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What Really Happened in New Orleans? Estimating the Threat of Violence During the Hurricane Katrina Disaster*

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Although research indicates that initial media reports greatly exaggerated the severity of violent crime in post-Katrina New Orleans, it is not yet clear whether violence in general was a problem for storm victims. In this study, data from a unique survey of storm victims are used to estimate the overall threat of violence faced by those who were hardest hit by the storm and who lived through the disaster in New Orleans. The findings suggest that, while the threat of violent victimization was very real for some respondents, it did not dominate the experience of these storm victims. These findings are discussed in terms of their implications for the social construction of law and order, the persistence of disaster myths, negative stereotyping of the urban poor, and crime control issues in the context of disaster management and planning.

Keywords disaster; Hurricane Katrina; New Orleans; violence

Introduction

In the days following Hurricane Katrina, journalists around the world repeated accounts of extreme violence in the flooded city of New Orleans, including

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reports of storm victims "raping and killing one another and even shooting at rescue workers trying to save them" (Thevenot, 2006, p. 35). These descriptions of violent crime were attributed to a wide range of sources, including the city's mayor, police chief, members of the National Guard, and storm victims. For instance, citing unnamed evacuees, the *Financial Times* of London reported the following description of anarchy in the New Orleans Convention Center: "Girls and boys were raped in the dark and had their throats cut and bodies were stuffed in the kitchens while looters and madmen exchanged fire with weapons they had looted" (Dinmore, 2005, p. 7). As highlighted by Tierney, Bevc, and Kuligowski (2006), such accounts delayed rescue and evacuation efforts, and constructed disaster victims as "lawless, violent, exploitative, and almost less than human" (p. 63; also see Dynes & Rodriguez, 2007; Tierney & Bevc, 2007; US Senate, 2006).

Initial research indicates that, in fact, media reports greatly exaggerated the severity and extent of violence in New Orleans: "many if not most of the alarmist reports of violence were false, or at least could not be verified"[1] (Thevenot, 2006, p. 32; also see Dwyer & Drew, 2005, Rodriguez, Trainor, & Quarantelli, 2006; Tierney, Bevc, & Kuligowski, 2006). Sommers, Apfelbaum, Dukes, Toosi, and Wang (2006) note that many of the initial reports resembled urban legends, involving "fantastical allegations, such as the claim that babies were being raped" and a "propensity to elicit emotions of fear and disgust" (p. 49). The social conditions surrounding the New Orleans disaster appear to have been ripe for the development of such legends and rumors. The storm and consequent flooding of the city knocked out communications and generated considerable uncertainty, confusion, and anxiety (Brinkley, 2006). It is under such conditions that urban legends tend to propagate, perhaps because tales of horror and atrocity "give life to fears and threats that have been articulated on a more abstract or general level" (Goode & Ben-Yehuda, 1994, p. 110). Also, when people are in a state of anxiety, they are more likely to believe the rumors they hear and pass them on to others (Goode & Ben-Yehuda, 1994).

In particular, rumors of a violent crime wave in New Orleans may have articulated general fears, concerns, or stereotypes about the city's urban poor and their potential for angry aggression (see Brinkley, 2006, p. 504; also see Dyson, 2006; Sommers et al., 2006; Thevenot, 2006). Prior to Hurricane Katrina, New

1. For instance, the initial description of the New Orleans Convention Center as "a nightly scene of murders, rapes, and regular stampedes" was not supported by a subsequent investigation (Thevenot, 2006, p. 36). Despite a rumor that "30 to 40 bodies" were stuffed in a freezer at the Convention Center, only four bodies were recovered at the site and only one of these deaths "could be called a suspected homicide" (Thevenot, 2006, p. 30, 36). By December of 2005, four Katrina-related homicides were being investigated by the Orleans Parish District Attorney, including one occurring at the Convention Center, one at the Superdome, and two on the street (Mabin, 2005). As observed by the state medical examiner, four homicides would be typical for a week in New Orleans (Cataldie, 2006). The reports of rape at the Convention Center could not be confirmed. At the Superdome, members of the police sex crimes unit established a permanent presence and reportedly "ran down every rumor of rape and atrocity," making two arrests for attempted sexual assault (Dynes & Rodriguez, 2007, p. 30). The head of the sex crimes unit concluded that other rumored attacks never happened (Dynes & Rodriguez, 2007).

Orleans recorded a staggering poverty rate of 23 percent and one of the highest violent crime rates in the nation[2] (Dynes & Rodriguez, 2007; Mitchell, 2007). To those troubled by the city's history of excessive violence, poverty, and deep racial and class divides, it may have seemed that almost anything was possible in the context of disaster. As stated by one reporter:

> I spent most of my life in the city of New Orleans, and when I left, it was the murder capital of the country. If you were to tell me a bunch of people murdered each other in the Dome and Convention Center, why wouldn't I believe it? (K. Woods quoted in Thevenot, 2006, p. 37)

Also, rumors of a violent crime wave in New Orleans may have seemed plausible to reporters because these rumors fit a popular myth about the social consequences of disaster. Although it is largely a myth that natural disasters result in lawlessness, Tierney and colleagues (2006) observe that this myth influenced the production and consumption of news media coverage following Hurricane Katrina:

> These reports [of mass murder and child rape] were later found to be groundless, but they were accepted as accurate by both media organizations and consumers of news because they were consistent with the emerging [myth-inspired] media frame that characterized New Orleans as a "snakepit of anarchy," a violent place where armed gangs of Black men took advantage of the disaster not only to loot but also to commit capital crimes (p. 68).

