castillo, E. M., Prabhakar, N., & Luu, B. (2012). Factors associated with law enforcement–related use-of-force injury. *American Journal of Emergency Medicine, 30*(4), 526-531.

Cesario, J., Johnson, D., & Terrill, W. (2019). Is there evidence of racial disparity in police use of deadly force? Analyses of officer-involved fatal shootings in 2015-16. *Social Psychological and Personality Science*, *10*, 586-595.

Chapman, C. (2012). Use of force in minority communities is related to police education, age, experience, and ethnicity. *Police Practice and Research, 13*(5), 421-436.

Correll, J., Park, B., Judd, C. M., Wittenbrink, B., Sadler, M. S., & Keesee, T. (2007). Across the thin blue line: Police officers and racial bias in the decision to shoot. *Journal of Personality and Social Psychology, 92*(6), 1006-1023.

Correll, J., Wittenbrink, B., Park, B., Judd, C. M., & Goyle, A. (2011). Dangerous enough: Moderating racial bias with contextual threat cues. *Journal of Experimental Social Psychology, 47*(1), 184-189.

Covington, M. W., Huff-Corzine, L., & Corzine, J. (2014). Battered police: Risk factors for violence against law enforcement officers. *Violence and Victims, 29*(1), 34-52.

Cox, W. T. L., Devine, P. G., Plant, E. A., & Schwartz, L. L. (2014). Toward a comprehensive understanding of officers' shooting decisions: No simple answers to this complex problem. *Basic and Applied Social Psychology, 36*(4), 356-364.

Crawford, C., & Burns, R. (1998). Predictors of the police use of force: The application of a continuum perspective in Phoenix. *Police Quarterly, 1*(4), 41-63.

Crawford, C., & Burns, R. (2008). Police use of force: Assessing the impact of time and space. *Policing & Society, 18*(3), 322-335.

Davis, E., Whyde, A., & Langton, L. (2018). *Contacts between police and the public, 2015* (NCJ 251145). Washington, DC: U. S. Department of Justice.

Donner, C. M., Maskaly, J., Piquero, A. R., & Jennings, W. G. (2017). Quick on the draw: Assessing the relationship between low self-control and officer-involved police shootings. *Police Quarterly, 20*(2), 213-234.

Donovan, K. M., Tillyer, R., & Klahm, C. F. (2018). Understanding perceptions of citizen demeanour: Using an experimental design to understand the impact of encounter and observer characteristics. *Policing and Society, 28*(4), 480-496.

Dunham, R. G., & Alpert, G. P. (2009). Officer and suspect demeanor: A qualitative analysis of change. *Police Quarterly, 12*(1), 6-21.

Engel, R. S., & Calnon, J. M. (2004a). Comparing benchmark methodologies for police-citizen contacts: Traffic stop data collection for the Pennsylvania State Police. *Police Quarterly, 7*(1), 97-125.

Engel, R. S., & Calnon, J. M. (2004b). Examining the influence of drivers' characteristics during traffic stops with police: Results from a national survey. *Justice Quarterly, 21,* 49-90.

Engel, R. S., Calnon, J. M., & Bernard, T. J. (2002). Theory and racial profiling: Shortcomings and future directions in research. *Justice Quarterly, 19(2),* 249-273.

Engel, R. S., & Silver, E. (2001). Policing mentally disordered suspects: A reexamination of the criminalization hypothesis. *Criminology, 39,* 225-252.

Engel, R. S., Sobol, J. J., & Worden, R. E. (2000). Further exploration of the demeanor hypothesis: The interaction effects of suspects' characteristics and demeanor on police behavior. *Justice Quarterly, 17*(2), 235–258.

Engel, R. S., Tillyer, R., Klahm, C. F., & Frank, J. (2012). From the officer's perspective: A multilevel examination of citizens' demeanor during traffic stops. *Justice Quarterly, 29*(5), 650-683.

Ferdik, F. V., Kaminski, R. J., Cooney, M. D., & Sevigny, E. L. (2014). The influence of agency policies on conducted energy device use and police use of lethal force. *Police Quarterly, 17*(4), 328-358.

Fridell, L. (2017). Explaining the disparity in results across studies assessing racial disparity in police use of force: A research note. *American Journal of Criminal Justice, 42,* 502-513.

Fridell, L. & Lim, H. (2016). Assessing the racial aspects of police force using the implicit- and counter-bias perspectives. *Journal of Criminal Justice, 44,* 36-48.

Friedrich, R. J. (1980). Police use of force: Individuals, situations, and organizations. *The Annals of the American Academy of Political and Social Science, 452*(1), 82-97.

Fryer, R. G. (2019). An empirical analysis of racial differences in police use of force. *Journal of Political Economy, 127*(3), 1210-1261.

Fyfe, J. J. (1980). Geographic correlates of police shooting: A microanalysis. *Journal of Research in Crime and Delinquency, 17*, 101-113.

Garner, J. H., Hickman, M. J., Malega, R. W., Maxwell, C. D. (2018). Progress toward national estimates of police use of force. *PLoS ONE, 13*(2), e0192932.

Garner, J. H., Maxwell, C. D., & Heraux, C. G. (2002). Characteristics associated with the prevalence and severity of force used by the police. *Justice Quarterly, 19*(4), 705-746.

Garner, J. H., Schade, T., Hepburn, J., & Buchanan, J. (1995). Measuring the continuum of force used by and against the police. *Criminal Justice Review, 20*(2), 146-168.

Gau, J. M., Mosher, C. & Pratt, T. C. (2010). An inquiry into the impact of suspect race on police use of TASERs. *Police Quarterly, 13*(1), 27–48.

Gill, C., Jensen, R. & Cave, B. (2018). Exploring physical force and subject resistance in police encounters with people with behavioral health issues. *Victims & Offenders, 13*(8), 1106-1131.

Hanushek, E. A. & Jackson, J. E. (1977). *Statistical methods for social scientists*. Orlando, FL: Academic Press.

Henriquez M. (1999). IACP national database project on police use of force. Report to the National Institute of Justice. *Use of force by police: Overview of national and local data* (October-NCJ 176330; pp. 19-24). Washington, DC: U.S. Department of Justice.

Hickman, M. J., Atherley, L. T., Lowery, P. G., & Alpert, J. (2015). Reliability of the force factor method in police use-of-force research. *Police Quarterly*, *18*(4), 1-29.

Hickman, M. J., Piquero, A. R. & Garner, J. H. (2008). Toward a national estimate of police use of nonlethal force. *Criminology & Public Policy, 7*(4), 563-604.

