Do Situational Differences Exist Between the Fatal Shooting of Armed Versus Unarmed Persons by Law Enforcement Officers?

by

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Abstract

In recent years, significant attention has been drawn to incidents of law enforcement's use of force, especially when lethal. The lethal shooting of Michael Brown by Ferguson police in August of 2014 brought new members and new energy to the Black Lives Matter movement, and the death of unarmed Eric Garner in July of the same year emphasized the occurrence of lethal use of force on unarmed suspects. In 2015, *The Guardian* and *The Washington Post* began recording cases of officer-involved shootings after a national realization that no consistent record was being kept by the U.S. government. Up until the present, research has been largely laboratory based and focused on person-specific variables. Situational variables have the potential to open a previously untapped understanding of these situations, hopefully with which positive change can be advanced. Focusing on the 963 cases of officer-involved shootings in 2016, data were gathered for time of incident, numbers of officer and non-officers present, and warrant status of the deceased. Utilizing this data and that of *The Washington Post*'s database, the present study compared cases of officer-involved lethal shootings of armed and unarmed individuals. The present study found that armed deceased were older than those unarmed and more likely to have a warrant, and these armed cases generally involved a higher number of officers and non-officers present at the time of shooting. The compelling implications of these conclusions and their potential for reducing the number of officer-involved lethal shootings, armed or unarmed, are discussed.

Do Situational Differences Exist Between the Fatal Shooting of Armed Versus Unarmed Persons by Law Enforcement Officers?

In recent years, events of lethal use of force by law enforcement officers have drawn a large amount of public attention and scrutiny. For example, the shooting of Michael Brown on August 9th, 2014, in Ferguson, Missouri led to a series of protests, which then led to riots and a federal investigation of the city's police department. The death of Eric Garner a month prior, combined with what was deemed the 'Ferguson Unrest,' initiated a nationwide dialogue around the justification of, and rules surrounding law enforcement's use of lethal force. A body of research exists on law enforcement officers' "decision-to-shoot." For example, Ma et al. (2013) tested 80 law enforcement officers using the Weapons Implicit Association test. They found that officers who had slept less prior to testing demonstrated stronger associations between Black Americans and weapons, tying fatigue and racial bias. Kleider, Parrott & King (2010) performed working memory assessments on 24 law enforcement officers who then watched a "police-relevant threatening video" and completed a computerized decision-to-shoot task. They found that negatively aroused officers with lower working memory capacity were more likely to shoot unarmed targets and fail to shoot armed targets. Flemming, Bandy, & Kimble (2010) administered weapon identification tasks to 24 military cadets while measuring pupil size as an indicator of physiological response to perceived threat. They found that more false identifications occurred (e.g., mistaking a power tool for a gun) when these images where primed by pictures of Middle Eastern men in traditional clothing, and that cadets who showed greater pupil size made more of these errors,

associating cultural stereotypes, perceived threat, and false positive decision-to-shoot errors. Unfortunately, much of this research is laboratory-based and focused primarily on person-specific variables (e.g., race of the deceased, possible officer bias/racism). Little is known about the role that situational factors (e.g., time of day, incident location, number of officers and non-officers present, etc.) may play in such incidents.

In addition to the myopic focus of existing research on the topic, a complete record of all officer-involved lethal shootings in the United States did not exist prior to 2015. Upon public realization that the United States government did not keep consistent record of cases of deadly use of force by law enforcement officers, several groups began keeping their own records of these cases. Specifically, *The Washington Post* (2016) began compiling a record of cases, starting with those occurring in 2015, and has since made its database available to the public online. Around the same time *The Guardian* (2016) began compiling a record of all people killed by police in the U.S., but this database is at the same time more broad and less descriptive than that of *The Washington Post*, which I chose to rely on. *The Washington Post'*s database provides information about each instance in which one or more law enforcement officers fatally shot one or more individuals in 2015 (995 cases), 2016 (963 cases), 2017 (987 cases), and 2018 (998 cases). Specifically, starting in 2016, the database contains the name, age, race, and sex of the person killed, the deceased's manner of death (e.g., "shot," "tasered and shot"), the date and location (city and state) of the incident, whether the deceased was fleeing or attacking the officer(s) involved, the name of the officer(s) involved (if known), whether the deceased was armed, whether the deceased had a known mental illness, and whether

body camera footage documenting the incident is available. *The Washington Post* gathered this information from local news reports, law enforcement press releases, independent databases, filing open-records reports, and in some cases reporting further on these cases themselves. *The Washington Post* chose to detail situations specifically involving a law enforcement officer shooting and killing a civilian because these circumstances most closely parallel the 2014 death of Michael Brown in Ferguson.

