An Evaluation of the Impact of Hurricane Katrina on Crime in

New Orleans, Louisiana

By:

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Abstract

This Applied Research Project is an explanatory study that evaluates the impact of Hurricane Katrina on crime rates in New Orleans. By analyzing existing data from the Federal Bureau of Investigation (FBI) and the U.S. Census, this research measures crime trends in New Orleans from January 2002 through December 2007. The findings of this research suggest that some types of crime increased after this disaster, while others decreased. In New Orleans, most crime rates increased significantly beginning in January 2006. Additionally, most crime rates appeared to be returning to pre-storm levels by December 2007. Since the reconstruction of New Orleans is projected to last for between 8 and 11 years, this research evaluates crime trends early in the reconstruction of the city.

About the Author

Kevin L. Bailey was born in Austin, TX in 1979. He attended Texas A&M University in College Station and obtained a Bachelor of Arts in 2002. In 2005, Kevin began working for the Texas Commission on Environmental Quality, a state agency that participates in the mitigation of natural disasters. He hopes that this research will assist New Orleans in its recovery efforts. His permanent email address is kevinbailey444@hotmail.com.

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Chapter 1. Introduction

Researchers usually examine the incidence of crime after disasters in one of two ways. First, they examine crime during the immediate aftermath of a disaster. Since crime rates are difficult or impossible to calculate immediately after a disaster, these researchers must use any data that is available. This data comes from a variety of sources including surveys, interviews, and estimates made by public officials. Research of this nature is abundant and focuses heavily on the occurrence of looting after disasters. Researchers also examine crime during the extended aftermath of a disaster. This extended aftermath is also called the reconstruction stage. Crime rates during the reconstruction stage are rarely studied, especially prior to 2005 when Hurricane Katrina impacted New Orleans.

Research has been conducted that assesses the immediate impact of Hurricane Katrina on some types of crime, such as burglary (Brunsma 2007, 52). Additionally, recent research has concluded that the annual murder rate increased in the years 2006 and 2007 (VanLandingham 2008). While these studies make valuable contributions to the field of disaster research, they are not sensitive to abrupt monthly shifts in crime rates during the reconstruction stage.

This research will assess monthly crime trends in New Orleans after Hurricane Katrina. This will provide a clearer picture of crime trends in New Orleans from 2002 through 2007. This six year time frame can be divided into three distinct historical

periods for the purposes of statistical enquiry. The first time period is represented by the years prior to August 29, 2005, when Hurricane Katrina struck land. The second time period began immediately after the impact of the hurricane, when the city was inundated with federal resources and National Guard troops. The second time period lasted until approximately the end of 2005. The third and final time period began in late 2005 as New Orleans began to rebuild itself. Reconstruction is projected to continue for between 8 and 11 years (Kates et al. 2006).

During the pre-storm time period, crime rates in New Orleans were increasing (Dreier 2006, 529). The population was steadily declining, with an average of 600 people per month leaving the city from January 2002 through August 2005 (U.S. Census Bureau 2006). The period immediately following the storm and up until the beginning of 2006 was chaotic. There are no reliable crime statistics for this time. Some authors have speculated that crime rates fell drastically across the board immediately following the storm (Roman 2007, 8). This could be due to a variety of factors including the presence of billions of dollars in government aid (Liu 2006), the collapse of justice system infrastructure and its subsequent inability to record crimes, and the large numbers of National Guard troops (over 30,000) that were in charge of policing and rebuilding the city. The impact of Hurricane Katrina and the lack of crime data during the subsequent months can be treated as an interruption in the crime history of New Orleans for the purposes of statistical enquiry.

Research Purpose

This explanatory study evaluates the impact of Hurricane Katrina on six types of crime in New Orleans by examining statistics from before and after the storm. The six types of crime that will be evaluated are murder, robbery, aggravated assault, burglary, larceny, and motor vehicle theft. This research will offer insight into crime rates after natural disasters during the reconstruction stage and contribute to a growing body of disaster research that empirically assesses the effects of natural disasters on communities.

Chapter Summaries

This chapter provides an overview of crime rates in New Orleans and describes the purpose of this research. Chapter 2 explores the literature surrounding crime rates after disasters, and describes previous research about crime in New Orleans. The literature divides disasters into four distinct stages. These stages are the mitigation, preparedness, emergency, and reconstruction stages. Chapter 2 also analyzes crime rates during the emergency and reconstruction phases after several disasters including Hurricane Katrina and closes by presenting the conceptual framework used for this research.

Chapter 3 describes the methods used to analyze crime rates before and after Hurricane Katrina struck New Orleans. The conceptual framework is also operationalized and presented as a table in Chapter 3. The results of the statistical analyses are

presented in Chapter 4. Chapter 5 summarizes the conclusions that can be drawn from the results and suggests future studies within the field of disaster research.

Chapter 2. Literature Review

Chapter Purpose

This chapter examines the scholarly literature pertaining to crimes that occur in the wake of natural disasters. Based on the literature, this chapter will first provide a definition of disasters and then discuss the stages of disasters, focusing particularly on the last two, which are the emergency and reconstruction stages. Finally, the chapter will address crime rates during these two stages in detail. An examination of this nature will highlight patterns that occur in crime rates following a natural disaster. These patterns will then be used to develop hypotheses for crime rates in New Orleans, Louisiana after Hurricane Katrina.

Disasters Foreign and Domestic

The number of global natural disasters per year did not significantly increase from the years 1974-2003. However, the number of people who were both vulnerable and affected increased dramatically (Guha-Sapir 2004, 52). During this thirty year span, there were 6,367 natural disasters. Approximately 2 million people died, 5.1 billion were affected, and $1.38 trillion of damage occurred (Guha-Sapir 2004, 15). In terms of casualties, natural disasters have a greater impact on developing countries than industrialized nations. The highest proportions of people affected by disasters live in

India, Bangladesh, and China. This is due in part to their higher population densities, much of which is located in river basins (Guha-Sapir 2004, 31).

Industrialized counties suffer fewer casualties as a result of natural disasters but report more economic losses. Between 1974 and 2003, the four costliest disasters in order were the 1995 Kobe earthquake in Japan, the 1980 earthquake in southern Italy, the 1992 Hurricane Andrew in the U.S., and the 1994 Los Angeles earthquake (Guha-Sapir 2004, 41). Between 2003 and 2008, the Indian tsunami in 2004 and Hurricane Katrina in 2005 were exceptionally devastating (Munasinghe 2007, 9).

U.S. Census data demonstrates that over one-half of the United States' population currently lives near a coast. Domestically, 72 million people are expected to reside in the most hurricane prone counties by 2010. These figures, along with other Census data, indicate that coastal populations are increasing faster than inland populations in the United States. Consequently, natural disasters will cause more economic damage per event than in previous decades. This demonstrates that the U.S. is at least as susceptible as the rest of the world to economic losses due to natural disasters (Kunreuther 1999, 172).

Crime After Disasters

The study of crime rates following natural disasters is still in its infancy. There is some consensus among scholars that certain types of crime, such as domestic violence, increase following a disaster (Enarson 1999). However, there is disagreement regarding the prevalence of other types of crime, such as burglary (Quarantelli and Frailing 2007).

This literature review will evaluate the intersection of natural disasters and crime from a variety of angles.

First, this review will use the literature to develop a definition of natural disasters. Following this definition, literature that assesses the four sociological stages of a disaster will be reviewed. Virtually all communities struck by large scale disasters progress through these stages. However, the stages often overlap making it difficult to distinguish one from the other (Nakagawa 2004, 5). These stages are mitigation, preparedness, emergency, and reconstruction. Next, this review will examine the literature pertaining to the emergency and recovery phases of disasters to determine how much and what type of crime takes place following a disaster. Finally, this review will independently evaluate the few studies that address crime in both the emergency and the recovery stages.

What is a Disaster

In order to examine disasters and the social phenomena surrounding them, a clear definition of the term 'natural disaster' should be established. One use of the phrase refers to the natural event itself, such as an earthquake or a hurricane. However, these natural events are not disastrous unless they negatively impact a community. A sociologically oriented definition is more accurate. Therefore, a 'natural disaster' is defined as a large scale negative impact on a society resulting from a natural occurrence. Without the society, there would be no disaster (Dynes 1991, 2).

Additionally, natural disasters are differentiated from civil disturbances by Quarantelli and Dynes (1970, 172), who note that the sociological response after a disaster is much different from the behavior found during and after riots. Crime rates during civil disturbances increase dramatically, while they fall precipitously after natural disasters. It is currently unknown whether sociological responses to manmade disasters are similar to responses after natural disasters.

Defining a disaster becomes more complex when the magnitude of the destruction is used to classify these events into categories. If a small amount of damage occurs, the event is an emergency. If the disaster is extremely devastating, researchers will classify it as a catastrophe or a mega-disaster. Catastrophes can prevent the expected sociological responses, including those involving crime, from occurring. This is due in part to a mass convergence of non-local assistance to the impact site soon after the catastrophe. In many cases, this assistance is not needed for a disaster whose effects can be absorbed locally (Guha-Sapir 2004, 52).

The Four Stages of a Disaster

For many decades, disaster literature has noted the myriad ways that communities prepare for and respond to disaster. Every community affected by disaster undergoes a cyclical process that is divided into four overlapping stages. These stages are also referred to as periods and/or phases. In the order they occur, they are the mitigation stage, the preparedness stage, the emergency or response phase, and the reconstruction phase (Tierney 1993, 2). The mitigation and planning stages take place

prior to a disaster. The emergency stage begins once an impending disaster is identified and is immediately followed by reconstruction (Drabek 2003, 98). These stages were originally identified by Mileti et al. in 1975 and have proven useful and accurate up to present day.

