Journal of Black Studies
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Journal of Black Studies 2007; 37; 482
DOI: 10.1177/0021934706296188

The online version of this article can be found at:
http://jbs.sagepub.com/cgi/content/abstract/37/4/482

Published by:
SAGE Publications
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SURVIVAL AND DEATH IN NEW ORLEANS
An Empirical Look at the Human Impact of Katrina

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Hurricane Katrina has been interpreted as both a "metaphor" for the racial inequality that characterizes urban America and as a purely "natural" disaster that happened to strike a predominantly Black city. To resolve these conflicting interpretations, the author analyzes data on New Orleans residents who died during Katrina in an effort to provide an empirical look at the groups most directly affected by the hurricane. Contrary to prior reports in the popular press, the author finds that the impact of the storm was felt most acutely by the elderly population in New Orleans and by Blacks, who were much more likely to die than would be expected given their presence in the population. Data on the locations of recovered bodies also show that Katrina took its largest toll in New Orleans's Black community. These findings confirm the impression that race was deeply implicated in the tragedy of Katrina.

Keywords: *Katrina; race; casualties*

The death, suffering, and displacement that accompanied Hurricane Katrina generated compassion from commentators across the political spectrum. But underlying the universal understanding of Katrina as a horrible tragedy is a struggle over how to interpret the disaster. The images of New Orleans's residents stranded at the Convention Center and throughout the city left the indelible impression that the storm's impact was anything but natural. Virtually all of

AUTHOR'S NOTE: The author thanks John Logan and Jal Mehta for helpful input on a previous version of this article.

JOURNAL OF BLACK STUDIES, Vol. 37 No. 4, March 2007 482-501
DOI: 10.1177/0021934706296188

the faces captured by the news cameras were Black, and the visible state of desperation among the stranded victims of the storm suggested deep poverty. Based largely on these visual impressions, Katrina has come to be interpreted by some as a "metaphor" (Alba, 2005) for the inequality that pervades urban America, affecting poor, primarily Black segments of the urban populace most directly.

As has been the case with many environmental disasters, a rival interpretation of Katrina as a purely "natural" disaster has been propagated by skeptical commentators who dismiss the idea that Katrina represents anything more than a random tragedy that happened to strike a predominantly Black city (Young, 2006). The skeptics' case was strengthened by an analysis of data on the casualties of the hurricane, which appeared to show that Whites, not African Americans, seem to have been disproportionately likely to die in Hurricane Katrina (Simerman, Ott, & Melnick, 2005). The report, conducted by staff from Knight Ridder Newspapers, finds that Blacks represented only a slight majority of those who died in the storm, despite the fact that they compose a substantial majority of the population in the areas hit hardest by Katrina. The implication is that Whites may actually have been overrepresented among the victims of Katrina, which would dispel the notion that the effects of the storm were centered on the poor, Black population of New Orleans. The study compelled one columnist to write that suggestions of a link between race and the effects of Hurricane Katrina are driven by nothing more than "racial paranoia" (Young, 2006).

Though the Knight Ridder analysis is flawed in numerous ways, the reaction to it makes clear the need to move beyond mere impressions or metaphors and to document the impact of Katrina with actual evidence. Although interpretations of the storm are widespread, the evidence put forth in support of these interpretations has been sparse. An exception is the research conducted by John Logan (2006) showing that the neighborhoods experiencing flooding and structural damage in the storm were disproportionately poor and Black. The current analysis, which is based on three sources of data on Katrina's victims and those who remain missing, adds to this research in an effort to develop an interpretation of the impact of Katrina that is empirically based. I am limited in this effort by sparse data that do not allow for any analysis of the

sequence of events that transpired during the storm. Still, the data used in the current analysis provide the most comprehensive description of the people and the neighborhoods that were most directly affected by Hurricane Katrina, providing the basis for a sociological interpretation of survival and death during Hurricane Katrina.

I follow a tradition of research that recasts "natural" disasters (e.g., famines, floods, or heat waves) as political, economic, and social in nature (Erikson, 1976; Klinenberg, 2002; Sen, 1981), and I reach the same conclusion that others have reached before me: Although such disasters may be triggered by environmental sources, their impact is felt differentially by individuals and groups based on their position in the social structure. Katrina's impact was felt most acutely by elderly individuals in New Orleans and by the city's African American population. Validating the impression that the storm hit New Orleans's Black communities hardest, I find that African Americans were disproportionately likely to die in Katrina and are also disproportionately likely to remain missing. Furthermore, the neighborhoods with the highest numbers of deceased are overwhelmingly Black. These findings reflect what Briggs (2006) refers to as a "geography of risk," where the legacy of racial and economic segregation has left specific segments of urban communities isolated from institutional resources, economic opportunity, and political influence and particularly vulnerable to a disaster such as Katrina.