Approximately 40% of this information pertains to characteristics of the deceased. By contrast, other than the date when, and the city/state where the incident occurred, little is known about the situation in which these shootings took place. Factors such as the time of the shooting, the number of officers and non-officers present, the exact location where the shooting occurred (e.g., private residence, public street, vehicle, etc.), and whether the deceased had a warrant out for his/her arrest may be especially insightful to know, as these aspects may influence the trajectory of an interaction on an unconscious level. For example, if there are two officers present, one may subdue a suspect to protect his or her partner from a perceived threat presented by the suspect. An individual who knows that they have a warrant out for their arrest may be less willing to comply with officers or act more aggressively towards them. Individuals approached in their home may react more defensively those approached on the street. Law enforcement may be more prepared for confrontation at 9:00 PM than 9:00 AM, potentially leading to more mistakes.

Less research exists for these situational considerations than for other aspects of these officer-involved shootings, but research that has been performed gives an idea of

the very relevant conclusions that can be garnered from examining situational variables. For example, Terrill & Reisig (2003) utilized data from studies of law enforecement officers in Indianapolis, Indiana, and St. Petersburg, Florida, to investigate the role of neighborhood context in the level of force that law enforcement exercises during police-suspect encounters. They found that law enforcement officers were significantly more likely to use increased force when suspects were encountered in disadvantaged neighborhoods and those with higher rates of homicide and suspect resistance. The addition of information on situational variables such as these (i.e., those not already included in *The Washington Post*'s database) could allow for a more complete and extensive "picture" of these cases to be rendered. The more thoroughly their context is understood, the more likely it is that trends in, or hallmark features of fatal use of force incidents can be discovered. Ultimately, such trends or features may prove helpful in efforts to educate the public, train law enforcement personnel, and develop strategies to reduce fatalities that result from lethal use of force.

It is important to point out that only 5% - 9% of the cases documented in *The Washington Post*'s database involve an individual who was found not to be in possession of a weapon. However, such incidents generally receive a large amount of publicity, and often undermine both trust in the judgement of law enforcement officers (Chermak, Gruenewald, & McGarrell, 2006; Culhane, Boman, & Schweitzer, 2016) and overall police-community relations (Dowler & Zawilski, 2007). Thus, the present researcher also felt that it would be important to know whether these smaller subset of cases (i.e., fatal

shooting of an unarmed individuals) differed from incidents in which the deceased was armed.

Upon undertaking this research project, the variables of time of incident, numbers of officers and non-officers present and deceased warrant status were chosen with the assumption that each would potentially differ between cases of officer-involved shootings of armed and unarmed individuals. Time of day can influence how populated an area is (e.g., a city street is generally much less trafficked at 3:00 AM versus 3:00 PM). It was hypothesized that time of day may also influence visibility conditions (e.g., amount of natural light), officer and non-officer demeanor, possibly even the initial perceived threat of a situation and by extension the number of officers present. Also hypothesized was that the number of officers and non-officers present may influence the perception and behavior of both parties. For example, a suspect behaving in an agitated manner may be perceived by law enforcement officers as more dangerous if there is a crowd of bystanders nearby or less so if no one but officers are present. I believed that whether the deceased had a warrant out for their arrest could affect perception and behavior. A suspect with an outstanding warrant likely knows that police intend to arrest them. As a result, those individuals may act more confrontational towards officers and officers may approach the serving of a warrant in anticipation of this possibility.

