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Les Temps Roulent: An Analysis of Emergency Medical and Police Response Times to Shootings and Lethality in New Orleans

Sarah Sacra
University of Central Florida

LES TEMPS ROULENT: AN ANALYSIS OF EMERGENCY MEDICAL AND POLICE RESPONSE TIMES TO SHOOTINGS AND LETHALITY IN NEW ORLEANS

by

SARAH ANN SACRA
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ABSTRACT

Lethality of aggravated assaults has long been discussed in terms of weapons used, location of assault, demographics of victims, and regions of the US in which the assault occurred. However, dating back to the 1950s, medical response times have been discussed as a mediating factor, but minimally explored in analyses. The current study assesses the lethality of shootings with a primary focus on emergency medical and police response times in New Orleans, LA. Along with routine activities and social disorganization indicators, 102 shootings that occurred in 3 months are analyzed to establish response time patterns of lethality. Results indicate that neither medical nor police response times impact the odds of a victim surviving a shooting, but instead, it is the days on which the violent encounters occur and the socioeconomic characteristics of the neighborhood that have a stronger influence on life or death, although not statistically significant. Limitations and future research directions are discussed.

I dedicate this to the people of the great city of New Orleans, the victims included in these analyses, and their loved ones. This study has been conducted in the hope that this exploration and future studies will improve the lives of residents and visitors, alike.

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CHAPTER ONE: INTRODUCTION

There are many factors that go into determining the lethality[1] of an aggravated assault. Much of the current literature indicates that common characteristics of assault, such as weapon, location of injury(ies) on the body, socioeconomic status of the area of the assault, distance to a trauma center, and road network connectivity, all have an important influence upon the lethality of the outcome (Barlow & Barlow, 1988; Doerner, 1975, 1983; Doerner & Speir, 1986; Giacopassi & Sparger, 1992; Harris, Thomas, Fisher, & Hirsch, 2002; Poole, 2013). It has been noted by several researchers that, on occasion, the only difference between an aggravated assault and a homicide is swift and appropriate medical intervention (Doerner, 1983; Morris & Hawkins, 1969; Pittman & Handy, 1964; Sarvesvaran & Jayewardene, 1985; Wolfgang & Ferracuti, 1967). However, although agreed upon by many as a leading factor in determining the lethality of intentional injuries, emergency medical response times and police response times to the scenes of criminal assaults have been minimally incorporated into empirical studies; for exceptions, see Barlow and Barlow (1988) and Blanchard, Doig, Hagel, Anton, Zygun, Kortbeek, Powell, Williamson, Fick, and Innes (2012).

As homicide is an ever-present public health concern, both nationally and globally, incorporating emergency response time analyses in the calculation of lethality can be a key component to improving public policies, interventions to reduce murders in particular, in the effort to decrease the overall homicide rate (Mercy & Rodney, 1999).

[1] The probability, between 0 and 1, based upon past events that an incident will end in the death of an individual.

This study will add to the growing literature on lethality through the study of lethal and non-lethal outcomes of recent aggravated assaults, shootings to be specific, using city-level data for the first quarter of 2014 in New Orleans, Louisiana. New Orleans is a very appropriate site for this type of study as it is located in the South, the most lethal region of the United States (Doerner, 1975, 1983; Gastil, 1971; Hackney, 1969; Rose, 1979; Whitt, Corzine, & Huff-Corzine, 1995), and has also consistently been one of the most lethal cities in the United States (Corzine, Huff-Corzine, Poole, McCutcheon, & Sacra, 2015). Additionally, New Orleans has persistently been in the top six rankings of cities in the United States with the highest murder rates since at least 1985 (DeSilver, 2014).

Unique to this study is the incorporation of police response times as an indicator of lethality. In all previous research, this key variable is neglected. Its inclusion in research on lethality could open the door to understanding an important facet of lethality as an aggravated assault journeys toward becoming either a homicide or survival. If pertinent findings result from this study, then certain policy implications can assuredly be discussed and changes can potentially be implemented to not only reduce homicide in New Orleans, but in other cities as well.

CHAPTER TWO: THEORETICAL PERSPECTIVE

Criminal Events Perspective

Though not a theory in and of itself, the criminal events perspective (CEP) takes into account multiple factors of a criminal incident; location, situational factors that united the offender(s) and victim(s), the event itself, and the aftermath of their interaction (Libby, 2009; Meier, Kennedy, & Sacco, 2001; Sacco & Kennedy, 1996). This provides a more holistic approach to understanding criminal events such as shootings and their outcomes, which are of particular interest to the present study. While the majority of the CEP applications have been employed to explain the first two components of a criminal event (Wilcox & Gialopsos, 2015), the exploration of the CEP in this study will provide insight into the importance of the last part of the event through the analysis of response times and the likelihood of post-event lethality by expanding the variables that have typically been taken into account when explaining the outcome of a criminal assault. The utilization of this perspective is appropriate as numerous studies regarding aggravated assaults and murders have been conducted and analyzed through these lenses. Past studies have indicated that an in-depth look at the presence of a trauma center and response times to the location of an assault is necessary to understanding the entire criminal event and how such response times affect lethality (Poole, 2013; Weaver, Wittekind, Huff-Corzine, Corzine, Petee, & Jarvis, 2004).

Routine Activities Theory

Routine activities theory, consistent with the CEP, holds a key to understanding why criminal assaults occur in certain areas versus others and at certain times of the week and day; with a major emphasis on location (Mustaine, 2014). The three components of routine activities theory as proposed by Cohen and Felson (1979); a suitable target, a motivated offender, and the lack of capable guardianship, must all intersect in time and space for a crime to occur. This theory also indicates that changes in social and economic circumstances impact crime and victimization.

An individual's demographics sway their daily activities and lifestyles and can, therefore, be utilized to forecast their risk of offending and victimization (Hindelang, Gottfredson, & Garofalo, 1978). For example, young, unmarried males experience significantly higher levels of victimization than anyone else, particularly in regard to their night life. They are more often away from the home, engage in higher risk-taking behaviors such as drug and alcohol use, and frequent socially disorganized areas, giving them more exposure to offenders. With more frequent visitation to disorganized areas and engagement in risky behaviors, their chances of becoming involved in violent encounters increases; not only as a victim, but as an offender as well. Research has systematically revealed that victimization is significantly more likely to occur when an individual is in the vicinity of offenders (see Dugan & Apel, 2003; Miethe & Meier, 1990). The final element of capable guardianship is primarily interpreted at the neighborhood level as collective efficacy, close family ties, positive peer interactions, etc. When any of these types of guardianship is present, the chances of victimization decrease (Cohen, Kluegel, & Land, 1981). However, disorganized neighborhoods are defined by a lack of collective efficacy; single parent, female-headed households where the parent is often away at work; and everyone minding their own business. This paves the way for the lack of (or very little) guardianship and almost invites criminal activity. Based on the routine activities of an individual, particularly from a disorganized community, the chances of being victimized are great. Aggravated assault rates and homicide rates can be expected to be higher in these areas, a relationship that has been closely examined through a related theoretical lens, social disorganization.

Social Disorganization Theory

Social disorganization theory, as established by Shaw and McKay in 1942 at the neighborhood level and further developed by Kornhauser (1978), Sampson and Groves (1989), Bursick and Grasmick (1993), and others specifies that, particularly in an urban setting, ethnic heterogeneity (the demographic make-up of an area), residential mobility (Kornhauser measures this as population turnover), and poverty lead to a lack of collective efficacy and breakdown of social institutions which result in the inability of a community to police itself. A major finding of Shaw and McKay's (1942) study, and key to subsequent research and the present study, was that crime and deviance were not consistently dispersed temporally and spatially. Conversely, crime was concentrated in certain neighborhoods across space and time, regardless of changes in population or residential demographics. These neighborhoods exhibited low socio-economic status, had a high percentage of residents who left once they had the means to do so, and were settled in a rotating manner by newly arriving immigrants. In addition, these neighborhoods produced “criminal traditions” which were transmitted through generations and created the perfect environment for crime and delinquency (Shaw & McKay, 1942).