The Mitigation and Preparation Stages

The first stage is the mitigation stage. During this stage, planners attempt to decrease the amount of damage done if an event were to occur in the future. Engineering resilient buildings and designing urban areas to withstand damage are good examples actions taken during the mitigation phase. The second stage, preparation, follows the mitigation stage and involves disaster response planning. Emergency plans, first responder training, and public education about what to do in case of a disaster, are three components of the preparation phase (Tierney 1993, 2). Good planning during pre-disaster stages is an important part of an effective community disaster response. However, the effects of pre-disaster planning on post-disaster crime reduction have not been adequately researched and are not the focus of this review.

The Emergency Stage

The emergency stage, also referred to as the recovery stage, is the most studied of the four stages (Berke 2008, 95). At this stage, the primary focus is reducing threats to civilian safety and critical infrastructure. Activities that take place during this stage are: evacuations, rescues, and emergency shelter provision (Tierney 1993, 3). Literature that examines the crime rate during the emergency stage frequently focuses on

dispelling common myths about post disaster behavior. It is believed that crime generally trends downward during the emergency stage, with the exception of domestic violence (Tucker 2001, 2). This is due in part to emergent prosocial behaviors which create an atmosphere of altruism among the members of the community. The existence of these prosocial forces in New Orleans after Hurricane Katrina is debated, despite the fact that the emergency stage after Katrina is the longest on record at six weeks. (Kates et al. 2006).

The Reconstruction Stage

Reconstruction is the least studied stage of a disaster (Berke 2008, 96). During this stage, communities repair their disaster-stricken infrastructure. Communities also begin planning for future disasters during this stage. This planning is an early indication that the community is transitioning back into the mitigation stage (Tierney 1993, 3). This recurring process is called the disaster cycle (Nakagawa 2004, 5). Crime rates during reconstruction are predicted to gradually return to pre-disaster levels. This may occur as the altruism of the community fades away following a disaster. Crime rates during this stage were rarely examined by the literature before Hurricane Katrina impacted New Orleans. The reconstruction stage is predicted to last for much longer than the emergency stage. In New Orleans, for example, the reconstruction is predicted to last for 8-11 years (Kates et al. 2006).

The Looting Myth

The body of literature that addresses the incidence of crime during the emergency stage is extensive. Much of this literature focuses on the "looting myth", which is the belief that citizens will begin looting simply because the opportunity has presented itself in the wake of a disaster. The looting myth is part of a larger disaster mythology that E. L. Quarantelli (1970, 174) calls the antisocial myth. The antisocial myth asserts that antisocial behaviors such as looting are rare immediately following a natural disaster. Looting that does occur is generally perpetrated by outsiders, or those people who venture into the impacted area. Additionally, the act of looting during a natural disaster is perpetrated by individuals rather than groups (Quarantelli 1970, 175).

Belief in the looting myth is largely promulgated by media reports. These reports frequently depict the victims of disaster as panic stricken, unable to care for themselves, and willing to loot stores on a whim (Sunseri 2005, 7). The media sustains the looting myth by either characterizing the lack of looting as unusual or by focusing on alleged rather than verifiable instances of looting (Sunseri 2005, 7). In some cases, researchers have analyzed media reports of looting and compared these reports to the actual instances of this crime.

One such study was conducted by Dennis Wenger & Barbara Friedman (1986, 27), in connection with the Disaster Research Center at the University of Delaware. They compared media reports of looting to the actual crime rate after Hurricane Alicia struck Galveston and Houston. The media, including newspapers and local television

stations, focused heavily on reports of looting. However, these researchers noted that the statistics on burglary and robbery did not corroborate media reports.

Using data from the FBI's annual Uniform Crime Report, Wenger and Friedman report that, "Within the city of Houston, 10,270 robberies (28.1 per day) and 41,613 burglaries (an average of 124 each day) occurred during 1983. In Galveston, there was a total of 1,950 robberies and burglaries during 1983 or an average of 5.7 per day. Therefore, within just these two cities…an average of 158 burglaries and robberies occur each day during normal periods" (1986, 41). No statistically significant increase in looting occurred during the emergency stage, or the time period shortly after Hurricane Alicia struck land. Media reports failed to consider the number of businesses that were robbed on any normal day in this region, and therefore created the public perception that crime had increased when in reality it had decreased.

Decreasing crime rates after natural disasters are part of a larger sociological phenomenon. Prosocial forces emerge from within the community and create an atmosphere in which all efforts made on the community's behalf are more likely to be accepted. These prosocial forces reinforce community bonds and decrease the likelihood of criminal behavior (Drabek & McEntire 2003, 97) (Quarantelli 1970, 176).

The Looting Controversy

Although the previously cited studies suggest the opposite, some researchers believe that looting following a domestic disaster is not a myth. These researchers believe that looting does occur and conduct statistical enquires to prove their theory

(Brunsma 2007). It is important to note that these researchers acknowledge that looting is less prevalent than the media often depicts. However, they assert that looting after some disasters is still far more prevalent than previous academic research indicates. The debate is called the "looting controversy". The fissure that has developed in the academic community as a result of this controversy will be briefly explored and will hopefully encourage further research.

One notable study that addresses the looting controversy appears in the book, The Sociology of Katrina: Perspectives on a Modern Catastrophe (Brunsma 2007, 52). The third chapter in this book, "Crime and Hurricanes in New Orleans", assesses the burglary rate before and after the three largest hurricanes to ever hit the city. The first of these storms struck in 1947 and is unnamed. The second and third storms are Hurricane Betsy and Hurricane Katrina. The authors of this chapter, Kelly Frailing and Dee Wood Harper, focus their research specifically on the incidence of looting. It should be mentioned that looting did not exist in the Louisiana criminal code until 1993. To mitigate this problem, the authors used burglary rates to confirm or deny the looting myth (Brunsma 2007, 52). These researchers used population data from the U.S. Bureau of the Census, focusing on the city of New Orleans itself and excluding data from the surrounding parishes. The authors also obtained data regarding the number of burglaries from a variety of sources including the Times-Picayune newspaper, microfilm archives, and official police records. According to these sources, all types of crime had been steadily increasing for decades. By the time Katrina struck, the burglary rate in

New Orleans was three times what it had been during the 1940's or the 1960's (Brunsma 2007, 56).

Burglary rates from the month before each storm were compared to the month immediately after each storm, to determine if the hurricane had a significant impact. The researchers concluded that the burglary rate increased after each storm, but increased much more dramatically following Hurricane Katrina. After the 1947 hurricane, the rate increased by 94.2%. After Hurricane Betsy, the rate increased only 15.4%. After Hurricane Katrina, the burglary rate increased by 402.9%. The increases that these researchers discovered after Katrina ignores a category of post-storm losses, termed '21k' by the New Orleans police department. These '21k's indicate that the loss could be attributed either to the hurricane or to looting. Therefore, it is possible that even more looting occurred. This significant increase in looting challenges the hypothesis that looting does not occur after a disaster (Brunsma 2007, 63).

Another study compares the social response to Hurricane Katrina with the social response to the 2004 Asian Tsunami in Sri Lanka. The tsunami spread with little warning across the Indian Ocean and killed approximately 35,000 Sri Lankans. This was a catastrophic blow to an impoverished nation, but long term damage was reduced by a proactive and cohesive social network. Within hours of the impact, local groups were searching for survivors and establishing refugee camps. The lack of crime during this emergency period was pronounced. Sri Lankans did not loot in significant numbers. Even ethnic conflicts subsided, but only during the initial weeks. Once the emergency stage of

the disaster ended, ethnic conflicts resumed and the altruism that had permeated the community faded (Munasinghe 2007, 9). This initial altruism reinforces the idea that looting and antisocial behavior are uncommon immediately following a disaster.

In contrast, the societal response to Hurricane Katrina was wholly different. Despite knowing about the impending disaster well in advance, the city "suffered a major social breakdown" (Munasinghe 2007, 10). Additionally, "Both violent, armed robbery of valuable items, and simple looting of essential supplies prevailed" (Munasinghe 2007, 10). Researchers attribute the drastic difference in response between these two societies to "social capital". Essentially, social capital is a tightly knit web of families and/or communities. The greater the social capital, the more tightly knit the society and the better its response to a disaster. Munasinghe argues that Sri Lankans responded more ably to their disaster because of their elevated social capital (Munasinghe 2007, 11). Unfortunately, neither Munasinghe nor any other researcher has managed to empirically test the strength of social capital or use this sociological theory to predict the incidence of crime following a natural disaster.

Transitioning from the Emergency to the Recovery Phase

The transition from the emergency phase into the recovery phase is not an immediate or linear process, and decisions made during the emergency phase can drastically affect the community's subsequent ability to recover (Sunseri 2005, 14). As this transition occurs, the altruism of the community begins to fade. Crime rates that had previously dropped sharply will begin to rise, eventually reaching pre-disaster levels.

The literature has not empirically measured the degradation of community altruism that disaster survivors exhibit (Moore 2004, 209), however a few studies address the degradation of community altruism in indirect ways.