The aim of the present study was to (a) add previously unresearched situation-oriented variables to *The Washington Post*'s 2016 Deadly Use of Force Database, and (b) determine whether these variables differ in frequency or means between cases of officer-involved shootings of armed versus unarmed individuals. This research was undertaken

with a goal of providing a more complete description of lethal use of force incidents and to determine whether situational differences exist between the fatal shooting of armed versus unarmed persons by law enforcement officers.

Methods

This study focused on the 963 officer-involved lethal shootings that occurred in 2016, as documented by *The Washington Post*. In focusing on 2016 cases, the intent was to highlight a year recent enough to be more broadly applicable to the current state of officer-involved lethal shootings in 2019, and with enough time having passed to allow a large proportion of details surrounding these situations to have surfaced. In 51 of these cases, the deceased was unarmed. I chose to measure the time of shooting, the number of officers and non-officers present at the time of the shooting, and whether the deceased had a known, outstanding warrant for their arrest. To obtain values for these variables I utilized information from *The Washington Post*'s database to search the internet for publicly available records, including local, regional, and national television and newspaper coverage of 2016 cases, and where city and/or county records were available, I prioritized the sourcing of press releases and incident reports released by the involved police departments and law enforcement agencies.

I constructed a prototype, or "typical features", portrait of the 963 officer-involved lethal shootings that occurred in 2016 by calculating means and categorical frequencies for the situational variables that I measured, and for several existing database

variables. For analytical purposes, several consistent changes were made to the raw data. Time data was condensed to reflect the hour that each incident occurred, omitting minutes. For example, 11:42 became 11:00, 23:21 became 23:00. Data on the number of officers and non-officers present was often not definitively clear. For example, in a case where 5 officers were identified but video of the incident shows there were many more, an entry of 5+ or 5 (+?) was made. These ambiguous entries were rounded up in intervals of five to establish a concrete integer for analysis (e.g., 4+ became 5, 8+ became 10, 13+ became 15, and so on.) The deceased was included in the number of non-officers present (e.g., 1 non-officer indicates that the deceased was the only non-officer present). To determine whether these means and category frequencies differed significantly between cases of *unarmed* (n=51) and *armed* (n=912) individuals, I performed t-test and chi-square analyses. Alongside the variables that I gathered personally, those borrowed from *The Washington Post*'s database were an invaluable supplement that allowed me to construct a descriptive picture of an "average" 2016 case of the officer-involved shooting of an armed or unarmed individual by incorporating the age, race and sex of the deceased, as well as whether or not they were fleeing when shot.

Results

Age of Deceased, Number of Officers and Non-officers Present

Independent-sample t-tests were conducted to determine whether age of the deceased, number of officers present, and number of non-officers present differed significantly between 2016 cases of unarmed and armed officer-involved lethal shootings. The unarmed deceased were younger on average (M = 29.3, SD = 9.9) than

the armed deceased (M = 37.0, SD = 12.8); t (935) = -4.09, p < .001, d = -0.61. In addition, more officers were present at the time of the shooting of an armed (M = 3.0, SD = 2.2) than an unarmed person (M = 1.3, SD = 0.6); t (960) = -5.35, p < .001, d = -0.78. Similarly, a larger number of non-officers were present at the time of shooting of armed persons (M = 1.7, SD = 1.4) than of unarmed individuals (M = 1.1, SD = 0.5); t (959) = -2.97, p = .003, d = -0.43.

Time of Incident

Fatal police shootings of unarmed individuals occurred in greater proportion between the hours of 12:00 AM and 2:00 AM, followed by a lull from early to mid-day, then spiking most significantly between 5:00 PM and 7:00 PM, followed by another decline (see Figure 1). Of the unarmed cases, none occurred between the hours 6:00 and 8:00 AM, 11:00 AM and 1:00 PM, or 3:00 and 4:00 PM. Beginning at 5:00 AM, shootings of armed individuals increased steadily hour by hour until reaching a peak between the hours of 9:00 PM and 11:00 PM.