Yet, while the most extreme accounts of violence have now been debunked (in particular, reports of mass murder in the New Orleans Superdome and Convention Center), questions remain about the extent to which violence in general was a problem during the disaster. Some storm victims maintain that an outbreak of violence did in fact occur and they have challenged attempts to revise initial media reports. As reported in the *Boston Herald*, a New Orleans visitor who took refuge from the storm in the Superdome claims to have witnessed two men wrangling over the final drops in a whiskey bottle, which then led to a fatal beating and stabbing. Still traumatized by memories of a "lawless city," she reportedly became outraged by televised reports suggesting that initial accounts of violence in the city had been exaggerated: "I was sitting here screaming at the TV. Did I imagine everything I saw? ... I can't believe people are saying this" (Freeman, 2005, p. 8).

Likewise, in his detailed chronicle of the New Orleans disaster titled, *The Great Deluge*, historian Douglas Brinkley devotes an entire chapter to crime and

2. In 2004, the year before Hurricane Katrina, New Orleans recorded a homicide rate of 56 per 100,000 residents—a rate nearly 10 times the national average. In 2005, the Katrina disaster disrupted the crime statistics reporting system in New Orleans for the remainder of the year (Mitchell, 2007), so it is only possible to estimate what the homicide rate might have been had the disaster not occurred. Just prior to Hurricane Katrina, New Orleans recorded 202 homicides. Researchers estimate that, at this pace, the city would have recorded an additional 107 homicides by the end of 2005, for a rate of 68 per 100,000. This rate "would have made New Orleans the murder capital of the United States" (Mitchell, 2007, p. 27).

violence in the flooded city. Brinkley (2006) interviewed numerous storm victims who claim to have personally witnessed violent victimization or who were themselves raped, physically assaulted, threatened with physical assault, or came under gunfire (pp. 499-541). Among those interviewed are several doctors from local hospitals who, in separate accounts, describe how they came under fire from rooftop snipers and witnessed other acts of violence:

> Snipers were firing at people rescuing folks from the Tulane Hospital. We got to witness people throwing things off the interstate at people in boats ... so there were some pretty awful things going on (Dr. Peter DeBlieux, quoted in Brinkley, 2006, p. 489).

As the disaster evolved into an international embarrassment for the US government, officials began to downplay the initial reports of snipers and other violence and, according to Brinkley, a "Katrina revisionism" began to settle in (pp. 490, 608). Nevertheless, Brinkley finds little reason to dismiss these personal accounts out of hand:

> The record shows that many reported sniper stories *were* false. The US government was right to quash some of the exaggerations. But there was also no reason to dismiss the claims of Charity and Tulane doctors that somebody took potshots at them while they were on the ER loading dock. They were credible witnesses (p. 490, emphasis in original).

Like the visitor who witnessed violence in the Superdome, Brinkley's eyewitnesses remain adamant about their claims in the face of skeptical reporters:

> There's no question we were being shot at ... For reporters to come back and say, "Maybe ... you just *thought* someone was shooting at you, ..." is outrageous (Dr. Ruth Berggren, quoted in Brinkley, 2006, p. 489, emphasis in original).

These conflicting accounts of the New Orleans disaster raise several questions. Even though the most extreme tales of violence turned out to be false, could it still be true that the threat of violence was pervasive during the disaster, as suggested by numerous first-hand accounts? If true, then the New Orleans case would be atypical of natural disasters and would deserve special attention and scrutiny from social scientists (see Tierney et al., 2006). Moreover, this fact would indicate a need for special crime control measures in the context of disaster management and planning.

Or could it be that, while violence undoubtedly occurred during the disaster, it was not typical of the experience of storm victims? To be sure, storm victims' accounts of violence are deeply troubling, but the existence of such accounts is not necessarily indicative of an outbreak of widespread violence in the immediate aftermath of Hurricane Katrina. In other words, the violent encounters documented by Brinkley (2006) and others may not be representative of the experiences of storm victims in the flooded city.

To help address these questions, we analyze data from a unique survey of Hurricane Katrina victims. The survey targeted those individuals who were hardest hit by the storm, including New Orleanians who were trapped in the city during the disaster and who spent time in locations that, according to initial media reports, were "hotspots" of violence. Many of the survey respondents had spent time in the New Orleans Superdome, at the Convention Center, or had spent a day or more living outside on a street or overpass. The survey contained a number of items that indexed the respondents' disaster-related experiences, including an item that asked each respondent if they had been "threatened by violence." Thus, using systematic survey data, it will be possible to determine if the threat of violent victimization was characteristic of the experience of these storm victims.

Because the survey includes some New Orleanians who managed to flee *before* the storm hit, it will also be possible to compare the experiences of prestorm and poststorm evacuees in our sample. All else equal, if the threat of violence was heightened in New Orleans during the immediate aftermath of Hurricane Katrina, then we should find the experience of violence (or threat of violence) to be more prevalent among those who remained in the flooded city.

Due to a collapse of the communications infrastructure in New Orleans during the disaster, the official reporting and recording of crime was not possible. Thus self-report survey data of this type may represent one of the few sources of systematic information on the threat of violence in the immediate aftermath of Hurricane Katrina. Moreover, in terms of the overall threat of violence that was experienced during the disaster, these data should provide a more complete picture than could be obtained from police reports, hospital records, and the like. In particular, the survey recorded respondents' experiences with violence regardless of whether such experiences resulted in injury, were reported to officials, or were disclosed to journalists. Thus, the survey likely captures experiences with violence (or threats of violence) that may never have come to the attention of law enforcement officials, journalists, or emergency personnel.