DATA

I use three sources of data that offer unique information on Hurricane Katrina's casualties and on those who remain missing. The first source of data is a published listing of individuals who died as a result of Hurricane Katrina. The "victims" file represents only a subset of all victims from the storm. As of June 2006, 1,577 Louisiana residents had been confirmed as deceased as a result of Katrina (Louisiana Department of Health and Hospitals [LDHH], 2006a). Of this total, 480 victims died outside of Louisiana after the storm; no information is available for this group. Another 210

individuals died after February 23, the date at which the LDHH stopped receiving detailed information on the storm's victims; only summary information is available for these 210 individuals, and they are not included in most tabulations.

Excluding these victims leaves 887 individuals who died as a result of Katrina. Information for some of the deceased is not available because they had not yet been released to their families. Thus, the main file I used contains information on 727 individuals who died as a result of Hurricane Katrina and who have been released to families (LDHH, 2006b). The list identifies the name, gender, race, age, and parish of confirmed victims who lived in Louisiana and died in Louisiana. The file was regularly updated by the LDHH until the end of February 2006, at which point detailed information pertaining to the deceased was no longer provided to LDHH. I focus my analysis on a subset of 555 victims from New Orleans whose race and age are identified.

The "victims" file does not contain any information on the addresses or the neighborhoods of the deceased. However, I was able to obtain access to a second file that provides information on the geographic locations of individuals who died in the storm and whose bodies were recovered prior to December 2, 2005. The "victims' locations" file is based on this initial search for bodies—when the body of a victim was found, officials made an attempt to document the address at which the body was located. Because there are very few victims in the file who were located outside of New Orleans, I again focus my analysis on locations within the city. No information pertaining to the victims themselves is included in this file, so it is useful only in describing the neighborhoods and the geographic locations of the deceased.

Given the difficulty of documenting the locations of the deceased in the aftermath of Katrina, it is not surprising that the "victims' locations" file contains a great deal of error. There were numerous locations that were missing an important piece of information, such as the street number. After cleaning the file as well as possible, I geo-coded all locations in the file to create a map of the locations of the deceased (Figure 1). Because multiple victims were found at some locations, the final file consists of 716 victims

FIGURE 1: The Locations of the Deceased and the Extent of Flooding in New Orleans

found at 524 different locations. The geo-coded locations were then matched with census data on all New Orleans's census tracts from the 2000 census, allowing for an analysis of the social, economic, and demographic characteristics of the neighborhoods at which bodies were located. This information is obtained using the Neighborhood Change Database (GeoLytics, 2003).

The third source of data is a file containing information on all individuals who remained missing as of May 2, 2006 (hereafter the "missing file"). After Katrina struck, a database of information on individuals missing from the hurricane was established and maintained by the Find Family National Call Center (LDHH, 2006c). Although individuals missing from Hurricanes Katrina and Rita are included in this database, the vast majority went missing after Katrina. In total, 11,695 calls were made regarding (nonduplicate) missing family members or friends who lived in an area struck by the hurricane. The database, which contains the name, gender, age, race, address, and city of the missing, was posted on the LDHH Web site in January 2006, when more than 3,000 individuals remained

missing. The vast majority of those individuals have been located, though it is not possible to determine how many turned out to be alive and how many had died. As of May 2, only 481 remained missing.

I use data on the missing in two ways. First, I analyze a subset of 328 individuals on the file who lived in New Orleans and whose race is identified. This file is used to compare the racial composition of the missing to the racial composition of the city as a whole. Second, I geo-coded the addresses of all New Orleans residents in the file who have valid address information. I used the same procedures that were used to geo-code the locations of the deceased, as described earlier. The final file contains information on the census tracts of 195 individuals who remained missing almost 8 months after Katrina had passed.

The three files represent the most comprehensive sources of data currently available to analyze the impact of Hurricane Katrina. Still, they have severe limitations, most notably the substantial errors in reporting and the extensive missing data. All conclusions should be considered in light of these limitations.

RESULTS

WHO DIED IN KATRINA, AND WHO REMAINS MISSING?

The widely reported Knight Ridder analysis, which concluded that Whites were overrepresented among Katrina's casualties, was based on a simple comparison of the proportion of White and Black victims with the proportion of Whites and Blacks in and around New Orleans. After reanalyzing an updated version of the same casualty data, I reach very different conclusions. I find that African Americans died in numbers that exceeded what would be expected given their population and age distribution in and around New Orleans. I reach this conclusion after considering two important factors that are overlooked by the Knight Ridder analysis. First, old age is the single most important factor in determining who fell victim to Katrina. Second, the White populations in the affected areas contain a much larger share of the region's elderly

TABLE 1
The Age Profile of Katrina's Casualties in New Orleans

	Number of Victims	*Total Population in New Orleans*	*Percentage of all Casualties*	*Percentage of Total Population*	*Death Rate per 10,000*
All casualties	555	484,674	—	—	11.5
Nonelderly (younger than 65)	184	428,021	33*	88	4.3
Elderly (65 and older)	371	56,653	67*	12	65.5

NOTE: Data on New Orleans total population is based on the 2000 census.
*Significantly different from expected percentage at $\alpha = .05$, two-tailed test.

than the corresponding Black populations. When one takes into account the size of the elderly population of Whites and Blacks in and around New Orleans, it becomes clear that Whites were actually underrepresented among Katrina's casualties and Blacks overrepresented.