Hine, K. A., Porter, L. E., Westera, N. J., & Alpert, G. P. (2018). The understated ugly side of police-citizen encounters: Situation, suspect, officer, decision-making, and force predictors of officer injuries. *Policing and Society, 28*(6), 665-683.

Hollis, M. E. (2018). Measurement issues in police use of force: A state-of-the-art review. *Policing, 41*(6), 844-858.

Hollis, M. E., & Jennings, W. G. (2018). Racial disparities in police use-of-force: A state-of-the-art review. *Policing: An International Journal, 41*(2), 178-193.

Ingram, J. R., Terrill, W., & Paoline, E. A. (2018). Police culture and officer behavior: Application of a multilevel framework. *Criminology, 56*(4), 780-811.

Ingram, J. R., Weidner, R. R., Paoline, E. A., & Terrill, W. (2014). Supervisory influences on officers' perceptions of less lethal force policy: A multilevel analysis. *Policing: An International Journal of Police Strategies & Management, 37*(2), 355-372.

James, L., Klinger, D., & Vila, B. (2014). Racial and ethnic bias in decisions to shoot seen through a stronger lens: Experimental results from high-fidelity laboratory simulations. *Journal of Experimental Criminology, 10*(3), 323-340.

James, L., James, S., & Vila, B. (2018). Testing the impact of citizen characteristics and demeanor on police officer behavior in potentially violent encounters. *Policing: An International Journal, 41*(1), 24-40.

Jennings, W. G., Hollis, M. E., & Fernandez, A. J. (2019). Deadly force and deadly outcome: Examining the officer, suspect, and situational characteristics of officer-involved shootings. *Deviant Behavior*, doi:10.1080/01639625.2019.1596532.

Jetelina, K. K. Jennings, W. G., Bishopp, S. A., Piquero, A. R., Reingle Gonzalez, J. M. (2017). Dissecting the complexities of the relationship between police officer–civilian race/ethnicity dyads and less-than-lethal use of force. *American Journal of Public Health, 107,* 1164–1170.

Jetelina, K. K., Reingle Gonzalez, J. M., & Bishopp, S. A. (2018). Gradual escalation of use-of-force reduces police officer injury. *Injury Prevention, 24*, 35-40.

Johnson, R. R. (2011). Suspect mental disorder and police use of force. *Criminal Justice and Behavior, 38*(2), 127-145.

Kahn, K. B., & Davies, P. G. (2017). What influences shooter bias? The effects of suspect race, neighborhood, and clothing on decisions to shoot. *Journal of Social Issues, 73*(4), 723-743.

Kahn, K. B., Steele, J. S., McMahon, J. M., & Stewart, G. (2017). How suspect race affects police use of force in an interaction over time. *Law and Human Behavior, 41*(2), 117-126.

Kaminski, R. J., Digiovanni, C., & Downs, R. (2004). The use of force between the police and persons with impaired judgement. *Police Quarterly, 7*(3), 311-338.

Kaminski, R. J., Edwards, S. M., & Johnson, J. W. (1998). The deterrent effects of oleoresin capsicum on assaults against police: Testing the Velcro-effect hypothesis. *Police Quarterly, 1*(2), 1-20.

Kaminski, R. J., Engel, R. S., Rojek, J., Smith, M. R., & Alpert, G. (2015). A quantum of force: The consequences of counting routine conducted energy weapon punctures as injuries. *Justice Quarterly, 32*(4), 598-625.

Klahm, C. F., Frank, J., & Brown, R. A. (2011). Police use of force: Tales from another city. *Journal of Crime and Justice, 34*(3), 205-220.

Klahm C. F., Frank, J., & Liederbach, J. (2014). Understanding police use of force: Rethinking the link between conceptualization and measurement. *Policing: An International Journal of Police Strategies & Management, 37*(3), 558-578.

Klahm, C. F., & Tillyer, R. (2010). Understanding police use of force: A review of the evidence. *Southwest Journal of Criminal Justice, 7*(2), 214-239.

Klinger, D. A. (1995). The micro-structure of nonlethal force: Baseline data from an observational study. *Criminal Justice Review, 20,* 169-186.

Kramer, R. & Remster, B. (2018). Stop, frisk, and assault? Racial disparities in police use of force during investigatory stops. *Law & Society Review, 52,* 960-993.

Lautenschlager, R. & Omori, M. (2019). Racial threat, social (dis)organization, and the ecology of police: Towards a macro-level understanding of police use of-force in communities of color, *Justice Quarterly, 36*(6), 1050-1071.

Lawton, B. A. (2007). Levels of nonlethal force: An examination of individual, situational, and contextual factors. *Journal of Research in Crime and Delinquency, 44*(2), 163-184.

Lee, J. (2016). Police use of nonlethal force in New York City: Situational and community factors. *Policing and Society, 26*(8), 875-888.

Lee, H., Jang, H., Yun, I., Lim, H., & Tushaus, D. W. (2010). An examination of police use of force utilizing police training and neighborhood contextual factors: A multilevel analysis. *Policing: An International Journal of Police Strategies & Management, 33*(4), 681-702.

Lee, H., Vaughn, M. S., & Lim, H. (2014). The impact of neighborhood crime levels on police use of force: An examination at micro and meso levels. *Journal of Criminal Justice, 42*(6), 491-499.

Lersch, K. M., Bazley, T., Mieczkowski, T. & Childs, K. (2008). Police use of force and neighbourhood characteristics: An examination of structural disadvantage, crime, and resistance. *Policing & Society, 18*(3), 282-300.

Lim, H., & Lee, H. (2015). The effects of supervisor education and training on police use of force. *Criminal Justice Studies, 28*(4), 444-463.

Lin, Y. S., & Jones, T. R. (2010). Electronic control devices and use of force outcomes: Incidence and severity of use of force, and frequency of injuries to arrestees and police officers. *Policing: An International Journal of Police Strategies & Management, 33*(1), 152-178.

MacDonald, J. M., Kaminski, R. J., & Smith, M. R. (2009). The effect of less-lethal weapons on injuries in police use-of-force events. *American Journal of Public Health, 99*(12), 2268-2274.

McCluskey, J. D., & Terrill, W. (2005). Departmental and citizen complaints as predictors of police coercion. *Policing: An International Journal of Police Strategies & Management, 28*(3), 513-529.

McElvain, J. P., & Kposowa, A. J. (2004). Police officer characteristics and internal affairs investigations for use of force allegations. *Journal of Criminal Justice, 32*, 265-279.

Mcelvain, J. P., & Kposowa, A. J. (2008). Police officer characteristics and the likelihood of using deadly force. *Criminal Justice and Behavior, 35*(4), 505-521.

Morabito, E. V., & Doerner, W. G. (1997). Police use of less-than-lethal force: Oleoresin capsicum (OC) spray. *Policing: An International Journal of Police Strategies & Management, 20*(4), 680-697.