Data and Methods

Survey of Hurricane Katrina Evacuees

The data for this study were drawn from the *Survey of Hurricane Katrina Evacuees*. This survey was conducted from September 10 through 12, 2005—just two weeks after Hurricane Katrina struck New Orleans—and was jointly designed by the *Washington Post*, the Kaiser Family Foundation, and the Harvard School of Public Health. The survey is based on 680 "randomly selected respondents 18 years or older who were evacuated to Houston from the Gulf Coast after Hurricane Katrina" (Brodie, Weltzien, Altman, Blendon, & Benson, 2006,

p. 1402). The intent of the survey was to "cover the population hardest hit by the hurricane: those who did not initially evacuate in time, had to rely on government help to evacuate, and did not have access to housing on their own" (Brodie et al., 2006, p. 1403).[3]

Within days of Hurricane Katrina's assault on New Orleans, Houston-area officials initiated plans to open the Houston Astrodome, allowing it to serve as a megashelter for storm evacuees. The Astrodome, along with surrounding facilities and shelters, became the primary destination point for those New Orleanians who were part of the government-assisted, poststorm evacuation effort (Appleseed, 2006). The surrounding facilities included the Reliant Center, George R. Brown Convention Center, and smaller Red Cross shelters that had been established in the greater Houston area.

Initially, Houston officials expected to receive evacuees from the Superdome in New Orleans, who were to arrive in FEMA-coordinated buses as part of a "dome-to-dome" transfer. However, far more evacuees arrived than anticipated, including evacuees who did not originate at the Superdome as well as those who were not part of the government-assisted effort. Professional interviewers were dispatched to the Astrodome, Reliant Center, Convention Center, and to 5 of the 14 Red Cross shelters in proportion to the estimated population size of each shelter. Across the shelters, the evacuee population totaled more than 8000 during the interview period. The interviewers randomly selected adult evacuees and approached them with requests for face-to-face interviews, conducted in the "most private circumstances available," with the assurance that their responses would remain anonymous (Brodie et al., 2006, p. 1403). Ninety percent of the selected evacuees agreed to participate in the interview (for additional details on the sampling plan and selection procedure, see Brodie et al., 2006).

Most of the respondents in the resulting sample are from New Orleans (98 percent) and most are African American (93 percent). Furthermore, Brodie and colleagues (2006) determined that, in comparison to New Orleans residents as a whole, the survey respondents are disproportionately African American, from lower-income households, and have lower levels of education. As Elliott and Pais (2006) determined, "it was specifically low-income Blacks ... who were most likely to remain in New Orleans through the disaster" (p. 38).

Moreover, most of the New Orleanians in the sample had evacuated after Hurricane Katrina hit the city (62 percent) and, of these respondents, many had been trapped in their flooded homes and had to be rescued (47 percent), nearly half had spent a day or more living outside on a street or overpass (49 percent), many spent time in the Superdome (31 percent), some spent time at the Convention Center (9 percent), and most were brought to Houston as part of the government-assisted evacuation effort (76 percent).

Thus, while the survey respondents may not be representative of all New Orleanians who remained in the city through the disaster (some of whom may

3. The authors wish to thank the Kaiser Family Foundation for providing access to the survey data.

have evacuated on their own or sought shelter elsewhere), the survey appears to capture the population of special interest here: lower-income residents who were trapped in the city, including many who spent time at the Superdome, Convention Center, or out on the street—locations that were frequently cited as focal points of violence in initial media reports.

Measures

Threat of violence

Respondents in the survey were asked a series of questions about their experiences in the immediate aftermath of Hurricane Katrina. For example, each respondent was asked, "Since the hurricane hit, has there been a time when you didn't have enough fresh water to drink" or "didn't have enough food to eat?" In this context, each respondent was also asked, " ... has there been a time when you were threatened by violence?" Responses to this item range from 0 ("no") to 1 ("yes"). Approximately 22 percent of the respondents report being threatened by violence.

As a measure of the overall threat of violence, this survey item has several limitations. First, the item does not probe the exact nature of the threat (e.g., whether the threat of violence was minor or serious in nature). However, despite this limitation, it is important to note that this item captures information that is still very useful. For example, the fact that a *minority* of respondents (22 percent) report threats of violence is itself telling. Contrary to initial media reports of widespread anarchy and social breakdown, this finding suggests that *most* of the respondents in the sample did not experience a threat of violence—whether minor or severe—even though most were in New Orleans after the storm hit, facing desperate conditions (below, we examine this issue in greater detail).[4]

In addition, analyses reported below suggest that the threat-of-violence item captures experiences that were consequential or meaningful for the respondents. For example, compared to others in the survey, respondents who said they were threatened by violence expressed less optimism about their ability to fully recover from the disaster. They also expressed less interest in returning to New Orleans—in many cases, they expressed a preference to permanently relocate somewhere else. It may also be worthwhile to note that, within the survey, the threat-of-violence item was asked in the context of serious life-threatening issues, such as not having enough food to eat and not enough fresh water to drink.

4. An additional limitation of the survey is that it does not cover those who, tragically, perished during the storm. If violence was responsible for a substantial number of such deaths, then their exclusion from the survey would lead us to underestimate the extent to which violence, or the threat of violence, was a problem in the city. However, available evidence indicates that only a small number of known murders occurred (Mabin, 2005) and that virtually all of the deceased in New Orleans were drowning victims (Dewan & Roberts, 2005).

A second limitation of the threat-of-violence item is that it does not capture information regarding the situational context in which the threat of violence occurred. Respondents were asked to report whether or not they were threatened by violence "since the hurricane hit." Because the survey was conducted two weeks after the storm, it is possible that this measure may be capturing threats of violence occurring outside of New Orleans, after the disaster (e.g., a threat of violence that occurred at the respondent's evacuation shelter).[5] Once again, however, it is important to note that the measure captures information that is still very useful, especially when combined with other information in the survey. For example, it will be possible to examine specific subgroups of respondents within the survey, including those who were trapped in the flooded city after the storm and who spent time in the Superdome, the Convention Center, or on the interstate. If these respondents report that they were *not* threatened with violence "since the hurricane hit," then this fact would clearly indicate that they did not experience violent victimization during their time in the flooded city or otherwise. Should a majority of these storm respondents report *not* being threatened with violence, then this fact would prove to be very telling about the nature of these storm victims' experiences—a finding that could be compared and contrasted to media characterizations of the disaster.