Although social disorganization theory was originally limited to the scope of delinquency, the application of these variables can prove fruitful to the study of other crimes in neighborhoods which possess similar characteristics (Elliott & Merrill, 1941). Thus, it can be theoretically assumed that these neighborhoods will experience more episodes of criminal violence than will their ethnically homogenous counterparts with home-owning, educated, and affluent residents.

Through the conceptual side-by-side (horizontal) integration (Bursik & Grasmick, 1993; Messner, Krohn, & Liska, 1989) of routine activities and social disorganization theories, the emergence of spatial-temporal patterns can be anticipated while conducting case studies of criminal events in cities regarding confrontational crimes, specifically the lethality of shootings for this paper. These theoretical patterns, if supported by research findings, can be utilized to amend public policy; e.g. more police patrol of these neighborhoods, enhancement of the quantity and quality of ambulance services to produce a reduced response time to an assault, thereby increasing chances of survivability, and ultimately decreasing a city’s lethality rate.

CHAPTER THREE: LITERATURE REVIEW

Lethality

Homicide can be understood as an incident of aggravated assault which results in the death of an individual regardless of their role in the assault (Doerner, 1988; Harris et al., 2002). More simply stated, homicide can be defined as a lethal assault (Poole, 2013). Lethality is measured by dividing all homicides that have occurred by the number of homicides and potential homicides (aggravated assaults) added together for a geographical unit (Corzine et al., 2015; Poole, 2013). Mathematically, this number will fall somewhere between zero and one. Aggregated across all cases in an area over a specific length of time, the closer to one this number is, the higher the lethaity rate and vice versa. To obtain a rate for comparison purposes, this number is multiplied by one hundred. There are a multitude of variables and covariates that contribute to an event's lethality potential and, in turn, increase or decrease a person's chance of survival. However, the focus in this study is the nexus between response times, lethality, and location (Barlow & Barlow, 1988; Doerner, 1975, 1983, 1988; Doerner & Speir, 1986; Regoeczi, 2003).

Firearms

Criminologically, weapons research goes back many decades. Much is to be said about the varying degrees of lethality each type of weapon possesses and how often each is utilized in the commission of an aggravated assault, especially when the assault ends with a homicide. However, across numerous homicide studies, out of every possible weapon choice, firearms have been indicated as the most lethal weapon without exception (e.g., Barlow & Barlow, 1988; Corzine et al., 2015; Morris & Hawkins, 1969). Beginning with studies in 1968, guns were used in 8,870 murders, 64,950 aggravated assaults, over 10,000 suicides, and over 2,500 “accidental” deaths (Morris & Hawkins, 1969); all in comparison to 100,000 non-fatal gun injuries. To compare the lethality of this gun usage to that of knives or other cutting instruments that year, 13 percent of assaults with firearms were fatal whereas only 3 percent of knife assaults resulted in death. In Zimring’s (1979) study of robbery in Detroit, he found that the death rate that resulted from robberies committed with a gun was consistently higher than the rate of any other method of attack. Additionally, he noted that if a deadly weapon was selected and an injury occurred, the more lethal instrument (gun) would lead to a higher number of fatal injuries. Barlow and Barlow’s (1988) study of the role of weapons on homicidal violence demonstrated a higher fatal outcome for any type of wound inflicted by a firearm of any sort than by a knife or other weapon; this was particularly true for a firearm of larger caliber. They go on to say “knives remain significantly less lethal than firearms regardless of wound location” (p. 354). Harris and colleagues’ (2002) study supports earlier findings of weapon lethality. When looking at the mean yearly lethality ratio by weapon type from 1964-1999, firearms were about 4 times more lethal than knives; .0846 compared to .0241 respectively. More recently, Weaver and colleagues (2004) utilized the criminal events perspective to predict odds of lethality. Their findings indicated that if a firearm was used in the event, the victim was almost 12 times more likely to die from the assault, whereas the victim was only about

2.5 times more likely to die as a result of the use of a knife in each case, in comparison to personal weapons as a baseline. The present study will add to the existing body of literature by analyzing outcomes of events that involved the most consistently lethal weapon – firearms.

The South

Regional disparities in homicide within the US are very apparent with the South having a much higher rate of homicide than any of its counterparts. Research on this phenomenon date back to the nineteenth century with Redfield's (1880) book comparing the North and South on homicide and its correlates and continues today with many researchers working to understand why this pattern remains (Corzine, Huff-Corzine, & Whitt, 1999; Gastil, 1971; Hackney, 1969; Huff-Corzine, Corzine, & Moore, 1986, 1991; Rose, 1979). Doerner (1975) conducted one of the earlier regional analyses of homicide rates in the United States utilizing official data from 1969. In his study of the 48 continential states and the District of Columbia, he found a mean homicide rate of 6.28. Of the 16 southern states[2] included in the analysis, 14 exceeded the national homicide rate, averaging 10.41 compared to 6.28 nationally. Similar results have been found in numerous other studies; "[i]t is clear from a review of the historical data that southern cities have shown a propensity for a greater frequency of acts of lethal violance than have their nonsouthern urban counterparts" (Rose, 1979, p. 2). Narrowing the focus from the South to a particular state, The Centers for Disease

[2] Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia as defined by the US Bureau of the Census.

Control and Prevention (1992) analyzed death cerificate data for firearm-related mortality in Louisiana as it ranked third for age-adjusted firearm-related deaths from 1970-1990 in the United States. Results indicate that firearms were the leading cause of injury in deaths for 4 out of 5 years from 1986-1990. In that time, 5,647 persons died in Louisiana by a firearm (Centers for Disease Control and Prevention, 1992). A more recent study by Kalesan, Vasan, Mobily, Villarreal, Hlavacek, Teperman, Fagan, and Galea (2014) indicates that the firearm-related fatality rate in the state of Louisiana over an 11 year period, 2000-2010, was 18.62 per 100,000, almost double the national average of 10.21 per 100,000. This supports the notion of a more violent and lethal South.

Narrowing the scope to New Orleans, as this will be the city-level focus of this study, Corzine, Huff-Corzine, Poole, McCutcheon, and Sacra (2015) demonstrated that although it has one of the lowest aggravated assault rates, New Orleans experienced the highest murder rate in 2010 out of the most violent cities in the United States[3,4,5] and, therefore, had the highest lethality rate of major cities with a tradition of high murder rates. This rate, however, has not been constant; it has been on the rise since 1996 when it increased from 6.7 during 1996-2001 to 11.0 during 2002-2009 (a 64% increase) and finally stood at 11.7% in 2010. Of particular note, the lethality rate spiked in 2002 but has yet to return to a lower rate remotely similar to the years prior to 1996. During this time, from 1996-2010, the raw numbers of homicides in the Crescent City

[3] In 2012, New Orleans was rated the 17th most lethal city in the world (Engel, Sterbenz, & Lubin, 2013).
[4] In 2013, New Orleans was rated the 26th most lethal city in the world (Engel & Sterbenz, 2014).
[5] In 2014, New Orleans was rated the 28th most lethal city in the world (Macias & Engel, 2015).

have almost doubled. VanLandingham (2007) studied the murder rate for New Orleans from 2004 to 2006 and, although there were issues with population estimates in the second half of 2005 due to Hurricane Katrina, his research is in line with the findings of Corzine and colleagues. He states that, "compared with rates in cities of comparable sizes, murder rates in New Orleans have been substantially higher since at least 2004, and the disparity has been worsening since then" (2007, p. 1615).