One such study, called Health Works After the Flood, was conducted Hurricane Floyd struck eastern North Carolina in September 1999 (Moore 2004, 204). This qualitative study sought to understand how community recovery was affected by social factors such as social cohesion. Nearly every participant in this study lauded the generosity of their neighbors during the emergency phase. They agreed that their community came together during the flooding. Local businesses and churches rallied together to aid those struggling in their community. Despite this elevated sense of trust, most community members feared that their homes would be looted if they left (Moore 2004, 211). When these same participants were asked if this "feeling of togetherness" continued during the reconstruction stage, the majority answered "no". One community organizer who participated in the study flatly stated, "I can't get anybody here to go help anybody else" (Moore 2004, 212). As the immediate effects of this natural disaster wore off, so did the sense of altruism that permeated the community. The degradation of this altruism is reflected in crime trends during the reconstruction stage, which returned to pre-disaster levels.

Crime During the Reconstruction Stage

Scholarly literature that addresses societal trends during the recovery phase of a disaster contains significant gaps. However, there is some general consensus in this

literature. For example, it is widely believed that negative societal trends that existed before the disaster will re-emerge during the reconstruction stage (Olshansky 2006, 356). This was certainly true in New Orleans after Hurricane Katrina, where the murder rate in 2006 and 2007 rose to unprecedented levels (VanLandingham 2008).

At least one study addresses this sociological response by using public perceptions of crime as a measuring device. In this study, the sociological response to Hurricane Hugo was measured in residents of four southeastern cities two years after the disaster (Norris et al. 1999). The cities participating in the survey were Charleston, Charlotte, Savannah, and Greenville. Researchers selected neighborhoods from each of these cities that shared similar demographics. The participants were also chosen based on how hard they were impacted by the hurricane. Greenville was chosen as the control group due to the lack of impact incurred by Hugo.

Researchers surveyed 250 respondents from each neighborhood and asked a variety of questions pertaining to hazard preparedness, crime prevention, vehicular safety, and health maintenance. Researchers assessed the demographic differences between the respondents and those who refused to take the survey to rule out the possibility of selection bias. Norris, Tenbroeck, and Kaniasty (1999, 40) concluded that the samples and subsamples were representative of the four populations. They further concluded that these populations were statistically similar to one another.

Sixteen survey questions assessed the effects of Hurricane Hugo on crime prevention in the aforementioned cities measuring four manifestations of the concept

of crime prevention. These measures included neighborly cooperation, the use of crime prevention professionals, personal protection, and perceived control over crime. The results indicated no difference between the experimental and control group relative to neighborly cooperation. However, the study indicated large differences between the control and experimental groups regarding the use of crime prevention professionals, personal protection, and perceived control over crime. The residents of damaged cities demonstrated higher levels in these three categories than the residents of the control city of Greenville (Norris, Tenbroeck and Kaniasty 1999, 41).

These results confirmed that the natural disaster, which had struck a full two years prior, had heightened the community's willingness to prevent crime. Whether or not this led to a decrease in the actual crime rate was not assessed. However, more important than the crime rate is the indication of a lingering sense of altruism throughout the affected communities. This supports the idea that the reconstruction stage may continue well after the buildings and roads have been repaired, and that crime rates may continue to be lower than expected for years.

Another, more empirical study, assessed the sociological impact of the Orissa supercyclone on the state of Orissa in eastern India. This natural disaster impacted the country's coastal belt and caused massive destruction in October of 1999, killing nearly 9,000 people (Suar 2005, 263). Part of this sociological assessment includes measuring crime trends in the region. In order to determine if the rate of crimes increased or decreased, the researchers gathered crime data from the Directorate of Economics and

Statistics (an Indian governmental agency) from 1997 through 2001. Researchers then performed a time series analysis using the 1999 cyclone as the intervening event. The results of this study indicate that the crime rate in all categories generally declined following the supercyclone. These categories included robbery, burglary, theft, rape, murder and many others (Suar 2005, 268). The results of this study corroborate the study conducted after Hurricane Hugo. After both Hurricane Hugo in the United States and the Orissa Supercyclone in India, lower crime rates persisted well into the reconstruction stage.

Conclusion

In conclusion, a natural disaster is a sociological phenomenon defined by the magnitude of its effect on society. Human impact is the distinguishing characteristic. Common community responses to disasters have led researchers to identify four stages of sociological response within disaster stricken communities. The planning and mitigation stages take place before the disaster strikes. The emergency and reconstruction stages take place after the disaster strikes.

Literature that addresses crime during the emergency and reconstruction stages is limited. The literature mostly deals with crime during the emergency stage, and focuses heavily on whether or not looting takes place. An unresolved issue in the literature is looting. During most disasters, looting appears to be a rarity, but significant looting occurred after Hurricane Katrina in New Orleans.

Few comprehensive studies have assessed crimes other than looting in disaster stricken communities. These studies indicate that crime rates drop during the emergency period (with the exception of domestic violence) and return to pre-disaster levels during the reconstruction phase.

Hypotheses

The literature indicates that crime rates generally drop during the emergency stage of a disaster. In the case of New Orleans after Hurricane Katrina, looting and murder increased (VanLandingham 2007, 1614) , whereas the rest of the major crime types, as listed in the FBI's Uniform Crime Report, decreased significantly beginning in January 2006. At this time, New Orleans was approximately ten weeks into its reconstruction stage.

According to the literature, all types of crime are expected to return to pre-disaster levels during the reconstruction stage. This leads to the hypotheses that, in 2006 and 2007, crime rates for looting (Brunsma 2007) and murder (VanLandingham 2007) decreased while other crime types increased, with all crime rates moving toward pre-disaster levels.

Research Purpose

The purpose of this research project is to evaluate the impact of Hurricane Katrina on crime rates in New Orleans. It is expected that Hurricane Katrina significantly reduced crime rates for robbery, aggravated assault, larceny and motor vehicle theft. These crimes were expected to increase gradually until they reached or exceeded pre-

storm levels. Monthly murder and burglary rates are predicted to have increased sharply after the storm and then slowly declined to pre-storm levels.

Monthly crime data that does not support these trends may indicate that the extreme damage caused by the hurricane affected the expected sociological response. Monthly data that does support these hypotheses will reinforce previous findings regarding social behavior after disaster. Additionally, support for these hypotheses will shed light on the speed with which the crime rate can be expected to return to pre-disaster levels following an event.

Conceptual framework

The conceptual framework for this research is formal hypothesis. This framework is presented below in Table 2.1. The research tests the hypotheses regarding crime rates in New Orleans before and after Hurricane Katrina.

TABLE 2.1
Conceptual framework and supporting literature

Formal Hypotheses	Supporting Literature
H1: After a temporary increase following Hurricane Katrina, the rate of murder in the city of New Orleans slowly returned back to its pre-storm level. **H2:** After a temporary decrease following Hurricane Katrina, the rate of robbery in the city of New Orleans slowly returned back to its pre-storm level. **H3:** After a temporary decrease following Hurricane Katrina, the rate of aggravated assault in the city of New Orleans slowly returned back to its pre-storm level. **H4:** After a temporary increase following Hurricane Katrina, the rate of burglaries in the city of New Orleans slowly returned back to its pre-storm level. **H5:** After a temporary decrease following Hurricane Katrina, the rate of larceny in the city of New Orleans slowly returned back to its pre-storm level. **H6:** After a temporary decrease following Hurricane Katrina, the rate of motor vehicle theft in the city of New Orleans slowly returned back to its pre-storm level.	Barsky et al. (2006) Berke et al. (2008) Brunsma (2007) Dynes (1991) Drabek et al.(2003) Guha-Sapir et al. (2004) Kunreuther (1996) Lindell (2003) Mitchell, Alvin (2007) Mitchell, James (1996) Moore et al. (2004) Munasinghe (2007) Nakagawa et al. (2004) Norris et al. (1999) O'Leary (2004) Olshansky et al. (2006) Omer et al. (1994) Quarantelli et al. (1970, 1972) Quarantelli et al. (2007) Shields et al. (2006) Suar et al. (2005) Sunseri (2005) Tierney (1993) Tucker (2001) Wenger et al. (1986)

Chapter summary

This chapter reviewed scholarly literature that addresses crime after natural disasters. A definition for disaster was provided and the four stages common to all disasters were explored. Crime trends during the final two stages, emergency and reconstruction, were assessed. Finally, hypotheses were established for crime trends in New Orleans based on the literature.

Chapter 3. Methodology

Chapter purpose

The purpose of this chapter is to describe the methods used to test the hypotheses of this study. Other features of this research that will be addressed are data collection, operationalization of the variables, and statistics used. Since the calculation of rates is dependent on accurate population figures, the issue of monthly population of New Orleans will also be addressed in this chapter.

Operationalization

This study uses secondary analysis of data gathered by the Federal Bureau of Investigation, the U.S. Census Bureau, and the Greater New Orleans Community Data Center. Return A Record Cards from the FBI's annual Uniform Crime Report are used as data sources for several types of crime. Monthly population figures for the city of New Orleans are estimated using the American Community Survey published annually by the U.S. Census Bureau.

Crime rates are calculated using the population and the number of crimes. From this data, the monthly number of crimes per 100,000 people is calculated. The six hypotheses of this study are listed below. Table 3.1 also operationalizes the variables of these hypotheses.

Hypotheses

H1: After a temporary increase following Hurricane Katrina, the rate of murder in the city of New Orleans slowly returned back to its pre-storm level.

H2: After a temporary decrease following Hurricane Katrina, the rate of robbery in the city of New Orleans slowly returned back to its pre-storm level.

H3: After a temporary decrease following Hurricane Katrina, the rate of aggravated assault in the city of New Orleans slowly returned back to its pre-storm level.