Thus, while an affirmative response to the threat-of-violence item is somewhat ambiguous in terms of it's meaning (possibly leading us to overestimate the percentage of respondents who experienced threats in New Orleans during the disaster itself), the meaning of a negative response to this item seems clear and, in combination with other data in the survey, can shed important light on the relative absence of violent victimization during the disaster.

Other disaster-related experiences

Respondents in the survey were also asked about a range of other experiences related to the disaster, along with their attitudes toward the future. As suggested earlier, information on these other aspects of the disaster can be used to validate the threat-of-violence item.

Several dichotomous variables were constructed to capture responses to the following questions: "Have you experienced any health problems or injuries as a result of the hurricane and flooding?" (yes =1); "Were any of your family, neighbors, or close friends injured in the storm or flooding? (yes = 1); "Were any members of your family, neighbors, or close friends killed during the storm

5. To help address this issue, we performed a supplemental set of analyses in which we controlled for the perceived quality of the respondent's evacuation shelter. In particular, we ran the analyses with a select group of respondents; namely, those individuals in the survey who described the conditions at their shelter as being "good" or "excellent" (86 percent of the sample). Presumably, within this group, those who report being "threatened by violence" are unlikely to be referring to experiences occurring at their evacuation shelter, and more likely to be referring to threats experienced during the disaster itself. In these supplemental analyses (not shown), an identical pattern of findings emerged (full set of results available from the first author on request).

or flooding?" (yes = 1); "Looking ahead, do you think you will ever fully recover from the hurricane?" (yes = 1); "Do you want to eventually move back to [New Orleans], or do you want to permanently relocate somewhere else?" (relocate = 1).

In addition, respondents were asked if they had spent "at least a day living outside on a street or overpass" during the disaster (yes = 1), "spent time inside the Superdome in New Orleans" (yes =1), or "spent time inside the Convention Center in New Orleans" (yes = 1).

Evacuation timing

Although the intent of the survey was to cover the population hardest hit by the storm (i.e., those who did not evacuate before the storm and who became trapped in the flooded city), and although most respondents fell into this category, some of the New Orleanians in the survey had evacuated before the storm hit. In response to the question, "Did you yourself evacuate before the storm hit, or not?", 38 percent of the respondents said they evacuated before the storm hit, while 62 percent said they did not evacuate in time. This item was used to construct a dichotomous (dummy) variable indexing evacuation timing (poststorm evacuation = 1). The inclusion of both prestorm and poststorm evacuees in the survey will allow us to compare the experiences (including threats of violence) of New Orleanians who were trapped in the storm-ravaged city with those who managed to escape the ordeal.

Demographic characteristics

The following dichotomous (dummy) variables index various social and demographic characteristics of the respondents: working full-time before the storm (full-time work = 1), working part-time before the storm (part-time work = 1), low household income (under $20,000 = 1), marital status (married = 1), race (African American = 1), and sex (female = 1). Age is coded in number of years. Education is coded as a five-point ordinal scale: 1 ("none, or grades 1-8"), 2 ("grades 9-11"), 3 ("high school graduate or equivalent"), 4 ("some college"), 5 ("college graduate or higher").

Table 1 summarizes the characteristics of the New Orleanians in the sample.

Analyses

The analyses below proceed in three steps. First, to help validate the threat-of-violence measure, we examine the correlations between this measure and measures that index other disaster-related experiences. Second, we examine how the experience of being "threatened by violence" is distributed among the

Table 1 Characteristics of the New Orleanians in the survey (showing percentage of respondents in each category)

Characteristic (%)		Characteristic (%)	
Age in years		Married, or living as married	30
18-30	25		
31-50	48	Have children under 18	45
51-64	21		
65 and up	6	Threatened with violence	22
Sex			
Female	50	Personal injury or health problem	33
Male	50		
Race		Family or friends injured	17
African American	93		
White, Asian, or other	7	Family or friends killed	14
Educational level			
None, or grade 1-8	5	Expect to fully recover	53
High school incomplete	25		
High school graduate or GED	49	Plan to relocate permanently	45
Some college	16		
College graduate or higher	5	Spent time at the Superdome	35
Low income (under $20,000)	68		
Employment status (before the storm)		Spent time at the Convention Center	7
Full-time	52		
Part-time	15	Spent time on street or overpass	40
Unemployed	33		
Homeowner	33	Evacuated before the storm	38

survey respondents in general, and among specific subgroups within the survey, with a special focus on those respondents who remained in New Orleans and who spent time in the Superdome, in the Convention Center, or outside on a street or overpass during the disaster. Third, in multivariate analyses, we compare the experiences of prestorm and poststorm evacuees, controlling for relevant demographic characteristics and other variables.

All analyses reported below are based on the 98 percent of respondents ($n = 669$) in the survey who were living in New Orleans when the storm hit (respondents who report that they were living elsewhere are excluded).

Results

Correlations Between Disaster-Related Experiences and Attitudes

Table 2 presents the phi correlations between the "threatened by violence" item and items indexing other disaster-related experiences and attitudes. As seen in Table 2, the threat-of-violence variable exhibits a statistically

Table 2 Correlations between the "threatened by violence" item and other variables[a]

	"Since the hurricane hit, has there been a time when you were threatened by violence?" Phi coefficient
Other disaster-related experiences and attitudes	
Personal injury or health problem	.05
Family or friends injured	.10*
Family or friends killed	.09*
I expect to fully recover	−.08*
I plan to permanently relocate	.10*

[a]Analyses are based on the New Orleanians in the sample; average $n = 628$.
*$p < .05$.

significant association with all of the experiences and attitudes included in the table ($p < .05$) with the exception of personal "injury or health problems." Moreover, these associations are in the expected direction. Respondents who report being "threatened by violence" also tend to report that "family members, neighbors, or close friends" were injured or killed during the disaster, they tend to be less optimistic about their ability to fully recover from the disaster, and they tend to express a desire to permanently relocate (away from New Orleans).