Homicide in New Orleans

Vanlandingham (2007) and Corzine and colleagues (2015) were far from wrong. Homicide in New Orleans for the first two and a half months of 2015 was already up 94% compared to the same time period for 2014 (Daley, 2015). While there are many potential causes for homicide, such as acts of neglect or domestic violence, New Orleans possesses some unique traits that lead to higher homicide rates than other comparable cities. A prominent issue that plagues the city is a rampant gang problem. In the 169 square miles of land in New Orleans, there are at least 37 known gangs (Bolden & Taylor, 2014). From 2011 to 2013, a little over one third of all homicides in the city were deemed as involving a gang member (Bolden & Taylor, 2014). Pre-Hurricane Katrina, the gangs were typically centralized in the housing projects, but after the natural disaster brought the city to its knees and displaced most of its residents, the gangs were relocated throughout New Orleans; they have been identified in all parts of the city except for the French Quarter and the Lakeview-Lakefront area (Bolden & Taylor, 2014). It has been demonstrated that areas of high gang concentration are associated with increased homicides (Costanza & Helms, 2012), and that gang homicides can be explained through social disorganization theory (Mares, 2010).

Furthermore, New Orleans has historically been a very racially segregated city. As the rest of the county becomes increasingly racially integrated, New Orleans has continued to become increasingly segregated since the 1990s (Strait, Gong, & Williams, 2007). Strait and colleagues' (2007) study on neighborhood racial and ethnic segregation within New Orleans has shown a trend of non-whites becoming gradually more segregated from whites. Not only this, but racial minorities have actually integrated with each other in residential neighborhoods. This study also showed that residential behaviors of whites and Hispanics contributed to the isolation experienced by blacks. That being said, it has been shown that racial segregation has a positive, augmenting effect upon violent crime (Logan & Messner, 1987).

Additionally, in the midst of record-breaking numbers of homicides, the number of homicide detectives in the city of New Orleans is rapidly declining. At its lowest number in five years, from 29 active homicide detectives in 2014 down to 22 this year with another retiring in May 2015 and no plans to hire any replacements, the question is raised about whether the department will be able to keep up with its caseloads (Daley, 2015). With the lack of resources to close cases, this may have serious repercussions in regards to an increase in the number of murders committed (Keel, Jarvis, & Muirhead, 2009). Criminals may become emboldened and escalate their activity from petty crimes to more violent and even lethal acts while murderers are not deterred from committing further killings. These recent events in New Orleans underscore why this city is an excellent choice as the site for this study.

Emergency Medical Resources

Doerner and Speir (1986) were among the first to incorporate variables congruent with how medical resources can affect the lethality of an aggravated assault into a study. This built upon Doerner's earlier study (1983) which focused on why the South has a higher homicide rate than the rest of the country. His results indicated that "states with relatively less adequate medical resources experience higher homicide rates, not because of their "southerness," but because of limited access to proper medical care" (1983, p.1). Additionally, this study found that the differential distribution of medical resources accounted for the homicide rates within the South. Although Doerner and Speir were the first to analyze data containing medical resource variables, a proposed link had been postulated by other criminologists (Corzine et al., 2015; Harris et al., 2002; Morris & Hawkins, 1969; Wilson, 1985; Wolfgang, 1958). While most of these writings focus on the advancement of medical services as lowering the homicide rate, they all propose that reducing emergency medical services (EMS) response times will increase survivability chances for victims.

Two previous studies of significant importance to the present endeavor are found in the medical literature. The first is Barlow and Barlow's 1988 study of the role of weapons in homicidal violence in St. Louis. In addition to examining weapon usage, injury location, and victim age, they are the first to examine mean response times for emergency medical services and their effect upon fatalities. They found a mean mobilization time of 1.71 minutes and a time to scene of 5.50 minutes; time spent at scene was 17.59 minutes and transport time to a hospital was 6.91 minutes. Although the emergency responders have no control over it, notification lag was an issue that was addressed as well. This is the estimated time from the victim receiving the injury and the notification of said injuries to authorities. Overall, this study found that "longer response times were not associated with higher mortality rates" (p. 355). However, there did seem to be a time threshold beyond which mortality rates jumped to about 20% - when there was an overall response time of more than 20 minutes - indicating a non-linear relationship. Also, the more time spent at the scene of the assault increased the odds of a fatality, even with a shorter notification lag. In sum, as can be theoretically expected, the combination of a short notification lag and a fast EMS response increased chances of survival (Barlow and Barlow, 1988).

The second study of importance is a more recent investigation by Blanchard and colleagues (2012). This study examined whether an 8-minute EMS response time was associated with mortality in an urban setting. Of the 7,760 cases that were included in their analysis, 1,865 (24%) had a response time of greater than or equal to 8 minutes. Their results indicated that, for patients with a response time of greater than or equal to 8 minutes, 7.1% died after being transported to an appropriate medical facility compared to 6.4% for patients with a response time of less than or equal to 7 minutes and 59 seconds. Although beneficial, this study is limited because the researchers constructed a dichotomous variable for response times. Perhaps if they would have left response times as a continuous variable, results would be different or a more appropriate minute break-point could have been discovered.

Present Study

The present study is designed to examine the seldom researched area of emergency medical and police response times to aggravated assaults committed by firearms, the most lethal weapon, in New Orleans, the most lethal city in the United States. First, this study will add to the body of lethality literature with more current data on aggravated assaults in which firearms are utilized. One benefit of this study versus previous investigations is the time-frame of the data. While most of the response time studies were conducted with data from the 1980s, my data contain response times from 2014 and can therefore give an updated perspective on emergency medical responses and their effectiveness. Second, this study will fill in the gap of the elusive response time variable utilizing New Orleans Emergency Medical Services (EMS) and New Orleans Police Department (NOPD) response times. This is the first study to include police response times in an examination of lethality. This will aid in discerning any possible effect that police response time has on whether a victim survives an aggravated assault. Third, geospatial results from this study will indicate where large numbers of shootings are located to identify characteristics of the areas where these events are occurring that increase the risk of a lethal outcome. The results can potentially lead to the development and implementation of preventive services and measures to reduce lethality.

Based on previous literature, the present study will be guided by three research questions. The first question, based primarily on Doerner's (1983; 1988), Barlow and Barlow's (1988), and Blanchard and colleagues' (2012) studies, will be whether a lower response time to a shooting leads to decreased odds of it ending in a homicide. To serve as a comparison between emergency response services, the present study will also examine if there is a discernable difference between emergency medical services response times and NOPD response times. There are two rationales for utilizing NOPD data as an indication of lethality. First, if violence is still on-going when the police are notified, it is likely to end when the perpetrator hears police sirens, thus resulting in a shorter violent episode. The shorter the duration of the episode, the less likely that lethal damage will be inflicted upon the victim. Second, although not protocol, it is probable that if a shooting call comes in to dispatch from a notoriously crime-ridden area, empirically described as socially disorganized, the NOEMS unit may wait for the police to arrive before approaching the scene. This in turn would result in longer NOEMS response times.

Based upon Poole's (2013) study indicating road network connectivity as an important factor in determining lethality of aggravated assaults, particularly when longer distances need to be travelled, the second research question for the present study will examine which neighborhoods of New Orleans have the lowest and highest response times. Theoretically, the closer neighborhoods to the trauma center should have lower response times and those further away should have higher response times. For the third research question, to compliment the second research question and to test social disorganization theory, the number of shootings and eventual homicides will be evaluated to see if they are concentrated in certain areas of the city. Additionally, the analysis of temporal data will be used to evaluate routine activities theory to assess the concentration of events for certain days of the week. Both of these spatial and temporal approaches will have direct policy implications, including if police need to concentrate their patrol efforts to particular areas at particular times.

As a final note for the present study, the scope of lethality is limited to shootings because data for violent encounters perpetrated with any other weapon are not available. However, the inclusion of other weapons in this study most likely would not affect the outcome as approximately 90% of all homicides in New Orleans are committed with firearms (Wellford, Bond, & Goodison, 2011).

CHAPTER FOUR: METHODOLOGY

Data

This study examines 3 consecutive months of data (January 2014-March 2014) and is based upon an aggregated database constructed from data obtained from the New Orleans Emergency Medical Services[6] (EMS) and the New Orleans Police Department (NOPD).[7] These data were selected because they each contain time-stamp data for variables indicative of response times (RT), variables for the theoretical analysis of routine activities theory, and location variables that can be linked to census data to measure the impact of social disorganization.