Morabito, M. S., & Socia, K. M. (2015). Is dangerousness a myth? Injuries and police encounters with people with mental illnesses. *Criminology & Public Policy, 14*(2), 253-276.

Morabito, M. S., Socia, K., Wik, A., & Fisher, W. (2017). The nature and extent of police use of force in encounters with people with behavioral health disorders. *International Journal of Law and Psychiatry, 50*, 31-37.

Morrow, W. J., White, M. D., & Fradella, H. F. (2017). After the stop: Exploring the racial/ethnic disparities in police use of force during *Terry* stops. *Police Quarterly, 20*(4), 367-396.

Nix, J., Campbell, B. A., Byers, E. H., & Alpert, G. P. (2017a). A bird's eye view of civilians killed by police in 2015. *Criminology & Public Policy, 16*(1), 309-340.

Nix, J., Pickett, J. T., Wolfe, S. E., & Campbell, B. A. (2017b). Demeanor, race, and police perceptions of procedural justice: Evidence from two randomized experiments. *Justice Quarterly, 34*(7), 1154-1183.

Novak, K. J., & Engel, R. S. (2005). Disentangling the influence of suspect's demeanor and mental disorder on arrest. *Policing: An International Journal of Police Strategies and Management, 28*, 493-512.

Nowacki, J. S. (2015). Organizational-level police discretion: An application for police use of lethal force. *Crime & Delinquency, 61*(5), 643-668.

Paoline, E. A., Gau, J. M., & Terrill, W. (2018). Race and the police use of force encounter in the United States. *British Journal of Criminology, 58*, 54-74.

Paoline, E. A., & Terrill, W. (2005). Women police officers and the use of coercion. *Women & Criminal Justice, 15*(3-4), 97-119.

Paoline, E. A., & Terrill, W. (2007). Police education, experience, and the use of force. *Criminal Justice and Behavior, 34*(2), 179-196.

Paoline, E. A., Terrill, W., & Ingram, J. R. (2012). Police use of force and officer injuries: Comparing conducted energy devices (CEDs) to hands- and weapon-based tactics. *Police Quarterly, 15*(2), 115-136.

Pate, A. M., Fridell, L. A., Hamilton, E. E., & Police Foundation (U.S.). (1993). *Police use of force: Official reports, citizen complaints, and legal consequences*. Washington, DC: Police Foundation.

Police Executive Research Forum. (2015). *Re-engineering training on police use of force (Critical Issues in Policing)*. Washington, DC: Author.

President's Task Force on 21st Century Policing. (2015). *Final report of the President's Task Force on 21st Century Policing.* Washington, DC: Office of Community Oriented Policing Services.

Reisig, M. D., McCluskey, J. D., Mastrofski, S. D., & Terrill, W. (2004). Suspect disrespect toward the police. *Justice Quarterly, 21*, 241-268.

Ridgeway, G. (2016). Officer risk factors associated with police shootings: A matched case-control study. *Statistics and Public Policy, 3*(1), 1-6.

Rojek, J., Alpert, G. P., & Smith, H. P. (2012). Examining officer and citizen accounts of police use-of-force incidents. *Crime & Delinquency, 58*(2), 301-327.

Rossler, M. T., & Terrill, W. (2017). Mental illness, police use of force, and citizen injury. *Police Quarterly, 20*(2), 189–212.

Rydberg, J., & Terrill, W. (2010). The effect of higher education on police behavior. *Police Quarterly, 13*(1), 92-120.

Schuck, A. M., & Rabe-Hemp, C. (2007). Women police. *Women & Criminal Justice, 16*(4), 91-117.

Shjarback, J. (2018). "Neighborhood" influence on police use of force: State-of-the-art review. *Policing, 41*(6), 859-872.

Smith, D. (1986). The neighborhood context of police behavior. In A. Reiss and M. Tonry (Eds.), *Crime and justice: A review of research*. Chicago: University of Chicago Press.

Smith, M.R. (1995). Integrating community policing and the use of force: Public education, involvement, and accountability. *American Journal of Police, 13*(4), 1-21.

Smith, M. R. & Alpert. G. (2000). Pepper spray: A safe and reasonable response to suspect verbal resistance. *Policing: An International Journal of Police Strategies & Management, 23*, 233-245.

Smith, M. R., Kaminski, R. J., Rojek, J., Alpert, G. P., & Mathis, J. (2007). The impact of conducted energy devices and other types of force and resistance on officer and suspect injuries. *Policing: An International Journal of Police Strategies & Management, 30*(3), 423-446.

Smith, M. R., Rojek, J. J., Petrocelli, M., & Withrow, B. (2017). Measuring disparities in police activities: A state of the art review. *Policing: An International Journal of Police Strategies & Management, 40*(2), 166-183.

Staller, M. S., Christiansen, P., Zaiser, B., Körner, S., & Cole, J. C. (2018). Do they aggress earlier? Investigating the effects of ego depletion on police officers' use of force behavior. *Journal of Police and Criminal Psychology, 33*, 332-344.

Stroshine, M. S, & Brandl, S. G. (2019). The use, effectiveness, and hazards associated with police use of force: The unique case of weaponless physical force. *Police Practice and Research*, *1-18, doi:10.1080/15614263.2019.1582342*.

Sun, I. Y., & Payne, B. K. (2004). Racial differences in resolving conflicts: A comparison between black and white police officers. *Crime & Delinquency, 50*(4), 516-541.

Sun, I. Y., Payne, B. K. & Wu, Y. (2008). The impact of situational factors, officer characteristics, and neighborhood context on police behavior: A multilevel analysis. *Journal of Criminal Justice, 36*, 22-32.

Taylor, B., Alpert, G., Kubu, B., Woods, D., & Dunham, R. G. (2011). Changes in officer use of force over time: A descriptive analysis of a national survey. *Policing: An International Journal of Police Strategies & Management, 34*(2), 211-232.

Taylor, B., & Woods, D. J. (2010). Injuries to officers and suspects in police use-of-force cases: A quasi-experimental evaluation. *Police Quarterly, 13*(3), 260-289.

Terrill, W. (2003). Police use of force and suspect resistance: The micro process of the police-suspect encounter. *Police Quarterly, 6*(1), 51-83.

Terrill, W. (2005). Police use of force: A transactional approach. *Justice Quarterly, 22*(1), 107-138.

Terrill, W., Alpert, G. P., Dunham, R. G., & Smith, M. R. (2003). A management tool for evaluating police use of force: An application of the force factor. *Police Quarterly, 6*(2), 150-171.