The lack of a significant association between the threat-of-violence item and the experience of personal "injury or health problems" is somewhat surprising. It should be noted, however, that storm victims (especially poststorm evacuees) were subject to a wide range of potential health problems unrelated to violent victimization, including lack of food, water, medicine, and heat exhaustion. Thus, the personal "injury or health problem" variable may be capturing a wide range of health problems—in addition to injury—and this may help to explain the lack of an association (note that the items in Table 2 dealing with family, neighbors, or close friends are specific to injury).

In any event, the overall pattern of findings in Table 2 is what we would expect to find if the threat-of-violence measure was, in fact, indexing experiences that were meaningful or consequential for the respondents.

Experiencing the Threat of Violence: Distribution Across Various Subgroups

Table 3 presents the percentage of evacuees in various categories who report being "threatened by violence." Several findings in Table 3 are noteworthy. First, as stated earlier, only a minority of New Orleanians in the survey report threats of violence (21.9 percent). Thus, for most of the evacuees in the survey, the threat of violence was not characteristic of their experience. The same

Table 3 Percentage of respondents in various categories who report being "threatened by violence"[a]

	Full Sample of New Orleanians (n = 669)	PreStorm Evacuees (n = 247)	PostStorm Evacuees (n = 405)
Percentage "threatened by violence"	21.9	21.6	22.3

Note. The percentage difference between the prestorm and poststorm evacuees is not statistically significant ($p > .05$). Due to missing cases on the "evacuation timing" variable, the numbers of prestorm and poststorm evacuees do not add up to 669.
[a]Analyses are based on the New Orleanians in the survey.

holds true even for those respondents who did not evacuate before the storm and who remained behind in the flooded city (i.e., poststorm evacuees), with 22.3 percent of these respondents reporting threats of violence.[6] Perhaps surprisingly, the percentage of respondents who report being threatened by violence is nearly identical among prestorm and poststorm evacuees (21.6 percent versus 22.3 percent; $p > .05$). The possibility remains, however, that only *certain* poststorm evacuees experienced a heightened threat of violence; for instance, those who spent time in the Superdome or the Convention Center.

Focusing now on the poststorm evacuees in the survey (i.e., those who did not evacuate New Orleans before the storm), Table 4 presents the percentage

Table 4 Percentage of poststorm evacuees who report being "threatened by violence," by time spent in the Superdome, Convention Center, or on a street or overpass[a]

	Poststorm evacuees Percent "threatened by violence" among those who did, or did not, spend time in particular locations	
	Yes	No
Spent time in the Superdome?	31.7*	18.4
Spent time in the Convention Center?	38.2*	21.0
Spent at least a day living on a street or overpass?	23.1	22.4

[a]Analyses are based on the New Orleanians in the survey.
*$p < .05$; comparing "Yes" to "No" categories. Chi-square tests were used to compare proportions across categories.

6. Our findings are consistent with those obtained in another Houston-area survey that was based on a small convenience sample of Katrina evacuees. Although violence was not a focus of their study, Coker and colleagues (2006) report that a minority of their survey respondents witnessed violence or experienced a direct threat of violence (p. 91). However, among the participants who responded to the violence items in their survey, it is not clear how many were actually in New Orleans during the immediate aftermath of the storm.

who report being threatened by violence by time spent in the Superdome, the Convention Center, or on a street or overpass. As seen in Table 4, among those who spent time in the Superdome or in the Convention Center, a relatively high percentage report being "threatened by violence." Moreover, compared to individuals who did not spend time in these locations, the differences are statistically significant ($p < .05$). The highest percentage (38.2 percent) occurs among those who spent time in the New Orleans Convention Center (although it should be noted that just 34 of the poststorm evacuees in the survey spent time in this location).

Nevertheless, even among those who spent time at the Superdome or Convention Center, it is still the case that a majority report that they were *not* threatened by violence. Furthermore, while it appears that the threat of violence was pronounced at certain locations, the significant findings reported in Table 4 could also reflect the personal and demographic characteristics of those individuals who ended up at the Superdome or Convention Center. Perhaps individuals who spent time at these locations possess characteristics that are associated with an elevated risk of violent victimization, for example. Although the respondents in the survey share many background characteristics (e.g., they are mostly from lower income backgrounds and are African American), those who spent time at the Superdome or Convention Center may still differ in some significant way. In the multivariate analyses described below, it will be possible to examine how time spent at various locations affected the odds of being threatened by violence while *controlling* for various characteristics that may be associated with violent victimization, such as age and sex (Lauritsen, 2001).

As seen in Table 4, with regard to the threat of violence, no significant difference was detected between individuals who did, and did not, spend at least a day living outside on a street or overpass ($p > .05$).

Multivariate Analyses: Comparing the Experiences of Prestorm and Poststorm Evacuees

If the threat of violent victimization was heightened during the New Orleans disaster, then (all else equal) we should find the odds of being "threatened by violence" to be greater among those New Orleanians who remained in the flooded city. The odds of being threatened by violence should be relatively low among those who managed to evacuate before the storm.[7]

7. It is possible that some prestorm evacuees in survey (those who fled to nearby areas) returned to New Orleans immediately after the storm passed, perhaps in search of friends or family members or to assist other storm victims. Indeed, many individuals (including some celebrities) came from outside to assist in the immediate aftermath of the storm well before the government-assisted evacuation was underway. Thus, even though they evacuated before the storm, some individuals may have spent time in the flooded city nonetheless. Although it is not possible to determine how many of our respondents fall into this category, it will be possible to control for time spent in certain locations in New Orleans during the disaster.