The EMS data contain the EMS Item Number; the 911 complaint (all were gunshots as this dataset contains strictly response times to shootings); disposition (whether the victim was dead on scene as a result of homicide or suicide or if he/she was transported to a trauma center, if the call was unfounded or cancelled prior to arrival on scene, or if the patient refused medical services); zip code; date; time the case was created; time the EMS was dispatched to the scene; time arrived on scene; time they made contact with the patient; time they left the scene and were enroute to the hospital; and time they arrived at the hospital. For the purposes of this study, the

[6] New Orleans Emergency Medical Services response times were provided to the researcher by Mr. Jeff Adelson, Staff Writer from the New Orleans Advocate and Mr. Gordon Russell, Managing Editor for Investigations from the New Orleans Advocate.

[7] New Orleans Police Department response times were provided to the researcher by Mr. Jeff Adelson, Staff Writer from the New Orleans Advocate and homicide data were given to the researcher by Dr. Christian Bolden, Assistant Professor, Department of Criminal Justice, Loyola University- New Orleans.

cases which included dispositions indicative that an individual was neither transported nor died at the scene as a result of homicide were excluded from analyses (N = 41).

The NOPD data contain the NOPD Item Number; location (address or block); signal (S30 - dead on scene or S34 - aggravated assault); time the department received the 911 call; time a unit was dispatched; time unit arrived on scene; and the time the case was cleared. The New Orleans homicide reports contain the NOPD district number of the death; date; time; NOPD Item Number; homicide and murder number (succession count for that given year); victim name; victim date of birth; victim sex; victim race; whether the incident had gang involvement (either the crime involved a gang member or was a gang motivated offense); location (address or block); name of detective who worked the case; disposition (open, CBA - cleared by arrest, CBE - cleared by exception, CBW - cleared by warrant, Justifiable Homicide, or Police Shooting); arrestee's name; arrestee's date of birth; arrestee's sex; arrestee's race; weapon involved (if stated); and in some cases, forensics notes. The victim and arrestee's name and demographics were not provided if they were a minor. The EMS and NOPD data are public record under Louisiana law.

To aggregate the data from 3 different files into one, I examined the EMS data and the NOPD data side-by-side and objectively matched cases based on the same date, similar Time Creates, and the same zip code. After all data were matched to the best of the my ability, New Orleans homicide data were examined utilizing the NOPD Item Number and matched to the NOPD data in the constructed data set. This process served to verify the lethality of case outcomes - whether the individual lived or died - information that is unavailable from the EMS data and not always accurate in the NOPD data. Once all three data sets were matched and aggregated, the final data set was ready for use in analyses.

Measures

Independent Variables

Response Times

EMS RT

For the EMS portion of the data set, Time Create, Dispatch, Arrive on Scene, Patient Contact, Enroute to Hospital, and Time Arrive at Hospital are all variables that are available to calculate a response time (RT). As these data contain times, all of the information is in a time-stamp format (HH:MM:SS). To calculate the RT, I went through the data by hand and transformed every cell format to minutes, rounding to the nearest hundredth to take seconds into consideration. RT variables were calculated by subtracting certain variables from others depending on which lethality was being measured as discussed next.

For the RT of how long it took the EMS to arrive on the scene of the shooting, I subtracted Time Create from Arrive on Scene, which resulted in the total number of minutes it took for the EMS to get to the scene for each case. These two variables were used because, unlike starting at Time Dispatch, it takes into account mobilization time, which plays an important part in both the initial and overall RT. This variable is labeled as EMS RT1. For the RT of being transported from the scene of the assault to the hospital, I subtracted Arrive on Scene from Arrive at Hospital. Lastly for the EMS data, to determine the RT of the overall process, I subtracted Time Create from Arrive on Scene. This RT takes every second into account including mobilization time, how long it takes for a paramedic to make contact with the victim, and how long it takes to determine if he/she should be taken to a hospital to treat the sustained gun shot wound(s). This variable is labeled as EMS RT2.

NOPD RT

For the NOPD portion of the data set, Time Create, Dispatch, Arrive on Scene, and Time Cleared are all variables available to calculate a response time (RT). However, since the time a case is cleared has nothing to do with response times or lethality, this variable was not considered. As with the EMS data, these data are in the same time format (HH:MM:SS). To calculate the NOPD RT, I performed the same calculations as with the NOEMS data; that is, I went through each cell and transformed every cell format to minutes, rounding to the nearest hundreth to take seconds into consideration. To calculate the RT variable, I subtracted Time Create from Arrive on Scene, consistent with the initial EMS RT, which produced the only RT for this portion of the data set. This variable is labled as NOPD RT.

Routine Activities Measures

Month

This data set contains 3 months of data. Months was coded as 0 = January, 1 = February, 2 = March. This coding scheme makes January the reference category for the determination of a linear change.

Day of Week

A categorical variable was created to indicate which day of the week an offense took place. As Fridays are the start of the weekend, typically when people are in more contact with one another outside of home and work environments, Friday is the reference category for this variable. The coding is: 0 = Friday, 1 = Saturday, 2 = Sunday, 3 = Monday, 4 = Tuesday, 5 = Wednesday, 6 = Thursday.

Social Disorganization Measures[8]

Neighborhood

Each NOPD case contains a physical address or block to where the unit was dispatched, and presumably, where the shooting occurred or very close to it. Utilizing this information and the United States Census Bureau Address Search tool, I determined which cases were in which neighborhoods and which census tract in New

[8]The data set includes neighborhood-level variables for Social Disorganization. For each case, if more than one census tract falls within the boundaries of a neighborhood, those percentages were combined to create a neighborhood-wide measure as opposed to just a single census tract measure. Refer to appendix B.

Orleans. The Data Center, an independent research organization founded in 1997, provides data about Southeast Louisiana to the public and is the source of neighborhood boundaries for this study. Utilizing a geographic information system (GIS), each case was mapped to spatially determine if certain areas incur more shootings and if certain areas have more homicides as a result of shootings. Neighborhood is a nominal, categorical variable. For the coding, please refer to the Appendix.

Racial Heterogeneity

After the collection of race population data from the United States Census American Community Survey (ACS) 5-year estimates for 2009-2013 for all census tracts in New Orleans (Orleans Parrish), the raw data were combined into neighborhood-level numbers (# of black residents/total # of residents). This number falls between 0 and 1, with lower numbers representing fewer black residents and higher numbers representing more black residents. This basic neighborhood-level variable construction was repeated for all of the following social disorganization variables.

Family Structure

Of the many ways to measure family structure in relation to social disorganization, female-headed households is one of the most common measures. ACS 2013 5-year estimates for female-headed households were collected. The variable is a continuous variable between 0 and 1 with a higher number representing a higher proportion of female-headed households in the area.

Poverty

ACS 2013 5-year estimates of poverty report family income by family type. For this continuous variable, all family types are included and it measures the proportion of income below the poverty level. The closer the number is to 1, the higher the population living below the poverty line.

Housing

Higher concentrations of rented dwelling units have been associated with higher levels of social disorganization. To measure this, ACS 2013 5-year estimates of renter-occupied housing units as proportions are included in the analyses. Numbers closer to 0 represent lower concentrations of rented units and numbers closer to one represent higher concentrations.

Educational Attainment

High school is a good break-point in measuring education levels. Educational attainment is measured as the proportion of the population with less than a high school education. A higher number indicates a higher proportion of the population with less than a high school education.

Unemployment

The unemployment proportion of New Orleans is a computed variable from the ACS 2013 5-year estimates. The original data, for population aged 16 years and older, are broken down by race so I compiled the total number of residents, regardless of race, who are unemployed[9] and divided that by the total population 16 years and older to obtain the unemployment proportion.