H4: After a temporary increase following Hurricane Katrina, the rate of burglaries in the city of New Orleans slowly returned back to its pre-storm level.

H5: After a temporary decrease following Hurricane Katrina, the rate of larceny in the city of New Orleans slowly returned back to its pre-storm level.

H6: After a temporary decrease following Hurricane Katrina, the rate of motor vehicle theft in the city of New Orleans slowly returned back to its pre-storm level.

TABLE 3.1

Operationalization of the Hypotheses

Variables	Definition	Measurement
Dependent		
H1: The monthly murder rate for the city of New Orleans, LA.	The number of murders per month for each 100,000 inhabitants of New Orleans from Jan. 2002 – Dec. 2007.	The murder rate for New Orleans. Attempted murders are not included.
H2: The monthly robbery rate for the city of New Orleans, LA.	The number of robberies per month for each 100,000 inhabitants of New Orleans from Jan. 2002 – Dec. 2007.	The rate of robberies, including those committed with guns, knives, other weapons, or by strong arm.
H3: The monthly aggravated assault rate for the city of New Orleans, LA.	The number of aggravated assaults per month for each 100,000 inhabitants of New Orleans from Jan. 2002 – Dec. 2007.	The rate of aggravated assaults including those committed with guns, knives, other weapons, and by strong arm.
H4: The monthly burglary rate for the city of New Orleans, LA.	The number of burglaries per month for each 100,000 inhabitants of New Orleans from Jan. 2002 – Dec. 2007.	The rate of burglaries including forcible entry, unlawful entry, and attempted entry.
H5: The monthly larceny rate for the city of New Orleans, LA.	The number of larceny-thefts per month for each 100,000 inhabitants of New Orleans from Jan. 2002 – Dec. 2007.	The rate of larceny thefts committed.
H6: The monthly motor vehicle theft rate for the city of New Orleans, LA.	The number of motor vehicle thefts per month for each 100,000 inhabitants of New Orleans from Jan. 2002 – Dec. 2007.	The rate of motor vehicles stolen including autos, trucks/buses and others.
Independent		
H1-H6: The variable 'Months' represents the slope before Hurricane Katrina.	A variable to measure the presence of trends before Hurricane Katrina.	Monthly counter 1-66 from January 2002 - Dec. 2007, excluding July 2005 through December 2005.
H1-H6: The variable 'Hurricane Katrina' represents the short term impact of Hurricane Katrina.	A variable which measures the magnitude of the change in the slope shortly after Hurricane Katrina.	0 is assigned to months of Jan. 2002 thru June 2005. 1 is assigned to the months from January 2006 to December 2007.
H1-H6: The variable 'LongTermImpact' represents the change in the slope after the impact of Hurricane Katrina.	A variable that measures changes in the slope after 6 months of recovery efforts.	0 is assigned to January 2002 thru June 2005. 1-24 is for the months from January 2006 to December 2007.

The above table lists both the dependent and independent variables. The dependent variables are the crime rates for six types of crime. The independent variables are the months from January 2002 through December 2007, minus the months from July 2005 through December 2005 when no crime data is available.

Data collection

The data used in this research is primarily gathered from two sources. These are the U.S. Census and 'Return A Record Cards'. These cards report monthly crime figures for all cities, New Orleans in this case. These cards are submitted by local authorities to the FBI. The FBI then compiles this data into the 'Uniform Crime Report' (UCR). The UCR summarizes annual crime figures for all major cities in the U.S.

The Number of Crimes Per Month in New Orleans

Local law enforcement institutions report monthly crime totals to the FBI on 'Return A Record Cards'. For the purposes of the Uniform Crime Reports, the FBI divides the crimes on these 'Return A Record Cards' into two basic categories. The categories are called part I and part II crimes. Part I crimes are defined as "serious crimes by nature and/or volume" (FBI 2009). Part II crimes are less serious and/or occur less frequently. One example of a serious crime that is categorized as part II is kidnapping. This crime, although serious by nature, does not occur with sufficient frequency to provide a basis for comparison (FBI 2009). The part I crimes that will be evaluated for New Orleans before and after Hurricane Katrina are murder/non-negligent manslaughter, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft. Rape will not be

evaluated, since the UCR is inaccurate for this crime type (Hodgson 2002, 16). Part I offenses are subdivided into violent and non-violent crimes. Violent crimes include murder/non-negligent manslaughter, robbery, and aggravated assault. Nonviolent crimes include burglary, larceny-theft, and motor vehicle theft.

Each crime type is a dependent variable in this study, and is measured against the independent variable of time (months). In order to more clearly understand each crime type that represents a dependent variable in this study, each part I crime will be defined.

The first crime type, murder/non-negligent manslaughter, is defined as, "the willful killing of one human being by another" (FBI 2009). According to the Uniform Crime Report, accidental deaths, suicides, and justifiable homicides are not included as murder. Additionally, attempted murders are counted as aggravated assaults and not murders (FBI 2009).

Robbery is the taking of anything of value from someone by force or by using the threat of force. Robbery, as opposed to burglary and larceny, is considered a violent crime. According to the Uniform Crime Reporting Program (FBI 2009), an aggravated assault is an attack "for the purpose of inflicting severe or aggravated bodily injury." Usually this type of attack involves the use of a weapon (FBI 2009). When aggravated assault and larceny-theft occur simultaneously, the offense is a robbery.

Burglary is defined as "the unlawful entry of a structure to commit a felony or theft" (FBI 2009). Burglary can still occur, even if force is not used to enter the structure.

The three subclassifications for burglary are forcible entry, unlawful entry where no force is used, and attempted forcible entry (FBI 2009). Another crime category involving theft is larceny-theft, which is defined as, “the unlawful taking, carrying, leading, or riding away of property from the possession or constructive possession of another” (FBI 2009). Some examples of this are thefts of bicycles, shoplifting, and pocket-picking. Attempted larcenies are included, but acts such as check fraud and embezzlement are excluded (FBI 2009). Motor vehicle theft is fairly self-explanatory, and is defined as, “the theft or attempted theft of a motor vehicle” (FBI 2009). This does not include farm or construction equipment. Additionally watercrafts are excluded from this category.

The Population of New Orleans from 2002 through 2007

Accurate population estimates for each month are essential when calculating monthly crime rates. The population during the month of July in the year 2002 was 471,440. A year later, in 2003, the population had declined to 465, 884. In 2004, approximately one year before Katrina, the population had dropped again to 459,048. The Census estimates that by the time Katrina struck in 2005 the population had dropped to approximately 454,000.

Monthly population estimates for New Orleans in the months after Hurricane Katrina vary depending on the source. By January 2006, the population of New Orleans was estimated to be 158,353. Six months later, in July of 2006, the U.S. Census estimated that the population had climbed to 223,388. The U.S. Census population estimates for the beginning of 2006 are too high according to several sources, such as

the Rand Corporation and VanLandingham. However, the Greater New Orleans Community Data Center (GNOCDC) asserts that these figures are too low, and states on their website that the U.S. Census is in the process of revising the July 2006 estimate upward.

Since no survey or empirical study assesses population growth month by month, population values for each month must be calculated using existing data. Monthly population estimates for the city are calculated by assuming consistent monthly rates of depopulation and repopulation. For example, the monthly population rates between July 2002 and July 2003 would be calculated by finding the difference between the monthly estimates, dividing this difference by 12, and subtracting an identical amount for each month.

Design

The best way to test the above mentioned hypotheses is by analyzing existing data and statistics. This method is the most appropriate because it utilizes the accuracy and objectivity of statistical testing to achieve the most reliable results. This study uses data gathered by the Federal Bureau of Investigation (FBI), the U.S. Census Bureau, the Greater New Orleans Community Data Center (GNOCDC) and other entities. Monthly crime data is gathered from 'Return A Record Cards', which are reported to the FBI by local law enforcement entities to report data to the FBI. Six types of crime will be evaluated in this study. These are murder/non-negligent manslaughter, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft. Monthly population

totals for the city of New Orleans are estimated using data from a variety of sources including the U.S. Census Bureau.

Monthly crime totals will be combined with monthly population estimates to calculate a monthly crime rate. Monthly crime rates, starting with January 2002 and ending with December 2007, will then be examined for significant change using an interrupted time series statistical analysis. The interruption in this test is Hurricane Katrina, after which there is no reliable crime data for six months. The forty two months from January 2002 through June 2005 will be tested to determine if any change in the monthly crime rates was already underway before Katrina struck the city. Monthly crime rates after the storm will be calculated for the months from January 2006 through December 2007. If necessary, two time series analyses will be performed, one of which will exclude crime rates from January 2006 through June 2006 as outliers. This additional analysis will shed further light on short and long term trends in post-Katrina crime rates.

The above hypotheses predict that monthly murder and burglary rates will show significant increases starting in January 2006 and that this elevated rate will gradually return to pre-Katrina levels. The other types of crime are predicted to have decreased significantly as of January 2006 and are in the process of increasing as they return to pre-Katrina levels.

Human Subjects

This research used data collected by the FBI that consisted only of records that report the number of crimes per month in New Orleans. Human subjects were not impacted by this research. The Texas State University, Office of Sponsored Programs declared this research exempt from review by the Institutional Review Board (exemption number EXP2009B4977).

Chapter Summary

This chapter specified the methods used to gather the data and address the research question. The chapter began by identifying the hypotheses and organizing them into a table of operationalization. Finally, the chapter described the statistical analyses that will be used to test these hypotheses.