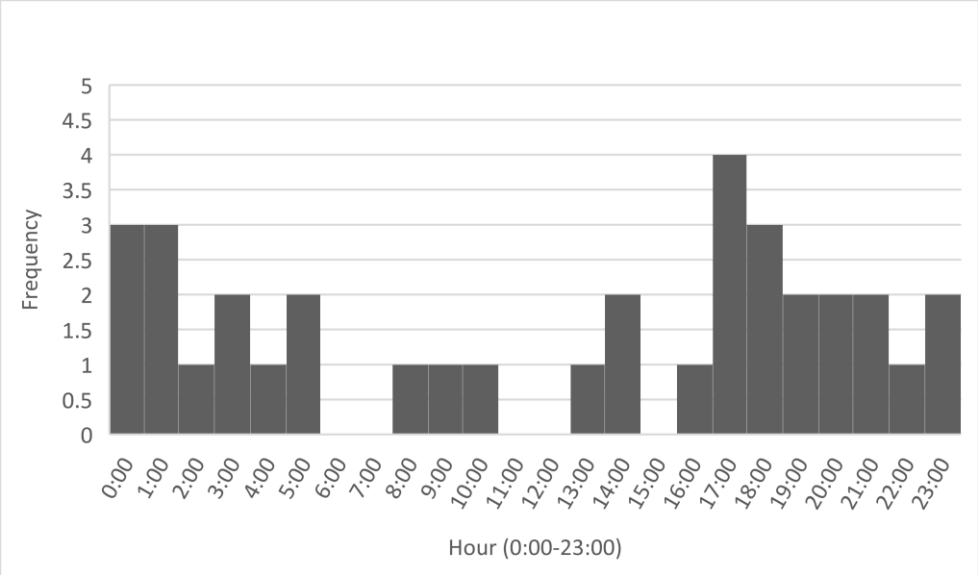

Figure 1. Time of Shooting in Cases of Unarmed Deceased.

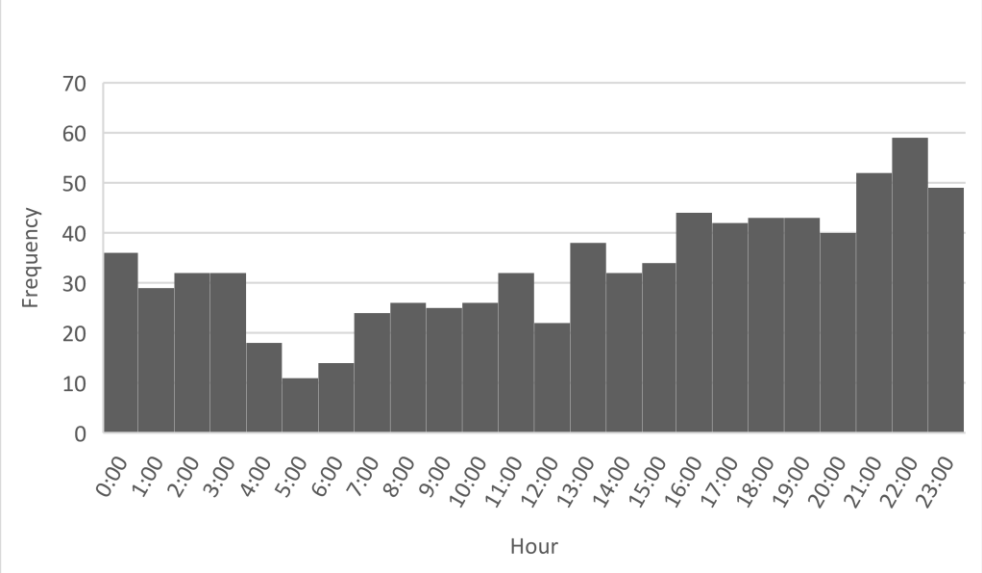

Figure 2. Time of Shooting in Cases of Armed Deceased.