Dependent Variable

Lethality

Using the NOEMS data, I created a composite lethality variable for whether the victim was dead on scene (coded as 1) or whether the person was alive when the NOEMS arrived (coded as 0) to measure the effectiveness of the initial RT (labeled as Lethality). The NOPD data that have been matched to the NOEMS data, along with the homicide data (when applicable), provided the lethality of the case overall, including the lethality for those individuals who were transported to the hospital, which cannot be discerned from the NOEMS and NOPD data alone. Using this information, I calculated a second composite lethality variable, labeled as Final Outcome, for whether the victim, after being transported to the hospital, died (coded as 1) or lived (coded as 0).

[9] Races included are white alone, black/African American alone, American Indian/Alaska native alone, Asian alone, Native Hawaiian and other Pacific Islander, and some other race alone.

Statistical Analysis

Frequencies were run and mapped to determine which neighborhoods contain the highest and lowest numbers of aggravated assaults and homicides. Descriptives were calculated to obtain mean, minimum, and maximum response times as well.

A Chi square goodness of fit test was run with the constructed neighborhood variable and each lethality variable to determine if shootings and eventual homicides are happening significantly more in one area of New Orleans as opposed to another. This test was merited as it detects any significant differences among expected frequences and observed frequencies.

To examine how both New Orleans Emergency Medical Serives response times (EMS RT1 and EMS RT2) and New Orleans Police Department response times (NOPD RT) to the scene of schootings affect lethality of these incidents, a binary logistic regression was run to estimate odds ratios (ORs). This method of analysis is appropriate for the data, as it estimates odd ratios for a binary, categorical outcome variable. Each calculated RT, Routine Activities variables, and Social Disorganization variables were independent variables and the dependent variable, lethality, was the outcome of the incident, that is, either the victim died or survived. This analysis was completed in eight Models for both the initial lethality and the post-transport lethality of cases.

In the following analyses, the first Model contains only the preliminary RTs for both agencies (EMS RT1 and NOPD RT) and the first dependent variable, Lethality.

The second Model added the Routine Activities variables. The third Model removed the Routine Activities variables and instead input the Social Disorganization variables. The fourth and final Model for the preliminary RTs includes all variables.

The last four Models measure the transport part of the response phase and follow a similar pattern as the first four Models. Model number five includes EMS RT2 and the second dependent variable, Final Outcome. The sixth Model added the Routine Activities variables. The seventh removed the Routine Activivies variables and included the Social Disorganization variables. The eighth and final Model includes EMS RT2, Routine Activities variables, Social Disorganization variables, and the Final Outcome dependent variable.

CHAPTER FIVE: RESULTS

Descriptives of response times are displayed in Table 1 in the Appendix. EMS RT1 average response time from the creation of the call to arriving on the scene of the shooting was 6.90 minutes (S.D. = 2.76). For the NOPD, the average time (NOPD RT) was 6.10 minutes (S.D. = 3.86). Although both the minimum and maximum amount of time it took for the EMS to arrive on scene (1.08 minutes and 14.06 minutes, respectively) is less than that of NOPD (1.37 minutes and 29.15 minutes, respectively), the EMS has to hold off on providing service to those injured as a result of protocol stating that NOPD must be on scene before the EMS can officially arrive at the location to give medical assistance (Martinez, 2015) and therefore results in a higher mean RT. The average time required by the EMS once they are on scene to get a victim to a hospital was 20.91 minutes (S.D. = 7.29). This takes into account the time it takes the EMT to find the patient, assess injuries, and treat any wounds that need attention while they are still on the scene. Overall, EMS response time from the creation of the call to arrival at a hospital (EMS Overall) for those who need transportation was 27.66 (S.D. = 8.24) minutes. For a break-down of average response times by neighborhood, see Figure 1 in the Appendix.

It is important to note that these response times take into account two outlier cases. One case, which had the longest response time of 20 minutes longer than the next longest, was on February 1st when a subject barricaded the scene and SWAT team presence was required before the EMS could officially arrive, making it impossible for the EMS to give medical treatment in a timely manner. The second case, which had a response time of 8 minutes longer than the next longest case, was on March 9th when a juvenile was shot and taken to a trauma center for children. This location is not the usual destination for shooting victims and it required this victim to be transported an additional five miles away from the scene, passing LSU Interim Hospital before reaching Children's Hospital. Taking these outliers out of the analyses, the mean EMS response time from the time of creation to the hospital (EMS Overall) was 26.82 minutes; the NOPD response time was not greatly affected by these outliers as the officer likely punched the time as soon as s/he got to the location.

For the initial lethality outcome of cases which can be found in Table 2 in the Appendix, 81 of the 102 victims were still alive at the time of the EMS arrival at the scene of the shooting and 21 had already died on scene indicating an opportunity for 79.4% of the shooting victims to survive. Of the 77 individuals who were transported to the hospital, 69 of them survived post-arrival while 8 died after arrival at the hospital indicating a 89.6% chance of survivability if they arrived at the hospital alive. Additionally, there was at least one shooting in 36 of the 71 neighborhoods with 17 of the 102 recorded shooting victims in one neighborhood (see Figure 2 in Appendix) and at least one homicide in 21 of the 71 neighborhoods with 5 out of 29 homicides occurring in the same neighborhood which had the highest shooting count (see Figure 3 in Appendix). However, a Chi-square goodness of fit test indicated no significant difference for the initial lethality nor for the final outcome of a shooting with neighborhood.

Table 3, found in the Appendix, displays the first four Models that were used to analyze the data. Model 1 tested for significant odds of a shooting ending up as either an aggravated assault (surviving) or a homicide (dying) based solely on the response times of the EMS (EMS RT1) and the NOPD (NOPD RT). Neither the EMS (B = -.031, OR = .970) nor the NOPD (B = .087, OR = 1.090) indicators were statistically significant.

Model 2 added routine activities variables, month and day of the week, to the equation. EMS RT1 (B = -.027, OR = .974) and NOPD RT (B = .098, OR = 1.102) remain insignificant. Both February (B = .400, OR = 1.492) and March (B = .288, OR = 1.334) had higher odds of an incident ending in a death than January, but these odds were not significant. Fridays (N = 9) were when lethal shootings were most common as a shooting on any other day indicated decreased odds of lethality.

Model 3 removed the routine activities variables and looked at the social disorganization variables (population heterogeneity, family structure, poverty, housing, educational attainment, and unemployment) along side response times. Although not significant, higher levels of poverty (B = -10.265, OR = .000) and unemployment (B = -10.939, OR = .000) indicate decreased odds of a shooting ending with the death of an individual by the time the EMS arrive on the scene while racial heterogeneity (B = 2.284, OR = 9.817), single female headed households (B = .574, OR = 1.775), high percentage of rentable housing (B = 6.727, OR = 834.849), and low educational attainment (B = 8.656, OR = 5747.235) all lead to increased odds of a fatality. The primary variables, EMS RT1 (B = -.060, OR = .942) and NOPD RT (B = .090, OR = 1.094) are insignificant.

Model 4 incorporated all indicator variables to assess the odds of lethality from the time the shooting occurred to the time the EMS and NOPD arrived on scene. EMS RT1 (B = -.170, OR = .844) and NOPD RT (B = .149, OR = 1.161) remain insignificant indicators but it has held across all Models that, consistent with expectations, EMS RT1 slightly reduces odds of lethality while NOPD RT slightly increases odds of lethality. The only changes that occurred by adding all variables into the Model is that the month of March flipped from increasing odds of lethality to decreasing them (B = -.530, OR = .589), Tuesday flipped from decreasing odds to increasing them (B = .246, OR = 1.279), and racial heterogeneity flipped from increasing odds to decreasing them (B = -2.102, OR = .122).

Table 4 in the Appendix displays the second set of four Models that were analyzed. Models 5, 6, 7, and 8 coincide with Models 1, 2, 3,and 4 with the primary difference being the response time put into the Models; Table 4 looks at post-transport lethality as opposed to initial lethality. Model 5 assessed the odds of lethality based solely on EMS reponse time (EMS RT2). The results not only indicate no significance, but no direction as well (B = .000, OR = 1.000). Lethality, then, is in no way associated with emergency medical response time once the EMS has arrived on scene and transports an individual to a medical facility.