Terrill, W., & Mastrofski, S. D. (2002). Situational and officer-based determinants of police coercion. *Justice Quarterly, 19*(2), 215-248.

Terrill, W., & Paoline, E. A. (2012). Conducted energy devices (CEDs) and citizen injuries: The shocking empirical reality. *Justice Quarterly, 29*(2), 153-182.

Terrill, W., & Paoline, E. A. (2017). Police use of less lethal force: Does administrative policy matter? *Justice Quarterly, 34*(2), 193-216.

Terrill, W., Paoline III, E. A., & Ingram, J. R. (2018). Beyond the final report: A research note on the assessing police use of force policy and outcomes project. *Policing, 41*(2), 194-201.

Terrill, W., & Reisig, M. (2003). Neighborhood context and police use of force. *Journal of Research in Crime and Delinquency*, *43*, 291-321.

Tillyer, R., Engel, R. S., & Cherkauskas, J. (2010). Best practices in vehicle stop data collection and analysis. *Policing: An International Journal of Police Strategies & Management, 33*(1), 69-92.

Torres, J. (2018). Predicting law enforcement confidence in going 'hands-on': The impact of martial arts training, use-of-force self-efficacy, motivation, and apprehensiveness. *Police Practice and Research*, 1-17.

Tregle, B., Nix, J., & Alpert, G.P. (2019). Disparity does not mean bias: Making sense of observed racial disparities in fatal officer-involved shootings with multiple benchmarks. *Journal of Crime and Justice, 42*, 18-31.

Van Craen, M., & Skogan, W. G. (2017). Officer support for use of force policy: The role of fair supervision. *Criminal Justice and Behavior, 44*(6), 843-861.

Westley, W. A. (1953). Violence and the police. *American Journal of Sociology, 59*(1), 34-41.

Westley, W. A. (1970). *Violence and the police: A sociological study of law, custom, and morality.* Cambridge, MA: MIT Press.

Willits, D. W., & Makin, D.A. (2018). Show me what happened: Studying use of force through analysis of body-worn camera footage. *Journal of Research in Crime and Delinquency, 55*(1), 51–77.

Willits, D. W., & Nowacki, J. S. (2014). Police organisation and deadly force: An examination of variation across large and small cities. *Policing and Society, 24*(1), 63-80.

Wolf, R., Mesloh, C. & Henych, M. (2008). Cumulative force factor: Examining resultant suspect and officer injuries. *Law Enforcement Executive Forum, 8*(4), 65-79.

Wolf, R., Mesloh, C., Henych, M., & Thompson, L. F. (2009). Police use of force and the cumulative force factor. *Policing: An International Journal of Police Strategies & Management, 32*(4), 739-757.

Worden, R. E. (1996). The causes of police brutality: Theory and evidence on police use of force. In W. A. Geller and H. Toch (Eds.), *Police violence: Understanding and controlling police abuse of force* (23–51). New Haven, CT: Yale University Press.

VII. APPENDICES

APPENDIX A

Arrest Data

Table 9: Missing Data - All Arrests (N=35,532)

	Missing N	Missing %	Valid N
Dependent Variable			
Use of force	0	0.0%	35,532
Independent Variables			
Incident Characteristics			
Year	0	0.0%	35,532
Month	0	0.0%	35,532
Day of week	0	0.0%	35,532
NCIS (Crime Type)	0	0.0%	35,532
Division	1,669	4.7%	33,863
Squad	1,669	4.7%	33,863
Beat	1,669	4.7%	33,863
Civilian Characteristics			
Average age	0	0.0%	35,532
Male	0	0.0%	35,532
Female	0	0.0%	35,532
White	0	0.0%	35,532
Black	0	0.0%	35,532
Hispanic	0	0.0%	35,532
Asian	0	0.0%	35,532
Native American	0	0.0%	35,532
Officer Characteristics			
Average age	2,121	6.0%	33,411
Length of service	2,120	6.0%	33,412
Male only	2,105	5.9%	33,427
Female only	2,105	5.9%	33,427
Mixed gender	2,105	5.9%	33,427
White only	2,105	5.9%	33,427
Black only	2,105	5.9%	33,427
Hispanic only	2,105	5.9%	33,427
Asian only	2,105	5.9%	33,427
Native American only	2,105	5.9%	33,427
Other race/ethnicity only	2,105	5.9%	33,427
Multiple race/ethnicity officers	2,105	5.9%	33,427
Rank	2,105	5.9%	33,427
Overall	**3,582**	**10.1%**	**31,950**
Contextual Characteristics (Squad, N=9)			
Calls for service (Priority Level 0-9)	0	0.0%	35,532
Violent crime rate	0	0.0%	35,532
Concentrated disadvantaged	0	0.0%	35,532
% Population 18-24 Years of Age	0	0.0%	35,532

Concentrated disadvantage is a cumulative measure of the percentage of the population that is non-White, below the poverty line, the unemployment rate, and female-headed households.

Table 10: Descriptive Statistics II – All Arrests (N=31,950)

	% or Mean	SD	Min.	Max.
Independent Variables				
Incident Characteristics				
Month			0.00	1.00
January	10.3%	--	0.00	1.00
February	9.6%	--	0.00	1.00
March	10.6%	--	0.00	1.00
April	10.8%	--	0.00	1.00
May	10.8%	--	0.00	1.00
June	9.7%	--	0.00	1.00
July	6.3%	--	0.00	1.00
August	6.5%	--	0.00	1.00
September	6.4%	--	0.00	1.00
October	6.5%	--	0.00	1.00
November	6.3%	--	0.00	1.00
December	6.0%	--	0.00	1.00
Day of week				
Monday	14.4%	--	0.00	1.00
Tuesday	13.2%	--	0.00	1.00
Wednesday	12.9%	--	0.00	1.00
Thursday	14.3%	--	0.00	1.00
Friday	16.2%	--	0.00	1.00
Saturday	15.9%	--	0.00	1.00
Sunday	13.1%	--	0.00	1.00
Beat				
A1	1.4%	--	0.00	1.00
A2	1.9%	--	0.00	1.00
A3	1.6%	--	0.00	1.00
A4	2.1%	--	0.00	1.00
A5	2.6%	--	0.00	1.00
B1	2.1%	--	0.00	1.00
B2	3.5%	--	0.00	1.00
B3	14.4%	--	0.00	1.00
B4	1.3%	--	0.00	1.00
B5	2.0%	--	0.00	1.00
C1	1.2%	--	0.00	1.00
C2	3.3%	--	0.00	1.00
C3	1.4%	--	0.00	1.00
C4	2.5%	--	0.00	1.00
C5	1.9%	--	0.00	1.00
D1	5.3%	--	0.00	1.00
D2	2.2%	--	0.00	1.00
D3	3.0%	--	0.00	1.00