Chapter 4. Results

Purpose

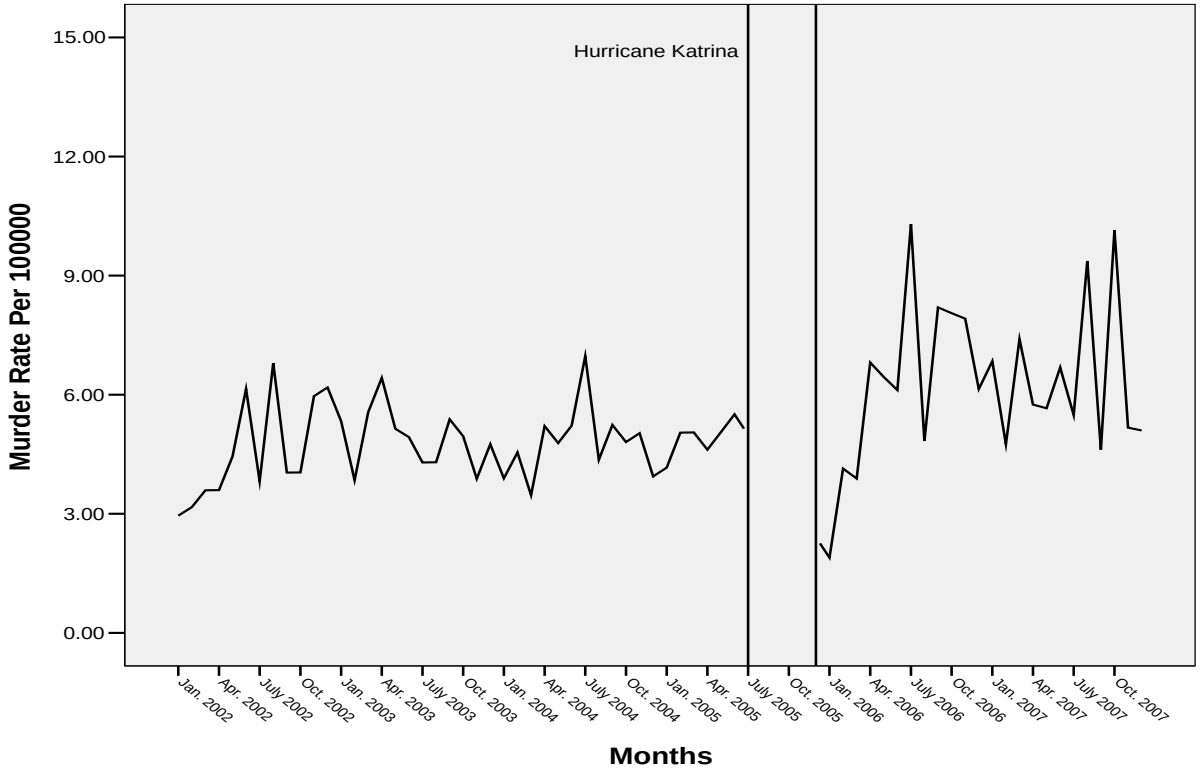
The purpose of this chapter is to evaluate the impact of Hurricane Katrina on six types of crimes in the city of New Orleans. This analysis examined six monthly crime trends using the interrupted time series design. The results of the statistical analyses will illustrate whether crime rates trended up, down, or demonstrated no change. The results are provided by crime type.

The data for each crime type represents the months from January 2002 through December 2007 and records the crime rate per 100,000 inhabitants for each month. Hurricane Katrina is tested as an intervening event in an interrupted time series statistical analysis. There is no reliable monthly crime data available from July 2005 through December 2005. Each statistical analysis tests 66 months worth of data.

Monthly Murder Rate in New Orleans Before and After Hurricane Katrina

Data for the monthly murder rate in New Orleans is presented in Figure 4.1 and a summary of the regression results is provided in Tables 4.1 and 4.2. This data represents the monthly murder rate per 100,000 people.

FIGURE 4.1
Monthly Murder Rate in New Orleans from January 2002 through December 2007



Statistical Results

The average monthly murder rate per 100,000 people for the months from January 2002 through December 2007 was 5.34. The monthly murder rate reached its lowest point immediately following the impact of the hurricane. This occurred in January of 2006 when the murder rate dropped to just 1.89 murders per 100,000 people. However, this reduction in the murder rate was short lived. By February the monthly rate had climbed back to pre-storm levels at 4.14 per 100,000 people. The increased murder rate was sustained for the rest of the months through December of

2007. The monthly murder rate was consistent before the storm but fluctuated rapidly from month to month after the impact of Hurricane Katrina.

TABLE 4.1
Monthly Murder Rate in New Orleans from January 2002 through June 2006

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.471	.299		14.966	.000
	Months	.014	.012	.181	1.155	.254
	HurricaneKatrina	-3.272	.931	-1.013	-3.515	.001
	LongTermImpact	.870	.228	1.064	3.824	.000

a. Dependent Variable: MurderRatePer100000 Other stats: **R²**=.273 **F**=5.52** **DW**=1.82

The short term impact of Hurricane Katrina on the monthly murder rate in New Orleans is assessed in Table 4.1. This table demonstrates that the murder rate dropped significantly beginning in January 2006 and then increased significantly through June 2006. The murder rate increased an average of .87 per 100,000 people for each month throughout this six month time period.

TABLE 4.2
Monthly Murder Rate in New Orleans from January 2002 through December 2007 excluding the months from July 2005 through June 2006

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.471	.397		11.257	.000
	Months	.014	.016	.155	.869	.389
	HurricaneKatrina	2.596	.730	.761	3.555	.001
	LongTermImpact	-.104	.060	-.346	-1.741	.087

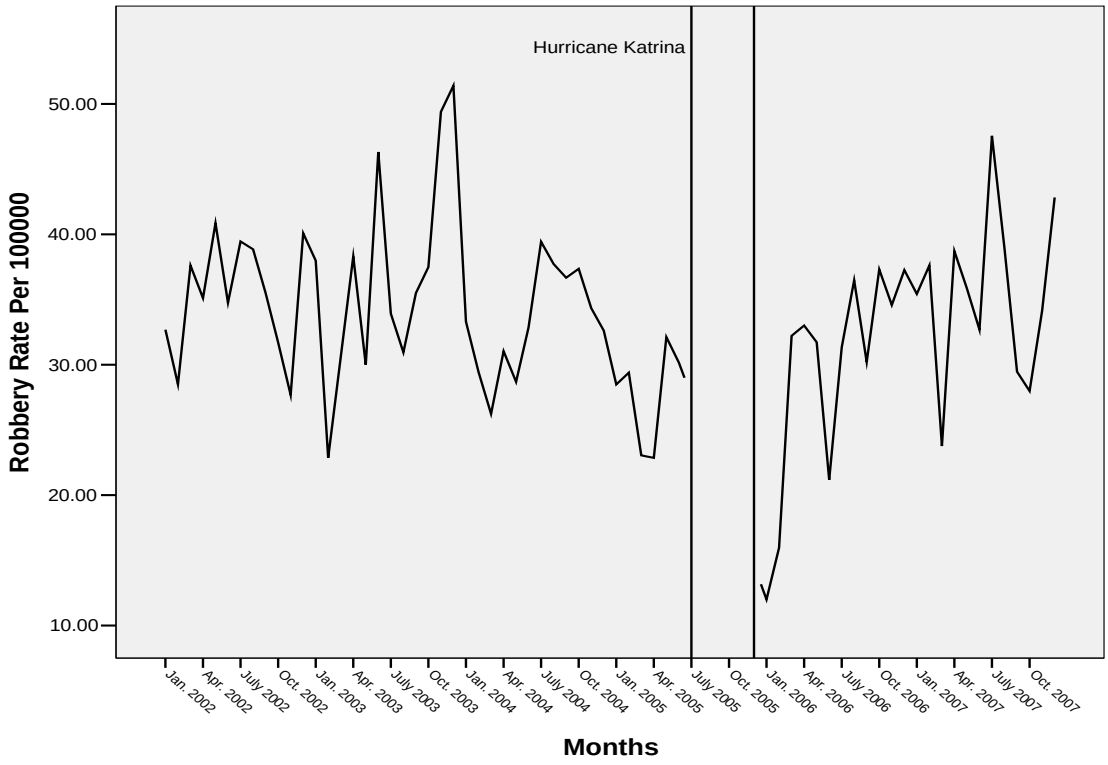
a. Dependent Variable: MurderRatePer100000

The long term impact of Hurricane Katrina on the monthly murder rate in New Orleans is exhibited in Table 4.2. The average monthly murder rate was significantly higher during this time period, when the six month time period from January 2006 through June 2006 was excluded as an outlier. These results confirm the studies conducted by VanLandingham, mentioned in Chapter 2, which demonstrated that the annual murder rate in New Orleans increased after Hurricane Katrina.

Monthly Robbery Rate in New Orleans Before and After Hurricane Katrina

Figure 4.2 presents data for the monthly robbery rate in New Orleans. The data represents the number of robberies per 100,000 people that occurred during the months before and after the impact of Hurricane Katrina. A summary of the regression is presented in Table 4.3. The statistics in this table demonstrate whether or not a significant change in the robbery rate occurred.

FIGURE 4.2
Monthly Robbery Rate in New Orleans from January 2002 through December 2007



Statistical Results

The average monthly robbery rate from January 2002 through December 2007 was 33.5 per 100,000. The robbery rate reached its lowest point during January 2006, immediately following the impact of Hurricane Katrina. During this month, the robbery rate fell to just twelve per 100,000 people. This rate began steadily climbing until it spiked at 47.55 per 100,000 during the month of July in 2007.