Model 6 combined the routine activities variables with the EMS transport response times. Opposite of Model 2, January had increased odds of lethality when compared to February (B = -.1.141, OR = .319) and March (B = -.602, OR = .548); however, the decreases in these two months were not significant. Days of the week were generally consistent with Model 2 indicating that a shooting occuring on a Friday produced non-significant increased odds of lethality. The exception to this is if someone is transported to a hospital on a Tuesday (N = 5, B = .942, OR = 2.566) or Thursday (N = 16, B = .736, OR = 2.088) in which case their odds of dying are actually increased more than two times; but are still insignificant. However, this is not necessarily a result of increased response times as homicide reports indicate that a number of individuals are pronounced dead after they were at the hospital or after going through a surgical procedure.

Model 7, focusing on social disorganization, post-transport response time, and lethality, also produced no significant findings. After adding in the social disorganization variables, EMS RT2 exhibited a negligible increase in odds of lethality (B = .001, OR = 1.001). For those individuals who survive the shooting and are transported to the hospital for further care, poverty (B = 12.943, OR 4.177e5) and unemployment (B = 2.609, OR = 13.586) became factors that increased the odds of lethality if someone who fell into those categories was taken for further medical attention. Conversely, racial heterogeneity (B = -4.616, OR = 0.10), housing (-2.906, OR = .055), and education (B = -9.823, OR = .000) were indicative of increased odds of survivability. Family structure remained an increasing, but insignificant factor, of increasing lethality (B = 3.929, OR = 50.858).

Across all Models and in both Tables, the odds of any response time affecting lethality were around 1.000 indicating that, contrary to historic and common belief, response times do not influence the chances of surviving a shooting. Instead, it is the routine activities of the population involved in an incident and level of social disorganization of the neighborhood where incidents are occurring which are the strongest, although non-significant, predictors. This is demonstrated in the change in the odds ratios as these particular variables are being added into the Models as predictors of lethality in comparison to the Models which contain response times exclusively.

CHAPTER SIX: DISCUSSION AND CONCLUSION

Based off of a conversation (Martinez, 2015) I had with a first responder EMT in New Orleans, the police department is required to be on scene before EMS services can be provided to those who need them. Because EMS RTs are slightly longer than NOPD RTs, perhaps because of waiting for the police to arrive on scene, it might be fruitful to provide each EMS vehicle with a police officer to accompany them on calls, particularly on busy nights. The temporal pattern of lethality from this study indicates that Fridays would be the best day for this partnership to occur. Fridays are not when most shootings occur, but they are when the odds of a shooting ending in a death are the highest. If time is of the essence, this would be a way to remedy an extra minute of medical inattention. One minute makes a huge difference in the big picture of survival when someone is suffering life-threatening wounds. If the average EMS response time were to be equal to the average NOPD response time, 6.10 minutes as opposed to 6.90, that would be about one minute of potential bleeding out that could be stopped and may make the difference between life and death for someone. An additional temporal finding was that most of the shootings occurred in January, the end of a family holiday time. When people, who do not necessarily get along, are forced to be around each other for an extended period of time because of societal expectations, conflict is more likely to ensue. Police accompaniment would also be beneficial during holidays when large numbers of people are known to gather (e.g., Fourth of July, religious holidays, New Year’s Eve, etc.).

However, no findings from the present study support any notion that response times directly and significantly affect the lethality of an aggravated assault on the basis of statistical significance. This is contrary to the main hypothesis as well as to all prior research, both inclusive and exclusive of response times, which indicate swift and appropriate medical attention is the key to homicide prevention after being shot (Barlow & Barlow, 1988, Blanchard et al., 2012; Doerner & Speir, 1986; Morris & Hawkins, 1969; Wilson, 1985; Wolfgang, 1958). The findings from Model 5 from Table 4 indicate with conviction that response times of the EMS from the time they arrive on scene to when they deposit the victim at the hospital have no impact on the odds of the individual living or dying. It may be that EMS services provided on scene are more important for the victim's survival than rapid transport to a trauma center. This is an important demonstration that the EMS is not discriminating in the care they are delivering, but instead other characteristics of an incident affect the outcome. Perhaps it is time to abandon the "lower response times equals lower lethality" mindset and focus instead upon changing the social conditions related to increased violence within communities. Instead of looking for results that are currently unsupported by research, like this study has demonstrated, attention and effort should be turned to resolving issues such as concentrated poverty, intracommunity relations, and inhibitors of social mobility, which will naturally have an ameliorating effect upon violence in society.

One of the largest social problems our society is facing today is distrust of police, rightly or wrongly, particularly with the surge of attention to police brutality cases in the media. However, going back into New Orleans' history books, a past of government corruption is evident. One of the prominent ways to lessen a community's trend of violence, particularly lethal violence, is to increase its collective efficacy (Morenoff, Sampson, & Raudenbush, 2001). Formal social control has been indicated as an important component of countering the negative effects social disorganization has on neighborhoods; however, the efforts of increasing police presence in violent areas would be moot with the current cynicism directed toward police. More integrative efforts between law enforcement and the community may prove useful to rebuild community-agency ties and allow law enforcement better access to neighborhood life, as well as increase the amount of informal social control a community could exert within its boundaries and therefore potentially prevent violent encounters before they start (Bursik & Grasmick, 1993). This increase in formal policing, however, may prove more difficult as these efforts in New Orleans would be reliant upon a police department whose number of law enforcement agents has been dwindling for quite some time now.

A closer examination of the neighborhood that has the highest number of shootings and homicides, Little Woods, reveals significant knowledge of social conditions that need to be addressed across the city. The Little Woods neighborhood is one of the slowest to recover after Hurricane Katrina swept through the city in 2005 leaving a trail of destruction behind it; there are still Katrina Xs on many of the houses. Gang activity, as previously discussed, is a problem across New Orleans, and Little Woods is no exception. The western part of the neighborhood firmly belongs to one gang, the Marley Gang, while the east side has ongoing disputes for territory between two others, the Bloodhounds and the Flame Gang, with other gangs just on the other side of the interstate (Bolden, 2015). Lastly, with almost one-third of the population living below the poverty line, and presumably most of the rest of the residents not too far above it, relative deprivation is a real issue with the residents. Bordering neighborhood communities are considerably wealthier; a situation which typically leads to increases in criminal activity (Chester, 1976; Sampson & Wilson, 1995).

Lastly, politics are largely hampering the creation of effective social policy. The data that were used in this study were gathered through the collective efforts of three individuals (Mr. Adelson, Mr. Russell, and Dr. Bolden) over the course of more than a year through public records requests. Multiple excuses were given about why the data were not available to the requestors, but overall it seems like the main take away was the simple lack of desire on the part of city employees to put the data together for the request. If there are so many hoops that need to be jumped through only to be met with pushback, current policy cannot be amended based upon actual current happenings to benefit both the community and the city. Many researchers and members of law enforcement alike, including New Orleans' former Police Superintendent Ronal Serpas, agree that more research concerning EMS response times is necessary to improve the overall condition of health in New Orleans and to make changes to protocols that would improve the chances of survivability of gunshot wound victims. Access to the tools to make this happen should not be as difficult to obtain as they are presently.

In contrast to refocusing on the issues of concentrated poverty, intracommunity relations, and inhibitors of social mobility and not on RTs, continued research on lethality that is inclusive of response times is definitely warranted. One major limitation of this study, and likely the cause of no significant findings, is the lack of data for a longer period of time. With only 3 months of data, 102 cases overall, not all of which were included in analyses for reasons previously discussed, the possibility of finding significant relationships is greatly hampered because of a small N. Future examinations should include EMS data on more months, preferably one year or more, with more linked police calls. It would also prove very useful if EMS data gatherers included a location to where each unit is called; NOPD includes XY geospatial coordinates. Without matching an EMS call to a NOPD call, it is only known which zip code an incident occurs in, and zip codes cover a large area including neighborhoods that can be socially diverse. Another direction for future research would be to extend the scope of the study from exclusively New Orleans to include cities like Baltimore, St. Louis, and Detroit that also have chronically high, and currently climbing, homicide rates as well as those with lower lethality rates, including New York City and Orlando.