To explore this issue, logistic regression analyses were conducted to examine the effect of poststorm evacuation on the odds of being threatened by violence, controlling for other variables. Table 5 presents the results of these analyses. The first equation in Table 5 shows the effect of poststorm evacuation on the odds of being threatened by violence while controlling for a range of demographic variables, including age, sex, education, income, employment status ("unemployed" is the excluded category), home ownership, marital status, and having children under the age of 18. As seen in Table 5, the effect of "poststorm evacuation" is insignificant ($p > .05$), suggesting that, overall, the odds of being threatened by violence were not any greater for respondents who did not evacuate in time (the "Wald" column in Table 5 provides the Wald chi-square value used in testing the null hypothesis that the coefficient is zero). Perhaps more important than evacuation timing is how, and where, postevacuees spent their time in the city during the disaster (see below).

As seen in the first equation in Table 5, age and marital status are the only variables that significantly affect the odds of being threatened by violence. To facilitate the interpretation of these effects, the exponentiated coefficients (Exp[B]) in Table 5 provide the odds ratios associated with age and marital status. The odds ratio for age indicates that, for every one year increase in age, the odds of being threatened by violence decreased by .97 times (or

Table 5 Logistic regression results showing the effects of the study variables on the odds of being "threatened by violence"[a]

	Equation 1: no controls for location				Equation 2: with location variables			
Independent variables	*B*	*SE*	Wald	Exp (*B*)	*B*	*SE*	Wald	Exp (*B*)
Poststorm evacuation	.26	.23	1.33	1.30	.31	.25	1.45	1.36
Age	−.03	.01	9.51*	.97	−.03	.01	7.30*	.97
Sex (female = 1)	.20	.22	.84	1.22	.23	.24	.90	1.26
Low income (under $20,000)	.05	.25	.04	1.05	.06	.27	.04	1.06
Education	.05	.13	.13	1.05	.07	.14	.23	1.07
Employed full-time	.07	.27	.06	1.07	.27	.30	.85	1.32
Employed part-time	.22	.35	.40	1.25	.36	.38	.90	1.43
Homeowner	.03	.24	.02	1.04	.11	.26	.18	1.12
Marital status (married = 1)	.65	.24	7.56*	1.91	.58	.25	5.17*	1.78
Has children under 18	−.05	.23	.04	.96	−.01	.25	.00	.99
Spent time at Superdome	–	–	–	–	1.34	.24	30.17*	3.81
Spent time at Convention Center	–	–	–	–	1.17	.40	8.78*	3.23
Spent time on street or overpass	–	–	–	–	.54	.26	4.29*	1.71
Constant	−.77	.71	1.19	.46	−1.96	.80	6.04*	.14
Psuedo-R^2 (Nagelkerke statistic)				.06				.18
N (listwise deletion)				501				471

[a]Analyses are based on the New Orleanians in the survey.

*$p < .05$; difference in *N* across equations due to the listwise deletion of missing values.

3 percent). The odds ratio for marital status indicates that being married (or living as married) increased the odds of being threatened by 1.91 times (or 91 percent).

The direction of the marital status effect is counterintuitive in light of previous research (in non-disaster situations) showing that married persons tend to experience relatively low rates of violent victimization (Lauritsen, 2001). It is possible, however, that the effect observed here reflects the unique context of disaster. A growing body of literature on gender and disasters indicates that domestic violence may increase in the aftermath of disasters such as hurricanes, severe floods, earthquakes, and environmental disasters (Enarson, 1999; Fothergill, 1999; Morrow & Phillips, 1999). In the aftermath of Hurricane Katrina, a number of reports surfaced highlighting family stress and marital conflict as problems afflicting many storm victims (e.g., Finney, 2006; Whoriskey, 2007). In one survey of New Orleanians, nearly one in four (22 percent) indicated that marital conflict had been a problem since the storm, with 10 percent reporting that "the new stress in their marriage had caused an incident where they or their partner 'became so angry that one of you lost control and either yelled, broke things or tried to hurt each other'" (Kaiser Family Foundation, 2007, p. 13).

Thus some of the reported threats of violence in the current survey may have involved intimate partners. Further inspection of the data reveals that, when observing the percentage of respondents in the survey who report being "threatened by violence," the Figure increases from 19 percent among nonmarried respondents to 28 percent among married respondents[8] ($p < .05$). While this interpretation of the marital status effect is admittedly ad hoc in nature, it could become the focus of future research.

Effect of Time Spent at Various Locations in the City

Despite the insignificant effect of "poststorm evacuation," it may still be the case that the odds of being threatened by violence were heightened—not for postevacuees in general—but for individuals who spent time in particular locations in New Orleans during the disaster. To explore this possibility, the second equation in Table 5 includes the following additional variables: time spent in the Superdome, time spent at the Convention Center, and time spent living outside on a street or overpass.