TABLE 4.3
Monthly Robbery Rate in New Orleans from January 2002 through December 2007

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	36.809	2.021		18.211	.000
	Months	-.125	.082	-.345	-1.525	.132
	HurricaneKatrina	-6.797	3.339	-.474	-2.035	.046
	LongTermImpact	.738	.207	.783	3.570	.001

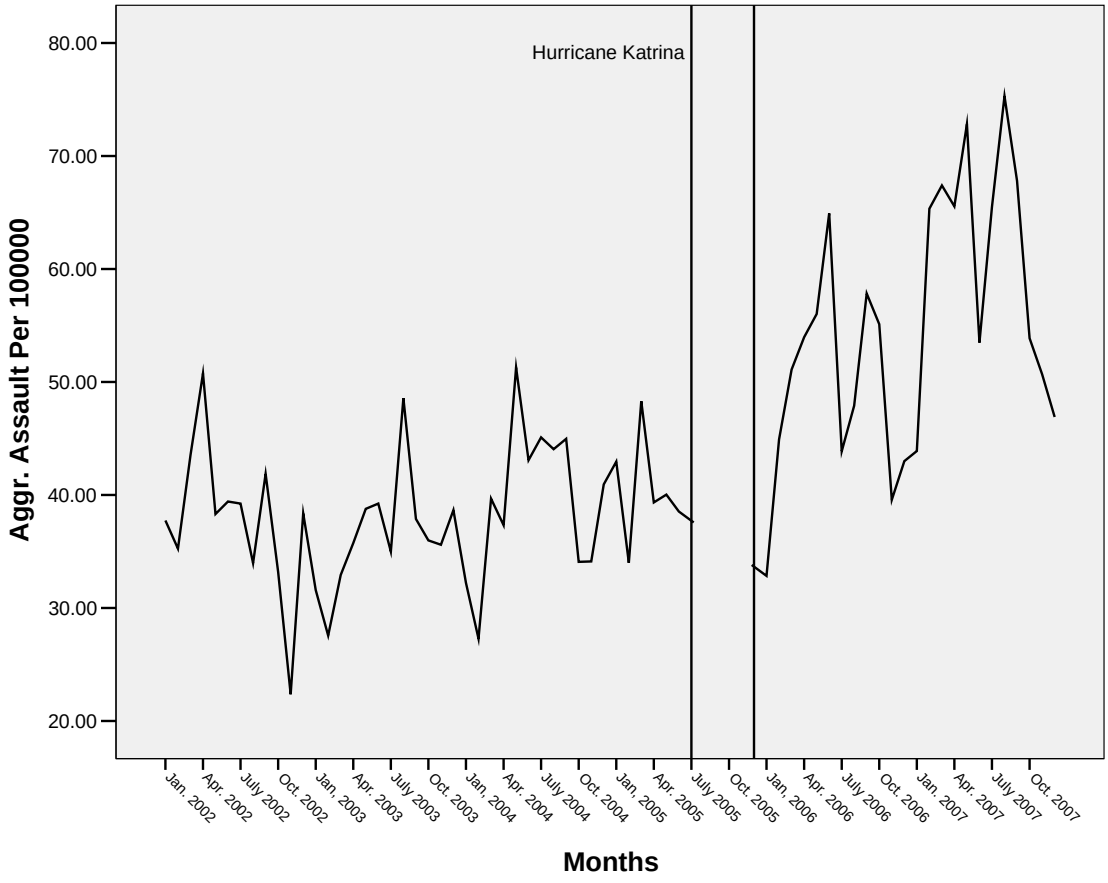
a. Dependent Variable: RobberyRatePer100000 Other stats: **R^2**=.182 **F**=4.61** **DW**=1.45

During the months from January 2006 through December 2007, the robbery rate increased an average of .74 per 100,000 people per month. The robbery rate dropped dramatically following the storm and gradually increased until it reached pre-storm levels. For instance, the robbery rate in June of 2005, just before the impact of Hurricane Katrina, was 30.16 per 100,000 people. Two years later, in June 2007, the robbery rate was 32.69 per 100,000 people.

Monthly Aggravated Assault Rate in New Orleans Before and After Hurricane Katrina

Data for the monthly aggravated assault rate in New Orleans is presented in Figure 4.3. The data presents the number of aggravated assaults per 100,000 people that occurred during the months from January 2002 through December 2007. The regression is summarized in Tables 4.4 and 4.5. The results of this regression measure the significance of the impact of Hurricane Katrina on aggravated assault rate trends.

FIGURE 4.3
Monthly Aggravated Assault Rate in New Orleans from Jan. 2002 through Dec. 2007



Statistical Results

The average monthly aggravated assault rate from January 2002 through December 2007 was 44.37 per 100,000 people. In January 2006, the rate decreased slightly to 32.84 per 100,000. After this low point, the rate increased significantly for the next 24 months until December of 2007. Increasing post-storm aggravated assault rates

contrast with rates before the storm, which remained constant between the months of January 2002 and June 2005. The aggravated assault rate, like the murder rate, increased sharply from January 2006 through June 2006. Unlike the murder rate, the aggravated assault rate did not significantly decrease immediately after the storm, as demonstrated in Table 4.4 below.

TABLE 4.4
Monthly Aggravated Assault Rate in New Orleans from Jan. 2002 through June 2006

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	36.328	1.825		19.901	.000
	Months	.092	.074	.164	1.242	.221
	HurricaneKatrina	-9.218	5.688	-.393	-1.621	.112
	LongTermImpact	5.525	1.391	.930	3.973	.000

a. Dependent Variable: Aggr.AssaultPer100000 Other stats: **R²**=.486 **F**=13.85** **DW**=1.6

Table 4.4 highlights a significant increase in the aggravated assault rate during the six months from January 2006 through June 2006. The aggravated assault rate significantly increased at 5.53 per 100,000 during each month of the six month time period. Table 4.5, provided below, tests the long term impact of Hurricane Katrina. The table demonstrates that the aggravated assault rate increased significantly even when the short term impact is excluded as an outlier.

TABLE 4.5
Monthly Aggravated Assault Rate in New Orleans from Jan. 2002 through December 2007 Excluding the Months from July 2005 through June 2006

Coefficients[a]

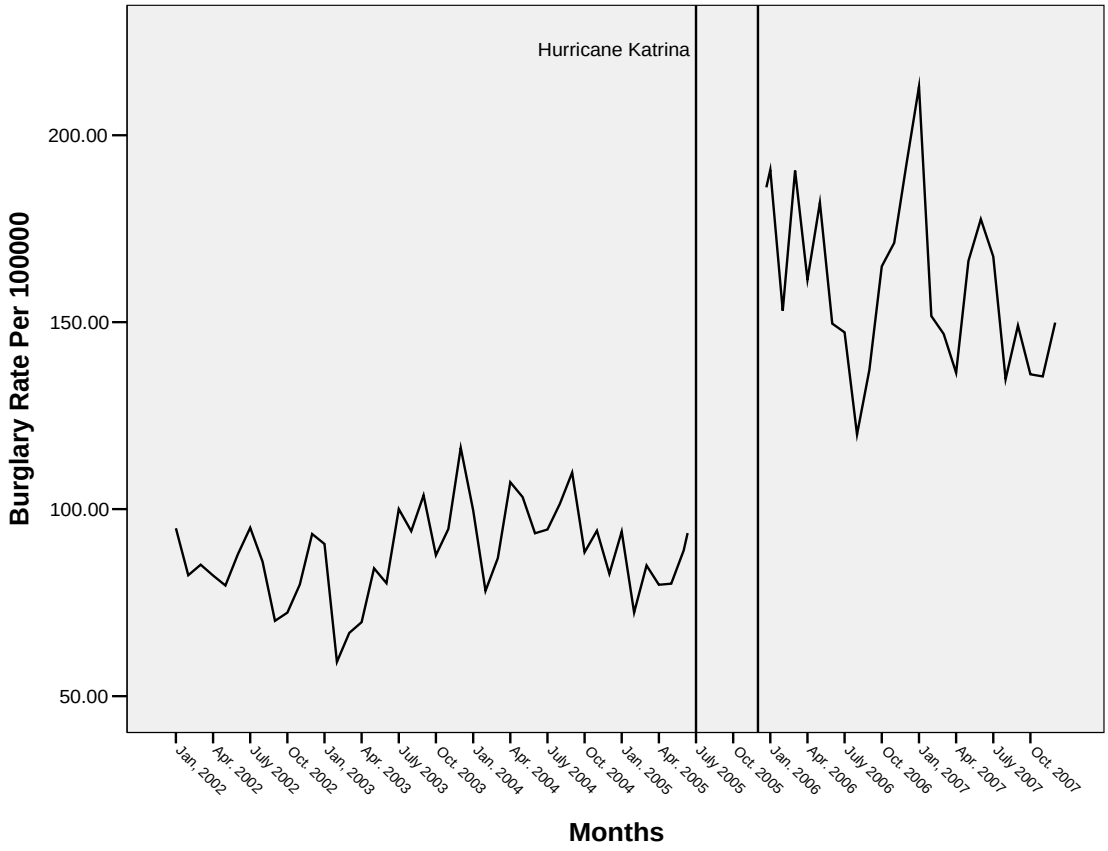
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	36.328	2.406		15.101	.000
	Months	.092	.097	.140	.943	.350
	HurricaneKatrina	9.099	4.423	.367	2.057	.044
	LongTermImpact	.660	.361	.302	1.828	.073

a. Dependent Variable: Aggr.AssaultPer100000

Monthly Burglary Rate in New Orleans Before and After Hurricane Katrina

Data for the monthly burglary rate is presented in Figure 4.4. The data represents the robbery rate per 100,000 that occurred during the months from January 2002 through December 2007. Table 4.6 summarizes the regression, which measures the significance of the impact of Hurricane Katrina on this crime type.