APPENDIX A: NEIGHBORHOOD INFORMATION

A1. New Orleans Neighborhoods Coding.

1 = Algiers Point
2 = Audubon
3 = Old Aurora
4 = B. W. Cooper
5 = Bayou St. John
6 = Behrman
7 = Black Pearl
8 = Broadmoor
9 = Bywater
10 = Central Business District
11 = Central City
12 = City Park
13 = Desire Area/ Desire Development
14 = Dillard
15 = Dixon
16 = East Carrollton
17 = East Riverside
18 = Fairgrounds
19 = Marigny
20 = Filmore
21 = Fischer Development
22 = Florida Area/ Florida Development
23 = Fontainebleau/ Marlyville
24 = French Quarter
25 = Freret
26 = Garden District
27 = Gentilly Terrace
28 = Gentilly Woods
29 = Gert Town
30 = Hollygrove
31 = Holy Cross
32 = Iberville
33 = Irish Channel
34 = Lake Catherine
35 = Lake Terrace/ Lake Oaks
36 = Lakeshore/ Lake Vista
37 = Lakeview
38 = Lakewood
39 = Leonidas
40 = Little Woods
41 = Lower Garden District
42 = Lower Ninth Ward
43 = McDonogh
44 = Mid-City
45 = Milan
46 = Milneburg
47 = Navarre
48 = New Aurora/ English Turn
49 = Pines Village
50 = Plum Orchard
51 = Ponchartrain Park
52 = Read Boulevard East
53 = Read Boulevard West
54 = Seventh Ward
55 = St. Anthony
56 = St. Bernard Area
57 = St. Claude
58 = St. Roch
59 = St. Thomas
60 = Tall Timbers/ Brechtel
61 = Touro
62 = Tremé/ Lafitte
63 = Tulane/ Gravier
64 = U. S. Naval Support Area
65 = Uptown
66 = Viavant/ Venetian Isles
67 = Village de L’Est
68 = West End
69 = West Lake Forest
70 = West Riverside
71 = Whitney

A2. Census Tracts in Each Neighborhood

Algiers Point = 1
Audubon = 115. 116, 117, 119, 120, 121.01, 121.02
Old Aurora = 6.06, 6.07, 6.15, 6.16
B. W. Cooper = 69
Bayou St. John = 41, 45
Behrman = 6.02, 6.03, 6.04
Black Pearl = 125
Broadmoor = 103, 112, 123
Bywater = 11, 12
Central Business District = 134
Central City = 84, 85, 86, 91, 92, 139, 140, 143
City Park = 46, 9800
Desire Area/ Desire Development = 137
Dillard = 33.07, 33.08
Dixon = 76.05
East Carrollton = 126, 127
East Riverside = 96, 97
Fairgrounds = 37.01, 37.02
Marigny = 18, 26
Filmore = 33.01, 33.02
Fischer Development = 6.01
Florida Area/ Florida Development = 14.01, 16
Fontainebleau/ Marlyville = 122, 124, 128
French Quarter = 38, 135
Freret = 111
Garden District = 90
Gentilly Terrace = 24.01, 24.02, 25.03, 25.04
Gentilly Woods = 17.02
Gert Town = 70, 72
Hollygrove = 75.01, 75.02
Holy Cross = 7.02, 8
Iberville = 48
Irish Channel = 88, 142
Lake Catherine = 17.34
Lake Terrace/ Lake Oaks = 133.02
Lakeshore/ Lake Vista = 133.01
Lakeview = 56.01, 56.02, 56.03, 56.04
Lakewood = 76.04
Leonidas = 129, 130, 131, 132
Little Woods = 17.24, 17.25, 17.37, 17.39, 17.40, 17.43, 17.44, 17.45, 17.46
Lower Garden District = 77, 78, 82, 83
Lower Ninth Ward = 7.01, 9.01, 9.02, 9.03, 9.04
McDonogh = 2, 3
Mid-City = 50, 54, 63, 64, 65, 71.01, 145
Milan = 100, 101, 102
Milneburg = 25.01, 25.02
Navarre = 55
New Aurora/ English Turn = 6.11, 6.12
Pines Village = 17.20
Plum Orchard = 17.22
Ponchartrain Park = 17.01
Read Boulevard East = 17.47, 17.48
Read Boulevard West = 17.23
Seventh Ward = 27, 28, 29, 30, 31, 34, 35, 36
St. Anthony = 33.03, 33.04
St. Bernard Area = 138
St. Claude = 13.01, 13.02, 14.02, 15, 136
St. Roch = 19, 20, 21, 22, 23
St. Thomas = 141
Tall Timbers/ Brechtel =6.13, 6.17, 6.18
Touro = 99
Tremé/ Lafitte = 39, 40, 44.01, 44.02
Tulane/ Gravier = 49, 60
U. S. Naval Support Area = 6.05
Uptown = 107, 108, 109
Viavant/ Venetian Isles = 17.51, 9801
Village de L'Est = 17.30, 17.41, 17.49, 17.50
West End = 76.06
West Lake Forest = 17.35, 17.36
West Riverside = 106, 114, 144
Whitney = 4