D4	2.8%	--	0.00	1.00
D5	1.6%	--	0.00	1.00
E1	4.1%	--	0.00	1.00
E2	1.5%	--	0.00	1.00
E3	1.9%	--	0.00	1.00
E4	1.1%	--	0.00	1.00
E5	0.5%	--	0.00	1.00
F1	1.0%	--	0.00	1.00
F2	1.4%	--	0.00	1.00
F3	0.9%	--	0.00	1.00
F4	1.5%	--	0.00	1.00
F5	0.7%	--	0.00	1.00
G1	1.7%	--	0.00	1.00
G2	1.2%	--	0.00	1.00
G3	3.8%	--	0.00	1.00
G4	1.8%	--	0.00	1.00
G5	1.4%	--	0.00	1.00
H1	2.6%	--	0.00	1.00
H2	2.3%	--	0.00	1.00
H3	1.3%	--	0.00	1.00
H4	1.0%	--	0.00	1.00
H5	0.5%	--	0.00	1.00
I1	1.7%	--	0.00	1.00
I2	2.1%	--	0.00	1.00
I3	1.4%	--	0.00	1.00
I4	1.6%	--	0.00	1.00
I5	2.9%	--	0.00	1.00

Use of Force Data (Incidents)

Table 11: Missing Data - Use of Force Incidents (N=713)

	Missing N	Missing %	Valid N
Dependent Variables			
Civilian Resistance	0	0.0%	713
Civilian Injury	0	0.0%	713
Officer Force	1	0.1%	712
Officer Injury	0	0.0%	713
Independent Variables			
Incident Characteristics			
Date and Time	1	0.1%	712
Squad	20	2.8%	693
Arrest	0	0.0%	713
Civilian Characteristics			
Age	24	3.4%	689
Gender	7	1.0%	706
Race/Ethnicity	15	2.1%	698
Criminal History	0	0.0%	713
Officer Characteristics			
Assignment/Organizational Unit	0	0.0%	713
Rank	5	0.7%	708
Length of Service	11	1.5%	702
Age	11	1.5%	702
Gender	5	0.7%	708
Race/Ethnicity	5	0.7%	708
Total (including Squad)	**71**	**10.0%**	**642**

Table 12: Descriptive Statistics II - Use of Force Incidents (n=642)

	% or Mean	SD	Min.	Max.
Independent Variables				
Incident Characteristics				
Year				
2016 (Jan-Dec)	44.5%	--	0.00	1.00
2017 (Jan-Dec)	40.2%	--	0.00	1.00
2018 (Jan-Jun)	15.3%	--	0.00	1.00
Month			0.00	1.00
January	12.0%	--	0.00	1.00
February	8.4%	--	0.00	1.00
March	11.1%	--	0.00	1.00
April	11.2%	--	0.00	1.00
May	9.2%	--	0.00	1.00
June	8.6%	--	0.00	1.00
July	7.2%	--	0.00	1.00
August	7.8%	--	0.00	1.00
September	6.2%	--	0.00	1.00
October	6.1%	--	0.00	1.00
November	5.8%	--	0.00	1.00
December	6.5%	--	0.00	1.00
Day of week				
Monday	13.7%	--	0.00	1.00
Tuesday	13.1%	--	0.00	1.00
Wednesday	12.0%	--	0.00	1.00
Thursday	18.2%	--	0.00	1.00
Friday	16.2%	--	0.00	1.00
Saturday	15.7%	--	0.00	1.00
Sunday	11.1%	--	0.00	1.00

Table 13:VII Bivariate Analysis – Use of Force Incidents – Civilian Injury (N=642)

	N	No Injury	Injury
Overall Civilian Injury		46.0%	54.0%
Incident Characteristics			
Weekend	172	45.3%	54.7%
Nighttime	335	41.8%	58.2%
Civilian Characteristics			
Average age	642	32.94	32.62
Male Only	569	44.1%	55.9%
Female Only	64	57.8%	42.2%
Mixed Gender	9	77.8%	22.2%
White Only	336	40.5%	59.5%
Black Only	226	56.2%	43.8%
Hispanic Only	55	41.8%	58.2%
Asian Only	3	66.7%	33.3%
Native American Only	17	29.4%	70.6%
Other Race/Ethnicity Only	2	0.0%	100.0%
Mixed Race/Ethnicity	3	66.7%	33.3%
Total Criminal History	642	37.33	31.98
Young, Black, Male	55	47.3%	52.7%
Officer Characteristics			
Police Officer	507	42.6%	57.4%
Length of service	642	11.53	12.13
Average Age	642	39.17	38.75
Male only	587	45.1%	54.9%
Female only	26	53.8%	46.2%
Mixed Gender	29	55.2%	44.8%
White only	459	42.5%	57.5%
Black only	17	64.7%	35.3%
Hispanic only	31	61.3%	38.7%
Asian only	10	20.0%	80.0%
Native American only	45	57.8%	42.2%
Mixed race/ethnicity	80	52.5%	47.5%
Type of Force			
Physical Control	32	25.0%	75.0%
Hard Hands	73	56.2%	43.8%
Pepper Spray	108	81.5%	18.5%
TASER	206	67.5%	32.5%
Baton	7	28.6%	71.4%
Canine	182	3.8%	96.2%
Firearm	28	25.0%	75.0%

Table 14:VII Bivariate Analysis - Use of Force Incidents – Officer Injury (N=642)

	N	No Injury	Injury
Overall Officer Injury		88.2%	11.8%
Incident Characteristics			
Weekend	172	89.5%	10.5%
Nighttime	335	87.5%	12.5%
Civilian Characteristics			
Average age	642	32.93	31.61
Male Only	569	88.2%	11.8%
Female Only	64	84.4%	15.6%
Mixed Gender	9	100.0%	0.0%
White Only	336	87.2%	12.8%
Black Only	226	87.6%	12.4%
Hispanic Only	55	90.9%	9.1%
Asian Only	3	100.0%	0.0%
Native American Only	17	94.1%	5.9%
Other Race/Ethnicity Only	2	100.0%	0.0%
Mixed Race/Ethnicity	3	100.0%	0.0%
Total Criminal History	642	35.74	24.86
Young, Black, Male	55	90.9%	9.1%
Officer Characteristics			
Police Officer	507	89.5%	10.5%
Length of service	642	11.86	11.83
Average Age	642	38.82	39.83
Male only	587	88.9%	11.1%
Female only	26	80.8%	19.2%
Mixed Gender	29	75.9%	24.1%
White only	459	89.3%	10.7%
Black only	17	88.2%	11.8%
Hispanic only	31	90.3%	9.7%
Asian only	10	90.0%	10.0%
Native American only	45	91.1%	8.9%
Mixed race/ethnicity	80	77.5%	22.5%
Type of Force			
Physical Control	32	84.4%	15.6%
Hard Hands	73	67.1%	32.9%
Pepper Spray	108	94.4%	5.6%
TASER	206	82.5%	17.5%
Baton	7	100.0%	0.0%
Canine	182	98.4%	1.6%
Firearm	28	92.9%	7.1%