FIGURE 4.4
Monthly Burglary Rate in New Orleans from Jan. 2002 through Dec. 2007



Statistical Results

The burglary rate increased more drastically than any other crime rate after Hurricane Katrina impacted New Orleans. In June 2005, just a few months before the hurricane, the average monthly rate was 88.95 per 100,000. Six months later, in January 2006, the burglary rate had climbed to 190.71 per 100,000. The rate peaked in January 2007, when it reached 212.98. After this spike, the rate gradually declined for the rest 2007. By December 2007 it had declined to 149.89 per 100,000 people.

TABLE 4.6
Monthly Burglary Rate in New Orleans from Jan. 2002 through Dec. 2007

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	83.227	5.109		16.292	.000
	Months	.223	.207	.111	1.075	.286
	HurricaneKatrina	79.895	8.440	1.009	9.466	.000
	LongTermImpact	-1.270	.522	-.244	-2.432	.018

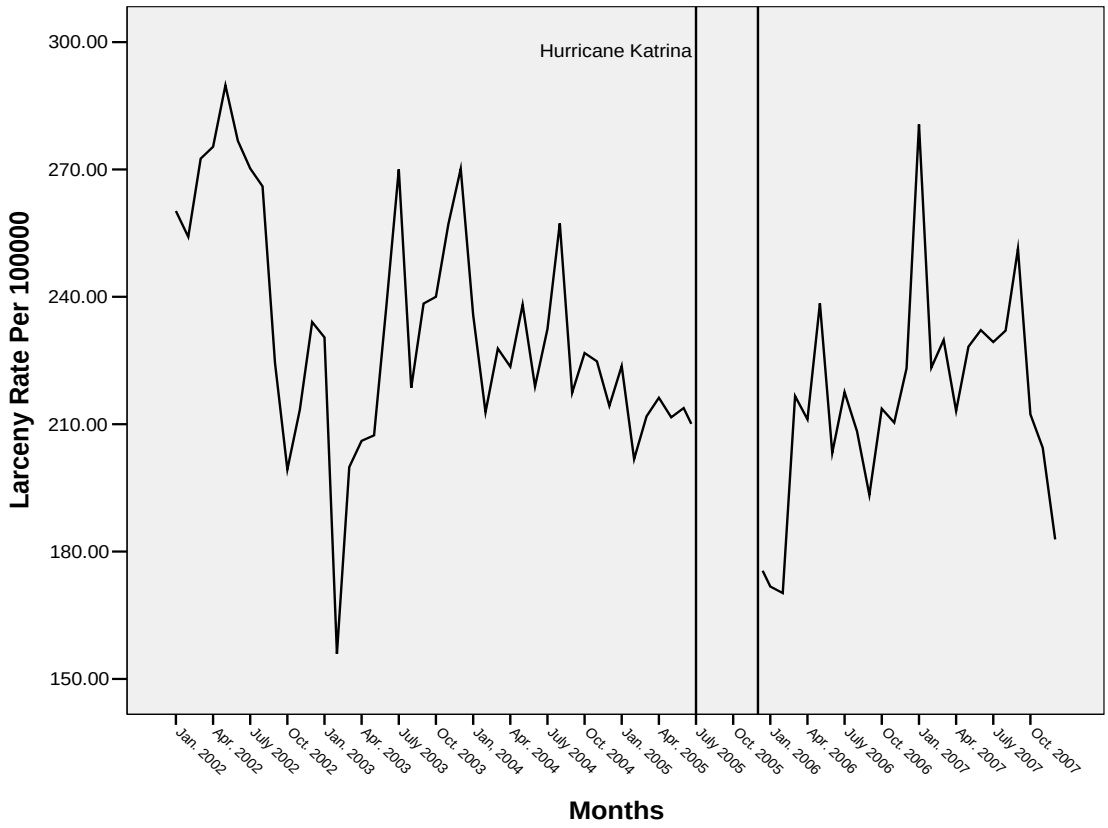
a. Dependent Variable: BurglaryRatePer100000 Other stats: **R^2**=.83 **F**=100.05** **DW**=1.31

The monthly burglary rate during the months from January 2002 to June 2005 was on the rise. However, the immediate impact of the hurricane on the burglary rate was significant. There was a significant increase in burglary after Hurricane Katrina and this rate remained elevated through December 2007. Although the post-hurricane burglary rate was at a significantly higher level, the trend of this crime was significantly declining toward pre-hurricane levels. This initial increase and subsequent decrease were predicted in H5.

Monthly Larceny Rate in New Orleans Before and After Hurricane Katrina

Data for the monthly larceny rate in New Orleans is presented in Figure 4.5 and Table 4.7. This data records the number of larcenies per 100,000 that occurred in the city from January 2002 to December 2007.

FIGURE 4.5
Monthly Larceny Rate in New Orleans from Jan. 2002 through Dec. 2007



Statistical Results

The larceny rate generally trended downward from January 2002 through June 2005. Shortly after the hurricane, in February 2006, the rate reached its lowest point in several years at 170.22 per 100,000. By March 2006, just one month later, the larceny rate climbed to 216.63 per 100,000 people. This upward trend continued until September 2007, after which the rate began to decline toward pre-Katrina levels.

TABLE 4.7
Monthly Larceny Rate in New Orleans from Jan. 2002 through Dec. 2007

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	253.791	7.617		33.317	.000
	Months	-.977	.309	-.692	-3.165	.002
	HurricaneKatrina	-9.653	12.585	-.173	-.767	.446
	LongTermImpact	2.052	.779	.559	2.636	.011

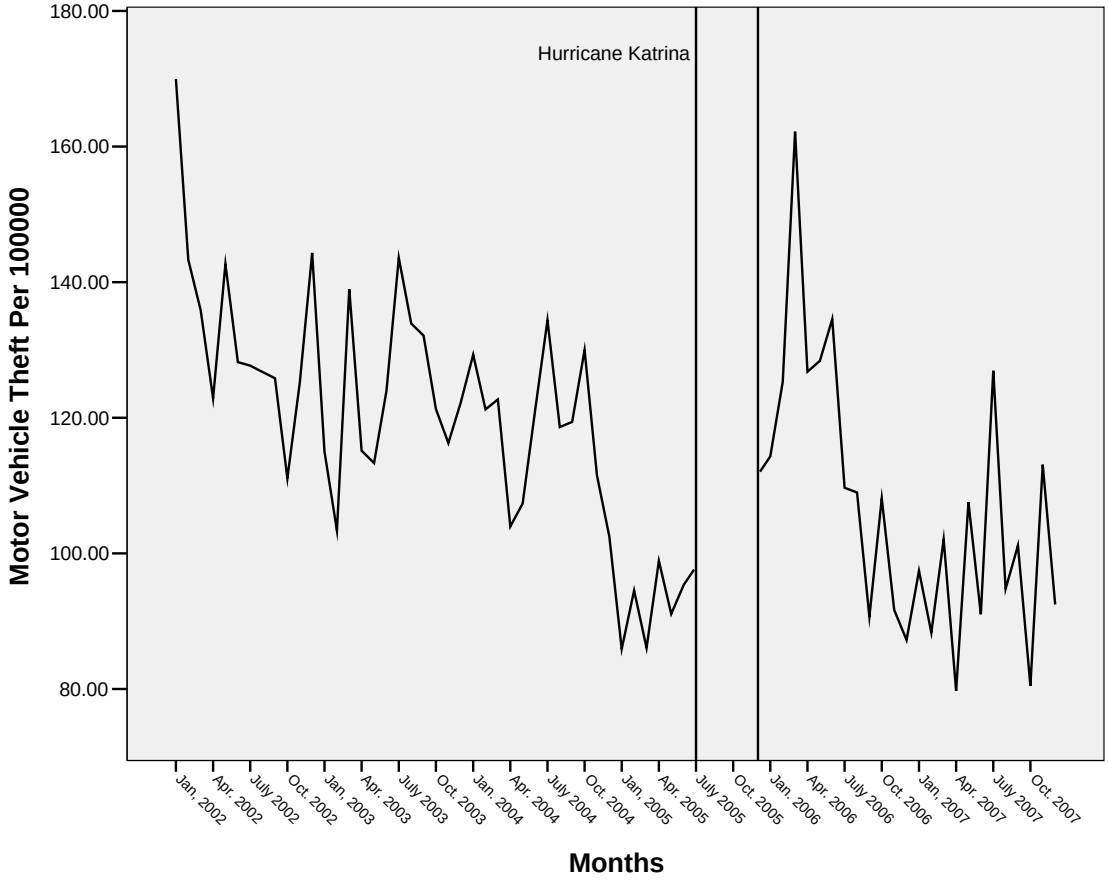
a. Dependent Variable: LarcenyRatePer100000 Other stats: **R²**=.236 **F**=6.37** **DW**=1.06

Despite the trends described above, the storm had no significant immediate impact on the larceny rate as demonstrated in Table 4.7. The larceny rate before the storm was significantly decreasing, while it significantly increased after the storm. The monthly larceny rate increased at an average of 2.05 per 100,000 after the storm, but appeared to be declining toward pre-Katrina levels at the end of 2007.