As seen in Table 5, time spent in these particular locations significantly increased the odds of being threatened by violence, net of age, sex, marital status, and other factors. The odds of being threatened by violence were 3.81

8. The percentage of respondents who report threats of violence is relatively high among married men (23 percent), but it is even higher among the married women in the sample (34 percent). Based on this observation, we tested for a sex-by-marriage interaction effect in multivariate analyses, but this effect was not statistically significant (complete set of results available from the first author on request).

times greater for those individuals who spent time in the Superdome (compared to those who did not spend time in the Superdome), 3.23 times greater for those who spent time at the Convention Center, and 1.71 times greater for those who spent at least a day living outside on a street or overpass.[9]

Summary and Discussion

In light of conflicting accounts regarding the extent of violent victimization in New Orleans during the immediate aftermath of Hurricane Katrina, we examined data from a unique survey of storm victims. Although the results of our analyses are somewhat mixed, our main finding concerns the overall prevalence of being "threatened by violence." In particular, it appears that the threat of violence was *not* characteristic of the experience of evacuees covered in this study; namely, those New Orleanians who were hardest hit by the storm. Even among respondents who did not evacuate before the storm, and who spent time in the Superdome, in the Convention Center, or on a street or overpass during the disaster, the majority report that they were *not* threatened by violence. Furthermore, in comparison to those evacuees in the survey who managed to flee New Orleans before the storm, we find no evidence that the odds of being threatened by violence, in general, were any greater for those who did not evacuate in time.

These findings are important for several reasons. First, they serve to further challenge initial media accounts that portrayed post-Katrina New Orleans as a "snakepit of anarchy" and that depicted storm victims as violent and exploitative. In this regard, our findings are consistent with the qualitative observations of Rodriguez and colleagues (2006) who suggest that, while some antisocial behavior did occur in the immediate aftermath of the New Orleans disaster, it did not dominate the experience of storm victims. Rather, "the overwhelming majority of the emergent activity" in response to the storm was prosocial in nature and involved efforts on the part of residents to provide mutual aid and assistance[10] (Rodriguez et al., 2006, p. 84). Indeed, outbreaks of widespread crime and violence in the aftermath of disaster tend to be rare (Tierney et al., 2006). Our findings also provide quantitative empirical support for the qualitative observations contained in a Senate report on the disaster: "While the city was far from peaceful, its inhabitants were safer and more disciplined than it first appeared" (US Senate, 2006, p. 439).

9. In Table 5, the sample size varies slightly across the equations due to the listwise deletion of missing values. We also ran these analyses after excluding the total cases with missing values from both equations (i.e., a sample size of 471 for both equations) and obtained an identical pattern of results.

10. Likewise, Cromwell and colleagues (1995) observed that citizen patrols and other informal social control efforts "formed almost immediately" in the aftermath of Hurricane Andrew (p. 63). Perhaps as a result of these efforts, the hurricane-affected areas included in their study experienced a poststorm reduction in crime.

Second, the findings serve to remind us of the limitations of "oral history" accounts of the disaster. While, in many cases, the accounts of storm victims have included descriptions of violent victimization (see Brinkley, 2006), we must be careful not to generalize such accounts, as they may not be representative of the experience of storm victims. Unfortunately, in the journalistic accounts of the disaster that have appeared to date, this limitation is rarely addressed. Consequently, readers may be left with the impression that unusual or exceptional behavior was typical or widespread in the storm's aftermath.

Third, the findings may help to challenge the negative stereotypes of evacuees that began to circulate in the aftermath of Hurricane Katrina. As documented by Brezina (2008), several commentators highlighted the background of urban poverty that was common to many poststorm evacuees and, consistent with stereotypes of the urban poor, portrayed these evacuees as irresponsible and prone to antisocial behavior (also see Deggans, 2005; Douglas, 2006; Heinauer, 2006; Sommers et al., 2006).

Nevertheless, while it appears that violence was not characteristic of the experience of storm victims in our sample, it remains true that a non-trivial number of survey respondents reported threats of violence. It is therefore important not to dismiss the fact that violent victimization, or the threat of such victimization, was very real for some storm victims. Although we do not have specific information on the type of threats experienced by the survey respondents, our measure of being "threatened by violence" is correlated with certain disaster-related attitudes, such as the desire to relocate permanently away from New Orleans. This fact suggests that the threats in question tended to be meaningful or consequential for respondents. Furthermore, published accounts suggest that at least some individuals trapped in New Orleans experienced severe forms of violent victimization (Brinkley, 2006) and this fact may have contributed to the perception that a massive outbreak of violence had occurred. Moreover, "the perception of extreme threats of violence and the reality of a lesser, but still serious, level of disorder had a significant detrimental impact on Katrina's victims and on those who were trying to help them" (US Senate, 2006, p. 439).

It also appears that the odds of being threatened by violence were relatively high for *certain* poststorm evacuees; namely, those who spent time in the Superdome, in the Convention Center, or living outside on a street or overpass. The fact that these locations were relatively problematic may not be surprising in light of the crowded conditions, extreme heat and humidity, and the lack of food, water, and basic services that characterized these locations during the disaster. (It may also be true that, given crowded conditions, individuals in these locations were reporting the same threats of violence. In such locations, a single incident—such as the brandishing of a knife, gun, or other weapon—may have affected numerous individuals, leading each to report being "threatened by violence".)

In hindsight, numerous mistakes were made in New Orleans that, in the end, contributed to considerable misery and, possibly, to the threat of

violence—especially in certain locations. First, city officials underestimated the danger posed by Hurricane Katrina, especially the risk of a catastrophic breach of the flood protection system. At the very least, they failed to prepare adequately for the storm and its aftermath (see Brinkley, 2006; van Heerden & Bryan, 2006). In particular, city officials failed to plan for a *worst case scenario*. As Lee Clarke (2006) describes:

> When it got right down to it, to creating and holding the expectation of what would really happen should a monster storm come screaming through New Orleans, the worst case imagination was neglected in favor of the more reasonable, probabilistic one.

Consequently, city officials waited too long to announce a mandatory evacuation order (Brinkley, 2006; van Heerden & Bryan, 2006). Lacking adequate evacuation plans for the poor, elderly, and disabled, city officials opened the Superdome as a "shelter of last resort." This plan was flawed for several reasons. First, as suggested by Scanlon (2006), people often search for ways to discount a warning. Unfortunately, the announcement by city officials that shelter would be available within the city may have undermined the mandatory evacuation order, making the need to leave seem less compelling for some residents. Second, in the event of flooding, the Superdome plan would only ensure that a large number of vulnerable residents would be stranded inside the dome, without basic services, for an undetermined length of time.