Table 15:VII Bivariate Analysis - Use of Force Incidents – Force Factor (N=642)

	N	Average Force Factor
Overall Average Force Factor		0.36
Incident Characteristics		
Weekend	172	0.26
Weekday	470	0.39
Nighttime	335	0.34
Daytime	307	0.37
Civilian Characteristics		
Male Only	569	0.36
Female Only	64	0.30
Mixed Gender	9	0.22
White Only	336	0.34
Black Only	226	0.45
Hispanic Only	55	0.44
Asian Only	3	-2.00
Native American Only	17	-0.41
Other Race/Ethnicity Only	2	0.00
Mixed Race/Ethnicity	3	0.33
Young, Black, Male	55	0.55
Officer Characteristics		
Police Officer	507	0.33
Non-Police Officer	135	0.45
Male only	587	0.36
Female only	26	0.58
Mixed Gender	29	0.03
White only	459	0.43
Black only	17	-0.18
Hispanic only	31	0.71
Asian only	10	0.10
Native American only	45	0.27
Mixed race/ethnicity	80	-0.01
		Correlation
Average Civilian Age		-0.05
Average Total Civilian Criminal History		0.09
Average Length of Service		0.11
Average Officer Age		0.07

APPENDIX B
Table 16: Tulsa Use of Force Policy

		PROCEDURE	Page 1 of 9	Procedure File No 31-101A
		Subject Use of Force	Supersedes No.	Previous Date 08/28/2014
	POLICE DEPARTMENT	Approved By *Chuck Jordan, Chief of Police*	Date Approved 09/27/2018	Effective Date 12/05/2018

This policy statement and the procedures thereunder are intended for Police Department use only. The policies, procedures, and regulations are for internal Police Department administrative purposes and are not intended to create any higher legal standard of care or liability in an evidentiary sense than is created by law. Violations of internal Police Department policies, procedures, regulations, or rules form the basis for disciplinary action by the Police Department. Violations of law form the basis for civil and/or criminal sanctions to be determined in a proper judicial setting, not through the administrative procedures of the Police Department.

PURPOSE OF CHANGE:

To remove Lateral Vascular Neck Restraint (LVNR), incorporate the Carotid Restraint Control Hold (CRCH), update the Use of Force Continuum, incorporate De-escalation, update for CALEA standards and update Use of Force report distribution.

POLICY:

The Tulsa Police Department places the highest value on the preservation of life. Personnel will use only that force which is objectively reasonable. Reasonableness is not capable of precise definition or mechanical application. Its proper application requires careful attention to the facts and circumstances of each particular case, including the severity of the crime at issue, whether the suspect poses an immediate threat to the safety of the officers or others, and whether the suspect is actively resisting arrest or attempting to evade arrest by flight. The reasonableness of a particular use of force must be judged from the perspective of a reasonable officer on the scene at the time of the incident and on whether the officer's own reckless or deliberate conduct during the seizure unreasonably created the need to use such force.

The use of unnecessary or excessive force will result in departmental discipline and may create personal liability for the officer with civil and/or criminal penalties. Actions that do not meet the spirit of this policy will neither be condoned nor tolerated merely because the acts were lawful.

The *Use of Force Continuum* is included as a guide in the appropriate use of force. It is recognized that it cannot be rigidly applied in rapidly unfolding and fluid situations. Officers should generally use the level of force which can reasonably be expected to succeed in controlling the situation. Officers are not required to move in a hierarchical fashion through all the levels of control, but instead, should use that level of force which is appropriate and reasonable under existing circumstances.

Deadly force may be used if the officer has probable cause to believe that the suspect poses an imminent threat of serious physical harm, either to the officer or others, to defend an officer or others from the threat of immediate physical harm from a dangerous animal, or to destroy a seriously injured animal when other dispositions are impractical and when approved by a supervisor.

An officer may use deadly force when making an arrest or preventing an escape from custody following an arrest. The officer must reasonably believe that such force is necessary to prevent the arrest from being defeated by resistance or escape, there is probable cause to believe that the person to be arrested has committed a crime involving the infliction or threatened infliction of serious physical harm, and the escape of the subject poses an imminent threat to the officer or others. Deadly force may also be used if the person to be arrested is

attempting to escape by use of a deadly weapon (21 O.S. 732). When feasible, a verbal warning will be given to the offender prior to the use of deadly force.

The use of deadly force is not authorized when its use would constitute a greater threat to innocent human lives than the actions of the suspect. Officers or employees must always be aware of the probable and possible result of their use of force. Officers or employees are never justified in using deadly force in a reckless manner disregarding the safety of themselves, other officers, or innocent bystanders. Officers or employees must identify and acquire the specific threat before using deadly force.

Whenever possible and when such delay will not compromise the safety of the officer or another and will not result in the destruction of evidence, escape of a suspect, or commission of a crime, an officer shall allow an individual time and opportunity to submit to verbal commands before force is used. An officer shall use de-escalation techniques and other alternatives to higher levels of force consistent with his or her training whenever possible and appropriate before resorting to force and to reduce the need for force.

Officers or employees shall not use tactics solely to justify the escalation of force when such escalation of force would not otherwise be appropriate (e.g., it would not be appropriate for an officer or employee to step in the path of a moving vehicle solely to justify the use of great or deadly force as self-defense).

For the purpose of this policy, use of any firearm to discharge a projectile composed of any material which may be reasonably expected to cause death or great bodily injury is considered deadly force and shall only be employed in circumstances where the use of deadly force would be justified. The use of a flexible baton, 37/40mm Launcher, PepperBall launcher, breaching gun, or any similar launcher or munitions will not be considered deadly force when used as trained and designed as a less lethal alternative.

There will be an administrative review immediately following any use of deadly force. The Detective Division will conduct a criminal investigation into any use of deadly force. The Deadly Force Review Board will review all uses of deadly force referred to it by the Chief of Police. The Board reviews the administrative and criminal investigations, as well as testimony from officers and witnesses, when necessary.