Deceased Sex, Race, Warrant, and Fleeing Status

A chi-square test of goodness-of-fit was performed to determine whether the categorical frequencies of sex, race, and warrant status of the deceased (see Table 1) were equally distributed between cases where this deceased was armed or unarmed. Sex of the deceased was equally distributed between both samples, X^2 (1, N = 963) = 0.97, p = 0.325. This is largely because in cases of armed and unarmed cases, the large majority of deceased were male. Race of the deceased was also equally distributed, X^2 (5, N = 963) = 9.40, p = 0.09. Finally, armed deceased were more likely to have a warrant out for their arrest than did unarmed deceased, X^2 (1, N = 963) = 19.43, p < .001. The percentage of deceased fleeing and not fleeing at the time of the shooting were not equally distributed, X^2 (1, N = 963) = 9.57, p = 0.002.

Table 1. Categorical Frequency Percentages for Deceased Sex, Race, Fleeing, and Warrant

	Sex	Race	Flee	Warrant
Unarmed	94% M 6% F	42.8% W 36.7% B 18.4% H 2.0% N	53.1% Not Fleeing	90% No warrant/Unclear 10% Active Warrant
Armed	96% M 4% F	52.2% W 25.2% B 17.7% H 1.8% N 1.8% A 1.3% O	67.5% Not Fleeing	69.7% No warrant/Unclear 30.2% Active Warrant

Discussion

Several *demographic* variables examined in the present study were relatively fixed. For example, fatally shot unarmed and armed persons were overwhelmingly likely to be male, as were the involved officers. In addition, neither race of the officer (predominantly European American) nor race of the deceased differed significantly between armed and unarmed cases. A major theme of the Ferguson Unrest – the movement referenced in the introduction - is racial disparity in police use of deadly force. This is a subject that has garnered significant research (e.g., Hechman, Flake, & Calanchini, 2017; Kahn et al., 2016). When Cesario, Johnson, & Terrill (2018) analyzed 2015-2016 police shooting data, adjusting for crime rate instead of population values (as is common for this research, see Kahn, 2016; Hechman, et al., 2017), they found no significant evidence of anti-black disparity in fatal shootings of armed or unarmed citizens. The present study's results similarly indicate that European American, African American, and Hispanic American individuals were roughly equally represented in both unarmed and armed lethal force events.

However, it should be pointed out that African Americans comprised a much higher percentage of fatally shot citizens (armed or unarmed) than their actual percentages in the overall U.S. population. For example, African American males represent approximately 7% of the U.S. population (https://www.census.gov), yet they made up 37% of the unarmed citizens and 25% of the armed persons fatally shot in 2016. A smaller racial disparity also existed for Hispanic Americans. So, to address the contradictory findings in this area, future research could replace crime rate adjustments

with a direct analysis of whether unarmed minorities were actually committing a violent crime at the time they were fatally shot.

In contrast, many *situational* differences did exist between cases of armed and unarmed officer-involved fatal shootings. Specifically, officer-involved fatal shootings of armed and unarmed persons differed in terms of age, warrant status, and fleeing behavior of the deceased, number of officers present, number of non-officers present, and time of the incident. Overall, compared to those who were armed, individuals shot while unarmed were younger, less likely to have an outstanding warrant, more likely to be fleeing from officers, and in environments containing fewer police officers and other citizens. Further, the shooting of unarmed individuals did not follow a within-day, hour-by-hour increase, as did the fatal shooting of armed persons. Each difference will be discussed in turn.

On average, unarmed individuals were 29 years old at the time of their death and armed persons were 37 years old. A somewhat greater age disparity was observed in terms of modal age – the most common age of unarmed persons was 22 years old and the most frequent age of armed individuals was 31 years old. One explanation for this age difference has to do with officers' perceived threat level. It may be the case that police officers (typically in their mid-30s) perceive male suspects in their 20s to be stronger, faster, or otherwise more physically threatening than suspects in their 30s. If that is the case, a heighted sense of threat might lead officers to incorrectly perceive the presence of a weapon that is not actually present (i.e., a false alarm) (see Kleider, Parrott & King, 2010). Alternatively, when confronted by law enforcement personnel, younger persons

may be more likely to behave in ways (e.g., impulsively) that police officers interpret as hostile or threatening. Future data collection efforts in this area are needed to tease apart these possible explanations.