Monthly Motor Vehicle Theft Rate in New Orleans Before and After Hurricane Katrina

Data for the monthly motor vehicle theft rate in New Orleans is presented in Figure 4.6 and Table 4.8. This data represents the rate per 100,000 that occurred in the city from January 2002 to December 2007. Similarly to the previous five analyses, data from the six month time period from July 2005 to December 2005 is not included.

FIGURE 4.6
Monthly Motor Vehicle Theft Rate in New Orleans from Jan. 2002 through Dec. 2007



Statistical Results

Unlike several of the preceding crime types analyzed, the motor vehicle theft rate was on decline before the storm impacted the city. Beginning in January 2005 and lasting until at least June of that year, the motor vehicle theft rate remained lower than previous pre-storm levels. January 2006 marked the beginning of a spike in motor vehicle theft rates, which reached as high as 162.19 just a few months later in March 2006. This increase was short lived. The rate dropped after this spike and remained

consistently low until at least the end of 2007. This is the first of the crime types for which the crime rate remained below pre-storm levels.

TABLE 4.8
Monthly Motor Vehicle Theft Rate in New Orleans from Jan. 2002 through Dec. 2007

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	141.477	4.463		31.697	.000
	Months	-.981	.181	-.975	-5.422	.000
	HurricaneKatrina	26.467	7.374	.665	3.589	.001
	LongTermImpact	-.618	.456	-.236	-1.354	.181

a. Dependent Variable: MotorTheftPer100000 Other stats: **R^2**=.483 **F**=19.33** **DW**=1.49

Before Hurricane Katrina impacted New Orleans, the motor vehicle theft rate was decreasing at an average of .98 per month. The immediate impact of the hurricane was significant, but attributable to a rapid increase in crime as opposed to the rapid decrease in crime which was hypothesized. Despite the spike in motor vehicle thefts during the early months of 2006, the rate began to decline for the remaining months.

Chapter 5. Conclusions

Research Summary

The purpose of this research is to measure the impact of Hurricane Katrina on crime rates in New Orleans. Chapter 2 evaluated the scholarly literature that studies crime rates after natural disasters. At the end of Chapter 2, predictions were made for six crime types. These predictions were based on a combination of past disaster research and recent research that evaluates annual crime rates in New Orleans.

Chapter 3 described the methods to be used in this study. In this chapter, hypotheses were operationalized, the data were described, and the research design was presented. Chapter 4 presented the results of the statistical analysis. These results will be compared with the hypotheses made at the end of Chapter 2 to see if these crime rates followed expected patterns.

Assessment of Findings

Six hypotheses were made in order to predict monthly crime rate trends in New Orleans. Three of the six crime rates were sharply lower for a few months at the beginning of 2006. These are the murder rate, the robbery rate, and the larceny rate. Three crime types did not substantially decrease in the early months of 2006. These include the burglary rate, aggravated assault rate and the motor vehicle theft rate. The monthly crime rates from August 2005 through December 2005 for these three crimes

might have been down significantly immediately after the storm but rebounded by January 2006. Table 5.1 summarizes the results and generalizes crime rate trends before and after the hurricane. The immediate impact of the hurricane as of January 2006 is also presented.

TABLE 5.1
Summary of Results

Crime type	Slope before Katrina	Impact of Katrina	Change after Katrina
Murder	Constant	Drop	(+)
Robbery	Constant	Drop	(+)
Aggr. Assault	Constant	No Impact	(+)
Burglary	Constant	Increase	(-)
Larceny	(-)	No Impact	(+)
Motor Theft	(-)	Increase	No change

Out of the six crime rates in this research, four were predicted to decrease significantly in January of 2006 and increase until December of 2007. Two of the crime types, burglary and murder, were predicted to have increased significantly after the storm. Although some of the hypotheses were not supported, the results are still valuable to the growing body of disaster research. Every crime type increased for a short time beginning in early 2006. This was true despite whether the crime rate had dropped significantly after Katrina or remained at pre-Katrina levels. The universal increase in crime rates during the early months of 2006 indicates an important shift in the sociology of New Orleans.

The first hypothesis (H1) predicted that the murder rate in New Orleans would increase significantly following Hurricane Katrina and then decrease toward pre-Katrina levels. This hypothesis was based on two studies conducted by VanLandingham (2007, 1614). These studies demonstrate that annual murder rates in the city of New Orleans increased for the years 2006 and 2007. This research highlighted a significant drop in the murder rate at the beginning of 2006 and confirmed that the murder rate was significantly higher on average in 2006 and 2007. From its lowest point in January 2006, the murder rate climbed for six months, peaking in July 2006. Following this increase, the murder rate steadily decreased toward pre-Katrina levels.

Hypothesis 2 predicted that the robbery rate would significantly decrease after Hurricane Katrina and then steadily increase, returning to pre-Katrina levels. The data demonstrates that this is exactly what happened during the reconstruction stage of Katrina. The robbery rate reached its lowest point in January 2006 at 12 per 100,000. After this, the robbery rate steadily increased at a rate of .74 per month. By December 2007, this rate had returned to pre-Katrina levels. Therefore, the findings support the hypothesis in this case.

Hypothesis 3 predicted that the aggravated assault rate would decrease significantly following the storm and begin returning to pre-Katrina levels during the reconstruction stage. The results of this study do not support this hypothesis. There was no significant decrease in this rate after Hurricane Katrina. Instead, the aggravated

assault rate began climbing significantly. By December 2007, the rate remained significantly higher than the pre-Katrina average.

It was predicted by hypothesis 4 that the burglary rate would increase significantly following the hurricane and steadily decrease until it returned to pre-Katrina levels. The hypothesis is supported by this study, as the burglary rate significantly increased after Hurricane Katrina. During the next 24 months, the rate significantly decreased at a rate of 1.27 per month. These changes in the burglary rate reinforce the study conducted by Harper and Frailing (Brunsma 2007) that demonstrated an increased burglary rate after hurricanes in New Orleans. This data does not capture the burglary rate in the months after the storm until January 2006. Since the literature surrounding the looting myth refers only to burglary during the emergency stage, this research can neither confirm nor deny that looting occurred after Hurricane Katrina.

Hypothesis 5 predicted that the larceny rate would decrease significantly after Katrina and then steadily return to pre-Katrina levels. Although there was no significant change in the larceny rate from before and after the storm, the rate was shown to have dropped to near record levels in January and February of 2006. After this, the rate increased significantly at an average of 2.05 per month. However, by September 2007 the larceny rate appeared to be decreasing toward pre-Katrina levels. This crime rate follows the predicted pattern, but without the significant immediate impact that was demonstrated in the robbery rate.

Hypothesis 6 predicted that the motor vehicle theft rate would decrease significantly immediately following the storm and slowly return to pre-Katrina levels during the reconstruction stage. The opposite of this hypothesis occurred. This crime rate increased significantly immediately after the storm, reaching a rate of 162.19 per 100,000 people in March of 2006. After this spike, it decreased significantly and remained low through December of 2007. Therefore, this study does not support hypothesis 6.

The literature drew an inverse correlation between crime levels and a sense of altruism within the community during the emergency stage. Specifically, the literature suggests that crime rates decrease immediately following a disaster while a sense of altruism simultaneously increases throughout the community. No empirical study has evaluated this relationship, either in the emergency or reconstruction stages. This research did not address this correlation, but it did highlight that crime rates during the reconstruction stage in New Orleans varied greatly between crime types and did not follow any pattern suggested by previous disaster research.

This unexpected social response might be due to a variety of factors. Researchers have suggested that a natural disaster as huge as Hurricane Katrina should be categorized as a catastrophe. Catastrophes are predicted to cause different sociological responses than less severe disasters. During and after a catastrophe, the criminal element within the community may become more active due to increased

opportunity. This opportunistic criminality might occur at the same time that an altruistic attitude permeates non-criminal segments of society.

For the crime types that were significantly lower in January 2006, it is likely but not verifiable that the rates were significantly lower beginning immediately after the impact of Katrina. For these crime types, the first months of 2006 likely marked the first time that crime rates returned to pre-Katrina levels. If increasing crime rates equate with a decrease of altruism within the community as the literature suggests, then the first months of 2006 certainly saw the end of that altruism.

Limitations of Research

There were two central limitations to this research. Firstly, reliable monthly crime data for the last half of 2005 is nonexistent. This lack of data, coupled with uncertain population estimates, makes it impossible to test crime rates during the emergency stage of this disaster. Instead, crime rates during this stage can only be estimated based on monthly crime rates from several months later in early 2006. Second, this study was limited by the lack of previous research assessing crime rates after disasters. Although disaster research is a growing field, there are too few assessments of sociological ramifications of disasters that take place during the reconstruction stage.

Recommendations for Future Research

The literature indicates that the number and devastation of disasters is increasing. As more disasters occur, more opportunities for research will present

themselves. Crime rates during the emergency and reconstruction stages should be studied carefully to determine if any patterns emerge. Furthermore, these crime rates should be evaluated when the size of the disaster, or catastrophe, is taken into account. This research should pay particular attention to the amount of time it takes crime rates to return to pre-disaster levels. If Hurricane Katrina is categorized by disaster researchers as a catastrophe instead of a disaster, then future catastrophes should be studied to determine if these crime types behave similarly.

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