DEADLY FORCE		
All Deadly Force Applications	Likely to produce great bodily injury or death	Calculated to Incapacitate (STOP)
ADVANCED FORCE		
Police Canine Bite, Launched Chemical Munitions, 37/40mm Launcher, 12-Gauge Flexible Baton, Carotid Restraint Control Hold, Personal Impact Strikes to Head, Conducted Electrical Weapon, Impact Weapons, Flash Sound Diversionary Devices, Direct Impact Pepperball,	Low expectation of great bodily injury or death, some possibility of injury, involves some pain compliance techniques	Calculated to Control and/or Overcome
INTERMEDIATE FORCE		
Personal Impact Strikes, Physical Control Holds, Area Saturation Pepperball, Vehicle Containment, Chemical Munitions, OC Spray	Less possibility of injury than Advanced Force, involves some pain compliance techniques	Calculated to Control and/or Overcome
LOW FORCE		
Firm Grip or Gesture, Verbal Commands, Uniform Presence	Little to no expectation of injury, low visual impact	Calculated to Gain Compliant Behavior

SUMMARY: Procedures for the use of force.

APPLIES TO: All police personnel

DEFINITIONS:

DE-ESCALATION – Taking action or communicating verbally or non-verbally during a potential force encounter in an attempt to stabilize the situation and reduce the immediacy of the threat so that more time, options, and resources can be called upon to resolve the situation without the use of force or with a reduction in the force necessary. De-escalation may include the use of such techniques as command presence, advisements, warnings, verbal persuasion, and tactical repositioning.

CAROTID RESTRAINT CONTROL HOLD (CRCH) – a bilateral vascular restraint where pressure is applied to the sides of the neck compressing the carotid arteries and jugular veins resulting in diminished cerebral cortex circulation, potentially rendering the subject unconscious while the subject retains the ability to breathe.

<u>DEADLY FORCE</u> – that force which is likely to cause death or serious physical harm.

<u>IMMEDIATE THREAT</u> – a significant threat that an officer reasonably believes will result in death or serious physical harm to the officer or others. The threat is not limited to being instantaneous. A person may pose an immediate threat even if they are not at that moment pointing a weapon at the officers or others.

<u>SERIOUS PHYSICAL HARM/GREAT BODILY HARM</u> – injury that causes a substantial risk of death, serious permanent disfigurement, or protracted loss or impairment of the function of any bodily member or organ.

<u>USE OF FORCE CONTINUUM</u> – a visual representation of force options designed to facilitate an understanding of appropriate levels of force by officers.

<u>WEAPONLESS CONTROL TECHNIQUES</u> – gestures, verbal commands, or physical control holds utilized to gain compliance from a subject.

<u>CHEMICAL MUNITIONS</u> – CS (Ortho Chlorobenzalmalononitrile) or OC (Oleoresin Capsicum) utilized via hand thrown or launched delivery systems.

PROCEDURES:

A.   USE OF FORCE REPORTS

1.   In other than testing or training situations, personnel will complete a *Use of Force Report* as soon as possible and forward it through the chain of command when the following force is used:

   a.   OC spray.
   b.   Conducted Electrical Weapon (CEW).
   c.   PepperBall launchers.
   d.   Physical control holds which result in an injury requiring medical attention or are alleged to have resulted in injury to another person.
   e.   Personal Impact Strikes (e.g., knee and fist).
   f.   Police canine bite.
   g.   37/40mm Launcher and the 12-gauge flexible baton.
   h.   Vehicle containment.
   i.   Chemical Munitions.
   j.   Flash Sound Diversionary Devices.
   k.   Carotid Restraint Control Hold (CRCH).
   l.   Impact Weapons (e.g., Baton or other improvised impact weapon).

2.   When force is used, only one *Use of Force Report* per incident need be completed. The report shall include the names of all personnel utilizing force. The on-scene supervisor will ensure that the report is completed as soon as possible.

3. The *Use of Force Report* and video evidence will be reviewed by the involved officer's chain of command. The Division Commander will determine if the incident is in-policy. If the Division Commander believes the use of force needs further review or is found out-of-policy then they shall forward the report to the Chief of Police.

4. When a firearm is accidentally discharged or an injured or vicious animal is shot, the officer shall complete an *Interoffice Correspondence* explaining the details of the circumstances to the officer's division commander. The division commander will also review and forward all findings and recommendations to the Chief of Police.

5. All *Use of Force Reports* will be reviewed by Internal Affairs (IA) for possible eligibility in the Employee Tracking and Assistance Program (ETAP).

6. The Training Division will complete an annual documented analysis of the departments use of force activities, policies and practices. This analysis will include conclusions, recommendations, and proposals.

    The analysis should identify:
    a. Date and time of incidents;
    b. Types of encounters resulting in use of force;
    c. Trends or patterns related to race, age and gender of subjects involved;
    d. Trends or patterns resulting in injury to any person including employees; and
    e. Impact of findings on policies, practices, equipment, and training.

    Annually, the Training Division will conduct a documented review of all assaults on law enforcement officers to determine trends or patterns, with recommendations to enhance officer safety, revise policy, or address training issues.

7. When the use of deadly force involves a department-issued or approved firearm or department-issued weapon in accordance with the *Uniform Specifications Manual*, the investigatory process shall be applicable to both on-duty and off-duty incidents.

B. NOTIFICATIONS

1. When force is used that requires a *Use of Force Report*, an employees will notify a field supervisor as soon as possible.

2. Supervisors will notify a shift commander, the on-call Captain, or Staff Duty Officer.

3. When deadly force is used, shift commanders, the on-call Captain, or the Staff Duty Officer will notify IA and the Detective Division as soon as possible, except when a firearm is accidentally discharged or an animal is shot and no additional injuries or property damage occurs.

4. When the use of deadly force results in property damage or an injury requiring first aid or medical treatment, notify the Detective Division.

5. When the use of force results in serious injury or death, request that Public Safety Communications (PSC) notify the following personnel in accordance with 31-308, *Staff Representation After Hours*:

   a. On-call IA Investigator.
   b. On-call Captain/Staff Duty Officer.
   c. The officer's division commander.
   d. The bureau Deputy Chiefs.
   e. The Chief of Police.
   f. The on-call Public Information Officer.
   g. The Tulsa Police Department Legal Advisor.
   h. On-duty Captain.
   i. The Police Chaplain.

6. Evaluate the incident and determine the need for further notifications (e.g., CIRT).

C. DEADLY FORCE INCIDENTS

1. Upon arrival, a supervisor shall assign an officer to remain and "walk through" the scene with Detectives.

2. The officer(s) or employee(s) directly involved in the use of deadly force will go directly to the Detective Division when relieved from the scene. An uninvolved officer shall accompany them to maintain the evidentiary chain of custody. The officer(s) or employee(s) shall remain at Detective Division until chain of custody issues have been resolved.