As documented by Brinkley (2006) and Sims (2007), lack of planning and preparedness also extended to the New Orleans Police Department (NOPD). As a result, the NOPD was quickly overwhelmed by the storm and flooding despite the heroic attempts of some officers. As local radio antennas were shut down, as batteries for individual radios began to fail, and as the flood waters began to overtake police stations and patrol cars, the NOPD was left without adequate supplies, transportation, or communication. Consequently, the NOPD was unable to carry out basic policing functions, was "essentially powerless to respond to gunfire or looting," and was severely limited in its ability to render assistance to storm victims: "officers were forced to pass by many residents needing help, simply because they did not have the resources" (Sims, 2007, p. 115; also see Brinkley, 2006; US Senate, 2006). In addition, as unsubstantiated rumors began to circulate of antisocial behavior on a massive scale, it appears the NOPD adopted a defensive posture more appropriate for a "war zone" than the site of a natural disaster (Tierney et al., 2006; Tierney & Bevc, 2007).

The paralysis of the NOPD forced ordinary residents to exercise social control in some instances (see Black, 1983). At times, these attempts at social control were successful:

> In [a] working-class area [of New Orleans], a group emerged that gathered their neighbors in a local school. Initially, everyone was invited, but when some "thugs" started to vandalize the building, breaking into vending machines and

> wielding guns, leaders of the group expelled them from the school and prevented them from reentering. (Rodriguez et al., 2006, p. 91)

Yet in other cases, it appears that social control attempts by ordinary residents led to a cycle of violence and retaliation among residents (see Brinkley, 2006).

The implications for future planning seem clear. To provide for the safety, security, and well-being of residents, officials at all levels of government need to plan for worst-case scenarios. In areas prone to hurricanes and flooding, such planning would include—at a minimum—robust communication systems, watercraft, staging areas for emergency personnel, the storage of supplies in dry areas, the placement of detention centers on high ground, a realistic plan for evacuating residents in need of transportation or care (e.g., the elderly and disabled), and the provision of adequate shelters outside of vulnerable areas (US Senate, 2006).

Perhaps equally important, the execution of a well-coordinated response to disaster requires the dissemination of accurate information. As seen in the case of New Orleans, rumors of widespread anarchy and mayhem contributed to a delay in rescue and evacuation efforts and hampered the response of law enforcement officials. Given the persistence of various disaster myths (Tierney et al., 2006), law enforcement agencies have a critical role to play in the area of rumor control. Instead of fueling unsubstantiated rumors by speaking directly to the media and by making sensationalized statements (as occurred during the New Orleans disaster), police officials can help to manage and control rumors by directing media inquiries to a public information officer, who is responsible for releasing authorized information through media-alert announcements and scheduled media briefings (US Senate, 2006).

Before Hurricane Katrina, the role of law enforcement in hurricane planning, preparedness, and rumor control was not fully appreciated. In fact, the "Hurricane Pam" exercise, which was designed to prepare public officials for a catastrophic storm in New Orleans, "did not include any public-safety or law-enforcement components, other than security at shelters" (US Senate, 2006, p. 439). By developing a better understanding of what actually occurred during the Katrina disaster, attention is directed to the critical role to be played by law enforcement in such situations. Also, steps for future planning and preparedness can be identified. It is hoped that the current study will contribute to these ends.

Ideally, future investigations will address the various limitations of the current study. Although it is now clear that many of the initial reports of extreme violence were false (see Dwyer & Drew, 2005; Thevenot, 2006), and although our own results indicate that violence did not dominate the experience of those New Orleanians who were hardest hit by the storm, the task of separating myth from reality is far from complete. For example, to provide a more complete picture, it would be desirable to have systematic data on the exact nature of the threats that some storm victims did, in fact, experience. This will be an important area to explore because, to the extent that storm victims

encountered lesser, but still serious, threats of victimization, it remains unclear whether such threats came mostly from fellow storm victims (as rumors have highlighted) or from other sources.[11]

It will also be important to develop a more complete understanding of why unsubstantiated, harmful rumors about the New Orleans disaster were reported in the first place. As described earlier, researchers have highlighted many possible contributing factors, including the collapse of the communications infrastructure, stereotypes about the urban poor, and popular disaster myths. An additional factor that merits attention is the role played by public officials. As documented by Thevenot (2006), some journalists had doubts about the initial rumors of extreme violence, but they felt compelled to run with the story because these rumors were being repeated and "confirmed" by local officials, including the mayor and police chief. As described by Dynes and Rodriguez (2007), these rumors "were even presented as facts by local officials on *The Oprah Winfrey Show*" (p. 29). The question of why local officials would help to spread harmful rumors about their own city is one we hope to address in the near future.

Finally, we conclude with an appropriate quotation from Kai Erickson (2007), which captures the spirit with which we have approached this study as well as other Katrina-related projects:

> The only way for us to ever acquire an understanding of Katrina ... is to come at it from many different vantage points—to chip away at it, to probe this detail and then that one ... until all those fragments of information and insight begin to form a picture. ... Science often works that way (p. xviii).

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11. Some threats of violence reportedly came from local authorities. When a large group of storm victims tried to leave New Orleans by walking across a bridge, police officers from the neighboring city of Gretna blocked their path and pointed their weapons at individuals who did not retreat immediately. The officers explained that there "would be no Superdomes in their city" (Brinkley, 2006, p. 469). Later, a police helicopter hovered low over the hungry and dehydrated evacuees, kicking up dust and pelting them with debris, until they all retreated (Brinkley, 2006).

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