As previously mentioned, in incidents where the deceased was unarmed, there were significantly fewer officers and non-officers present than in incidents where the suspect was armed. Perhaps when fewer fellow officers are present, officers see themselves as more vulnerable, or in greater danger when confronting a suspect. Thus, their perception of threat is especially high. Previous studies (e.g., Flemming, Bandy, & Kimble, 2010) show that officers make more false-positive weapon identification errors under high threat conditions (i.e., they more often misidentify non-weapon objects as weapons). In addition, "solo" officers may react more strongly or quickly to ambiguous/ difficult to interpret behaviors exhibited by a suspect, such as sudden movements or failure to comply with an order. Additional investigation should examine how the presence of others might influence the social dynamics of an officer-suspect interactions.

Hourly frequency analyses indicated that the fatal shooting of unarmed citizens most often occurred in the early evening (i.e., 5 to 7 pm) and, to a lesser degree, between the hours of midnight and 2:00 AM Both of these spikes could potentially be explained by officer fatigue. If a typical eight-hour day shift began at 9 AM, officers on that shift ended their workday around 5 PM, precisely when the fatal shooting of unarmed individuals was most frequent. Those working a somewhat longer shift ended their workday around 7 PM, which represents the end of the two-hour evening "spike" in unarmed citizen shootings. It is quite possible that officers in the cases investigated here

experienced significant fatigue during that timeframe, rendering their judgments less sound, or lowering their ability to employ less lethal tactics (e.g., tasers, de-escalation dialog). Officers beginning an evening/second shift at 5:00 PM would have been similarly fatigued 7-8 hours later, precisely when the second spike in fatal shootings of unarmed persons occurred.

In contrast, cases of armed deceased increased gradually over time, and occurred most often later in the evening, between 9:00 PM and 11:00 PM. This time pattern directly overlaps/maps onto the time pattern for violent crime (National Archive of Criminal Justice Data, 2016). Thus, it is reasonable to assume such force was mainly used against those involved in the commission of violent crimes. However, fatal use of force against unarmed individuals does not map onto this pattern. This suggests that unarmed individuals fatally shot by law enforcement officer were less likely to be engaged in violent crime at the time of their shooting.

Neither sex of the officers nor sex of the deceased differed significantly between cases of armed and unarmed fatal shootings. This makes sense, as the vast majority of police officers are male. Further, males commit more violent crime (which would account for armed suspects fatally shot) and are perceived to pose a greater physical threat to officers (which would explain unarmed suspects being fatally shot). Fatally shot unarmed citizens were more likely to have been fleeing from officers than were fatally shot armed citizens. Closer inspection indicates that those fleeing were most likely to be doing so in a vehicle. Thus, perceived risk to other motorists may explain some instances of officers opening fire during rush hour (5:00-7:00 PM). Other cases including those

outside of this window (from 12:00-2:00 AM) may be explained by perceived risk to officers.

Given her data collection experience, the author would recommend that future research focus on the type or quality of the situation in which the shooting occurred. In addition, better understanding the type of responding officers involved may also shed important light on these situations (e.g., SWAT, traffic stop, serving of a warrant, domestic, welfare check, etc.). Of further interest may be the impact of the rate of officer-involved use of force involving armed or unarmed individuals in relation to officer shift-length and fatigue in these situations. During my research, certain sources provided vague or unclear indications of information required for the variables I was recording. Where number of officers and non-officers present and warrant status data is wanting, I feel information on the nature of the officer(s)' presence in the situation may be more easily and consistently obtained while providing valuable insight regarding potential situational influences.

Another detail that warrants consideration is that of the author's ability to collect this type of data improved as the project progressed. Data was collected for unarmed cases first, meaning that as knowledge of how and where to find consistent and representative data increased, it likely would have favored the amount of data gathered for armed cases. Future researchers may look more closely at these unarmed cases to solidify the measures presented here.