3. The Detective Division will conduct a criminal investigation upon notification of the use of deadly force.

4. The involved officer(s) or employee(s) will remain available for the Detective Division to contact and schedule an in-depth interview at their earliest convenience.

5. The involved officer(s) or employee(s) may be represented by legal counsel, if desired, during the criminal investigation.

6. The Detective Division will submit an *Interoffice Correspondence* to the Chief of Police by 0800 hours on the day following the occurrence, outlining the following:

   a. The need for the force used.
   b. The type of force employed.
   c. How and where the force was employed.
   d. Additional information regarding the use of force (e.g., injuries, backdrop, witnesses).

7. The Chief of Police, or designee, may place involved officer(s) on administrative leave pending the results of the criminal investigation.

8. The weapon used in a deadly force incident will be given to Detectives and will be sent to the lab for testing. While the weapon is being tested, the division commander or shift commander will ensure that the officer has a weapon to carry until their weapon is returned. Upon completion of the testing, the weapon will be returned to the officer as soon as possible by the Detective Division.

D. ADMINISTRATIVE REVIEW PROCESS

1. After receiving a clearance sheet from the DA regarding the criminal investigation of a use of deadly force incident, IA will conduct an administrative investigation on:

   a. On-duty employees of the Tulsa Police Department, or an on-duty Tulsa Police Reserve Officer, or any other person acting in concert with Tulsa Police Officers.

   b. Off-duty employees of the Tulsa Police Department or an off-duty Tulsa Police Reserve Officer when the use of deadly force involves a department issued or approved firearm as described in the *Uniform Specifications Manual.*

   c. Employees of the Tulsa Police Department or a Tulsa Police Reserve Officer who accidentally discharges their firearm which causes injury to any person.

2. IA will prepare and submit a complete report to the Chief of Police within 30 days of each incident. The IA Commander may grant an extension if the investigation will not be completed within the 30 day time frame.

3. When the actions of an employee, while working in an official capacity, result in the death or serious physical injury of another, the Chief of Police, or designee, shall remove the employee from the operational assignment pending an administrative review of the incident.

4. After receiving approval by the Chief of Police, or designee, to return to their duty assignment, the employee's division commander will coordinate with the employee the exact time and date the employee shall return to their normal duties.

E. DEADLY FORCE REVIEW BOARD

1. The Deadly Force Review Board will review all incidents of deadly force that are referred to the Board by the Chief of Police.

2. Each member of the Board will be an officer not directly involved in the incident.

3. The Chief of Police will appoint the Board from the following ranks with a maximum of five voting members for incidents involving Tulsa Police Officers or employees:

   a. A bureau Deputy Chief to act as chairman.
   b. The division commander of the involved officer or employee.
   c. The Training Division Commander.
   d. An officer of equal rank to the officer involved.
   e. The Tulsa Police Department Legal Advisor (non-voting).

    f.   The Special Operations Team (SOT) Leader or Team Commander (non-voting).

    g.   An officer below the rank of division commander chosen by the officer being reviewed.

4.   If the incident involves a Tulsa Police Reserve Officer, the following will also be appointed:

    a.   The Special Operations Division Commander (non-voting).

    b.   If the Tulsa Police Reserve Officer was assigned to a TPD partner, the Division Commander of the partner will be appointed as the Division Commander of the involved officer (voting).

    c.   If the Tulsa Police Reserve Officer was working a special event (e.g., Fairgrounds, River Parks), the Special Operations Commander will be appointed as the Division Commander of the involved officer (voting).

5.   The duties of the Board will be to:

    a.   Thoroughly review the criminal investigation report.

    b.   Thoroughly review the administrative investigation completed by IA.

    c.   Hear direct testimony from officers and witnesses when necessary.

6.   The Board will develop findings and make recommendations to the Chief of Police in the following areas:

    a.   Whether the use of deadly force complied with policy.

    b.   Tactical considerations.

    c.   Training considerations.

    d.   The quality of supervision.

    e.   The process and the quality of the post-incident investigation.

7.   The Chief of Police will review all findings and forward the decision to the officer's or employee's bureau Deputy Chief.

8.   The Chief of Police will report the decision and any resolutions along with the Board's findings to all sworn personnel.

9.   The bureau Deputy Chief will review and forward the findings along with the Chief's decision to the officer's or employee's division commander.

10.   The division commander will review and initiate the required action.

11.   Data and/or statistics related to the use of deadly force will be identified at the Deadly Force Review Board meetings and directed to the Training Division to be incorporated into training when appropriate.

REGULATIONS:

1. When officers or employees use the level of force described in procedures A.1. and A.3., they shall make the appropriate reports and notifications as set forth in this policy.

2. Officers or employees shall not discharge firearms for the purpose of warning shots or for any indiscriminate use. Officers or employees shall use firearms only as authorized by this policy.

3. Officers or employees shall identify and acquire a specific threat/target before using deadly force.

4. Only officers who have successfully completed the Tulsa Police Department's eight hour Carotid Restraint Control Hold (CRCH) course are authorized to use the CRCH.

5. Officers shall use only that force which is objectively reasonable.

6. Any time the actions of an officer or employee result in injury or alleged injury to another person, once the subject is properly restrained, officers will perform the following:

   a. Render necessary first aid.
   b. Request EMSA to respond to the scene, if appropriate.
   c. Immediately notify a supervisor.

7. Only personnel who have been trained, and have demonstrated proficiency in the use of, departmental-authorized weapons will be approved to carry such weapons.

8. Agency personnel will be issued a copy of, and be instructed in, the content of this policy before being authorized to carry lethal and less lethal weapons.

9. A report must be submitted whenever an employee takes an action that results in, or is alleged to have resulted in, injury or death of another person. This report will be either a *Use of Force Report*, an *Interoffice Correspondence*, or a statement to the Detective Division as outlined in this policy. If serious bodily injury or an injury that could result in death occurs, this report will be completed by Detective Division as outlined in C.6. Field supervisors will ensure that reports on any other injuries are completed.

REFERENCES:

21 O.S. 732
31-101B, *Roadblocks*
31-101C, *Vehicle Containment*
31-101D, *Use of OC Spray*
31-101E, *Use of Electronic Control Device*
31-101G, *Carotid Restraint Control Hold*
31-308, *Staff Representation After Hours*
31-304C, *Employee Tracking and Assistance Program*
Uniform Specifications Manual

APPENDIX C
Table 17: Tulsa Squad Boundaries

2018 Tulsa Police Squad Boundaries
(Three Squads Per Division)

Tulsa Police Department
Headquarters Division--ISIT
Last Update: April 9, 2018

Legend
Squads
Highways
Major Roads
Ramps
Arkansas River
City Limits

N

0 1 2 4 6 8 Miles