APPENDIX B: FIGURES OF RESULTS

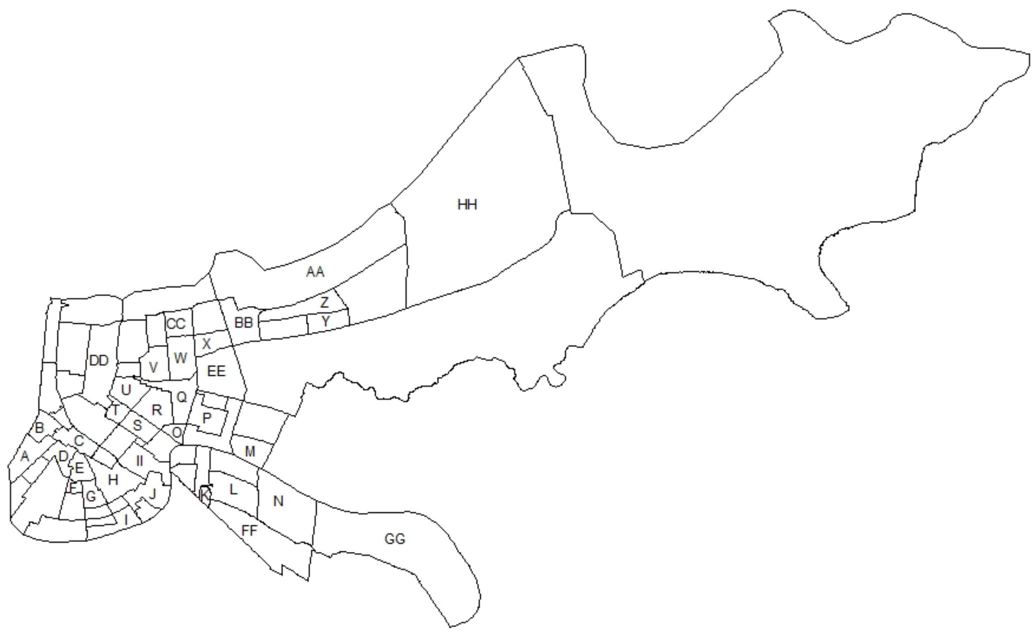

Figure 1. Average Response Times by Neighborhood.*

A. Leonidas	6.93, 5.61, 19.26	S. Tremé/Lafitte	4.58, 16.19, 19.18
B. Hollygrove	7.14, 4.74, 14.35	T. Bayou St. John	4.85, n/a, 13.30
C. Gert Town	5.89, 5.98, 21.48	U. Fairgrounds	8.84, 2.92, 12.60
D. Fontainebleau/Marlyville	6.74, 4.67, n/a	V. Dillard	6.04, 5.67, 20.14
E. Broadmoor	5.43, 1.37, n/a	W. Gentilly Terrace	6.43, 4.94, 24.18
F. Freret	3.52, 5.62, n/a	X. Gentilly Woods	3.21, 4.90, 21.82
G. Milan	6.36, 4.42, 18.15	Y. Read Boulevard West	7.37, 6.67, 19.22
H. Central City	3.98, 1.57, 14.37	Z. West Lake Forest	7.44, 7.24, 30.80
I. Irish Channel	6.45, 2.95, 18.55	AA. Little Woods	8.75, 7.01, 26.63
J. Lower Garden District	4.71, 7.10, n/a	BB. Pines Village	5.98, 6.79, 33.16
K. Fischer Development	6.03, 5.59, 16.99	CC. Milneburg	6.19, 6.50, 19.86
L. Behrman	6.74, 4.66, 22.88	DD. City Park	2.27, 15.92, 18.88
M. Holy Cross	10.29, 5.07, 18.80	EE. Desire Area/ Development	10.20, n/a, n/a
N. Old Aurora	6.37, 3.62, 19.03	FF. Tall Timbers/Brechtel	8.45, 10.28, n/a
O. Marigny	7.25, 4.03, n/a	GG. New Aurora/English Turn	14.06, 5.25, 22.10
P. St. Claude	8.00, 4.87, 21.84	HH. Village de L'Est	9.89, 7.27, 24.81
Q. St. Roch	5.77, 7.53, 15.71	II. Central Business District	4.81, n/a, 11.06
R. Seventh Ward	5.82, 4.49, 15.29		

*Response times are given in minutes in the format EMS RT1,NOPD RT,EMS RT2

Figure 2. Shooting Counts by Neighborhood.

Figure 3. Homicide Counts by Neighborhood

APPENDIX C: TABLES OF RESULTS

Table 1. Descriptive Response Times.

	N	Minimum	Maximum	Mean	SD
EMS RT 1	102	1.08	14.06	6.90	2.76
EMS RT 2	77 (75)	9.50	58.74 (36.45)	20.91 (20.16)	7.29 (5.48)
EMS Overall	77 (75)	15.02	68.09 (41.72)	27.66 (26.82)	8.24 (6.34)
NOPD RT	75 (73)	1.37	29.15	6.10 (6.10)	3.86 (3.91)

Response times are displayed in minutes rounded to the nearest hundredth. Parentheses contain results which exclude outliers.

Table 2. Chi-Square Test of On Scene & Post-Transport Lethalities by Neighborhood.*

	On scene		Post-Transport	
Neighborhood	**Alive (0)**	**Dead (1)**	**Alive (0)**	**Dead (1)**
3	1	0	1	0
5	1	0	1	0
6	5	0	4	1
8	0	1	n/a	n/a
9	1	0	n/a	n/a
10	1	1	1	0
11	4	0	4	0
12	1	0	1	0
13	1	1	n/a	n/a
14	5	0	5	0
18	1	1	0	1
19	0	1	n/a	n/a
21	1	1	1	0
23	0	1	n/a	n/a
25	0	1	n/a	n/a
27	3	0	2	1
28	1	0	1	0
29	2	1	2	0
30	3	2	3	0
31	3	0	3	0
33	1	0	1	0
39	3	1	3	0
41	13	4	11	1
45	4	0	2	2
46	4	0	4	0
48	1	0	1	0
49	3	0	3	0
53	1	0	1	0
54	3	0	2	1
57	3	3	2	0
58	3	1	3	0
60	0	1	n/a	n/a
62	3	0	2	1
67	1	0	1	0
69	2	0	2	0
71	2	0	2	0
TOTAL	81	21	69	8
	Pearson Chi-Square = .215		Pearson Chi-Square = .554	

*Note that not all victims who were injured and alive once the EMS arrived on scene were transported to a hospital. Additionally, some data were missing for times when EMS arrived at the hospital and those cases were excluded from post-transport analyses.

Table 3. Binary Logistic Regression Models 1 Through 4 for On-Scene Lethality of Response Cases.

Independent Variable	Model 1		Model 2		Model 3		Model 4	
	B/SE	**OR**	**B/SE**	**OR**	**B/SE**	**OR**	**B/SE**	**OR**
EMS RT 1	-.031/.107	.970	-.027.130	.974	-.060/.117	.942	-.170/.163	.844
NOPD RT	.087/.066	1.090	.098/.073	1.102	.090/.069	1.094	.149/.095	1.161
Month								
January			Reference				Reference	
February			.400/.892	1.492			1.318/1.100	3.737
March			.288/.855	1.334			-.530/1.069	.589
Day of Week								
Friday			Reference				Reference	
Saturday			-1.078/1.340	.340			-2.334/1.815	.097
Sunday			-.260/1.020	.771			-.857/1.238	.425
Monday			-20.716/1.098e4	.000			-25.458/8.075e3	.000
Tuesday			-.008/1.305	.992			.246/1.520	1.279
Wednesday			-.321/1.078	.725			-.348/1.309	.706
Thursday			-1.177/1.130	.308			-1.676/1.429	.187
Social Disorganization								
Percent Black					2.284/3.101	9.817	-2.102/4.814	.122
Family Structure					.574/6.454	1.775	.852/9.368	2.344
Poverty					-10.265/6.973	.000	-10.072/8.751	.000
Housing					6.727/4.578	834.849	9.149/6.226	9409.374
Education					8.656/6.177	5747.235	8.727/8.941	6170.093
Unemployment					-10.939/11.248	.000	-13.559/18.983	.000
Constant	-1.646/.895	.193	-1.221/1.173	.295	-3.437/2.421	.032	.392/3.020	1.480
N	75		75		75		75	
Chi-Square	1.799		11.723		7.442		22.419	
Cox & Snell R^2	.024		.145		.094		.258	
Nagelkerke R^2	.037		.224		.146		.400	

B = Standardized Coefficients

SE = Standard Error

OR = Odds Ratio

Table 4. Binary Logistic Regression Models 5 Through 8 for Post-Transport Lethality of Response Cases.

Independent Variable	Model 5		Model 6		Model 7		Model 8	
	B/SE	**OR**	**B/SE**	**OR**	**B/SE**	**OR**	**B/SE**	**OR**
EMS RT 2	.000/.052	1.000	.014/.059	1.014	.001/.053	1.001	.065/.078	1.067
Month								
January			Reference				Reference	
February			-1.141/1.424	.319			-1.421/1.629	.241
March			-.602/1.011	.548			-1.439/1.307	.237
Day of Week								
Friday			Reference				Reference	
Saturday			-.973/1.628	.378			-1.182/2.149	.307
Sunday			-19.202/1.194e4	.000			-18.677/1.167e4	.000
Monday			-19.422/1.021e4	.000			-21.141/8.375e3	.000
Tuesday			.942/1.763	2.566			2.508/2.614	12.282
Wednesday			-.547/1.663	.579			.001/1.874	1.001
Thursday			.736/1.427	2.088			1.477/1.815	4.380
Social Disorganization								
Percent Black					-4.616/4.083	.010	-9.233/6.938	.000
Family Structure					3.929/8.170	50.858	4.928/11.381	138.097
Poverty					12.943/8.323	4.177e5	6.235/10.830	510.255
Housing					-2.906/5.248	.055	-4.388/7.828	.012
Education					-9.823/7.612	.000	3.046/11.485	21.037
Unemployment					2.609/12.630	13.586	17.042/23.761	2.519e7
Constant	-2.145/1.143	.117	-1.603/1.487	.201	-.828/3.068	.437	-.023/4.726	.977
N	77		77		77		77	
Chi-Square	.000		10.124		4.677		14.879	
Cox & Snell R^2	.000		.123		.059		.176	
Nagelkerke R^2	.000		.253		.121		.361	

B = Standardized Coefficients

SE = Standard Error

OR = Odds Ratio

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