In conclusion, the present investigation indicates that, compared to fatally shot *armed* citizens, fatal shot *unarmed* persons in 2016 were younger, less likely to have an

existing warrant, and confronted in either the early evening or 12:00 to 2:00 AM hours with few others present. This portrait begs the question, "What was occurring in these situations to turn them deadly?" The pattern of results outlined above suggest that each factor (suspect age, time of day, etc.) heightened officers' perception of threat and/or lowered officers' physical/mental resources (fatigue). Thus, even though only 5-9% of all officer-involved lethal shootings involve an unarmed victim, perhaps the situational data presented here may inform future training of officers to be more sensitive to situations similar to the "typical features" portrait constructed here.

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Appendix A-

Descriptive Statistics

	Age		Officers Present		Non-Officers Present	
	Unarmed	Armed	Unarmed	Armed	Unarmed	Armed
Valid	48	889	50	912	50	911
Missing	2	23	0	0	0	1
Mean	29.271	36.979	1.320	2.981	1.140	1.739
Median	27.000	35.000	1.000	2.000	1.000	1.000
Mode [a]	22.000	31.000	1.000	2.000	1.000	1.000
Std. Deviation	9.946	12.852	0.551	2.190	0.452	1.420
Minimum	12.000	13.000	1.000	1.000	1.000	1.000
Maximum	73.000	86.000	3.000	16.000	3.000	15.000

[a] More than one mode exists, only the first is reported

Independent Samples T-Test

	t	df	p	Cohen's d
Age	-4.089	935.000	< .001 [a]	-0.606
Officers Present	-5.352	960.000	< .001 [a]	-0.777
Non-Officers Present	-2.973	959.000	0.003 [a]	-0.432

Note. Student's t-test.

[a] Levene's test is significant ($p < .05$), suggesting a violation of the equal variance assumption

Appendix B-

Frequencies for Gender

Arm/Unarm	Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Unarmed	F	3	6.000	6.000	6.000
	M	47	94.000	94.000	100.000
	Missing	0	0.000		
	Total	50	100.000		
Armed	F	37	4.057	4.057	4.057
	M	875	95.943	95.943	100.000
	Missing	0	0.000		
	Total	912	100.000		

Frequencies for Race

Arm/Unarm	Race	Frequency	Percent	Valid Percent	Cumulative Percent
Unarmed	A	0	0.000	0.000	0.000
	B	18	36.000	36.735	36.735
	H	9	18.000	18.367	55.102
	N	1	2.000	2.041	57.143
	O	0	0.000	0.000	57.143
	W	21	42.000	42.857	100.000
	Missing	1	2.000		
	Total	50	100.000		
Armed	A	15	1.645	1.761	1.761
	B	215	23.575	25.235	26.995
	H	151	16.557	17.723	44.718
	N	15	1.645	1.761	46.479
	O	11	1.206	1.291	47.770
	W	445	48.794	52.230	100.000
	Missing	60	6.579		
	Total	912	100.000		

Frequencies for Flee

Arm/Unarm	Flee	Frequency	Percent	Valid Percent	Cumulative Percent
Unarmed	Car	14	28.000	28.571	28.571
	Foot	5	10.000	10.204	38.776
	Not fleeing	26	52.000	53.061	91.837
	Other	4	8.000	8.163	100.000
	Missing	1	2.000		

Frequencies for Flee

Arm/Unarm	Flee	Frequency	Percent	Valid Percent	Cumulative Percent
	Total	50	100.000		
Armed	Car	129	14.145	14.413	14.413
	Foot	115	12.610	12.849	27.263
	Not fleeing	604	66.228	67.486	94.749
	Other	47	5.154	5.251	100.000
	Missing	17	1.864		
	Total	912	100.000		

Frequencies for Deceased Warrant

Arm/Unarm	Deceased Warrant	Frequency	Percent	Valid Percent	Cumulative Percent
Unarmed	No	45	90.000	90.000	90.000
	Yes	5	10.000	10.000	100.000
	Yes	0	0.000	0.000	100.000
	Missing	0	0.000		
	Total	50	100.000		
Armed	No	625	68.531	69.754	69.754
	Yes	271	29.715	30.246	100.000
	Missing	16	1.754		
	Total	912	100.000		
	Total	912	100.000		