Before demonstrating this, I begin by considering the age profile of Katrina's victims (Table 1). In this and all analyses, I focus on victims from New Orleans; however, the same patterns arise when we consider victims in surrounding parishes that had more than a few casualties (results from other parishes are available on request). The most distinguishing feature of Katrina's victims is that they were extremely old. Among victims from New Orleans, I find that about 67% were at least 65 years old. By contrast, only about 12% of New Orleans's population was 65 or older in the 2000 census. The death rate for the elderly population in the city was more than 15 times as high as the death rate for the nonelderly population.

The striking overrepresentation of the elderly among Katrina's casualties means that age must be controlled in any analysis of casualty data. This is especially true when we consider the race of Katrina's victims, because Whites living in New Orleans are much more likely to be elderly than Blacks. For instance, in the 2000 census, about 19% of the White population in New Orleans was 65 or older, compared to just 9% of the Black population.

Table 2 displays casualty rates for Whites and Blacks and men and women, after splitting the sample of victims into the elderly and nonelderly. First considering race, I find that about 17% of

TABLE 2
The Race and Gender of New Orleans's Casualties by Elderly Status

Group	*Percentage of Within-group Victims*	*Percentage of Within-group Population*	*Number of Within-group Victims*	*Total Within-group Population*	*Death Rate per 10,000*
Nonelderly (younger than 65)					
White	17*	27	31	114,441	2.7
African American	82*	70	151	300,328	5.0
Male	65*	48	119	205,671	5.8
Female	35*	52	65	222,350	2.9
Elderly (65 and older)					
White	38*	47	140	26,727	52.4
African American	58*	51	214	28,843	74.2
Male	47*	38	174	21,423	81.2
Female	53*	62	197	35,230	55.9

NOTE: Data on New Orleans total population is based on the 2000 census.
*Significantly different from expected percentage at $\alpha = .05$, two-tailed test.

nonelderly victims are White, and Whites compose about 27% of the nonelderly population in New Orleans. Blacks make up 82% of nonelderly victims and 70% of the nonelderly population. In both cases, the racial composition of nonelderly victims is significantly different from what would be expected given the racial composition of the nonelderly population in New Orleans. Looked at another way, the death rate for Blacks is almost double that for Whites (5 per 10,000 vs. 2.7 per 10,000).

The same pattern emerges in the elderly population. Whites compose 38% of elderly victims and 47% of the elderly population as a whole; Blacks compose 58% of elderly victims and only 51% of the elderly population. The death rate for elderly Blacks is about 74 per 10,000 compared to the rate of 52 per 10,000 elderly White residents. Among both the elderly and the nonelderly, then, Blacks were more likely to die in Katrina than we would expect given their presence in the population as a whole.

Next, considering the gender of victims, Table 2 shows that men were also disproportionately likely to die in the hurricane. Men compose about 48% of the nonelderly population in New Orleans, yet they account for 65% of nonelderly deaths. Similarly, although

TABLE 3
Katrina's Missing

	Number of Missing	*Total Population in New Orleans*	*Percentage of All Missing*	*Percentage of Total Population*	*Missing Rate per 10,000*
All missing	328	484,674	—	—	6.8
Nonelderly (younger than 65)	268	428,021	87	88	6.3
Elderly (65 and older)	40	56,663	13	12	7.1
White	44	140,168	13*	29	3.1
African American	275	329,171	84*	68	8.4
Male	183	227,094	56*	47	8.1
Female	145	257,580	44*	53	5.6

NOTE: Data on New Orleans total population is based on the 2000 census.
*Significantly different from expected percentage at $\alpha = .05$, two-tailed test.

men make up only 38% of the city's elderly population, they represent close to half (47%) of elderly deaths in Katrina. These findings may seem surprising, as elderly women are often thought of as the most vulnerable segment of the urban population. However, the overrepresentation of men among Katrina's casualties is consistent with Klinenberg's analysis of deaths during Chicago's heat wave. After adjusting for age, Klinenberg (2002, p. 20) finds that men were more than twice as likely to die in the heat wave as women.

THE DEMOGRAPHICS OF THE MISSING

As mentioned previously, hundreds of New Orleans's residents remain unaccounted for almost 8 months after Katrina struck. Table 3 provides a basic description of those still missing, again focusing on residents of New Orleans. Unlike the deceased, the missing were no more likely to be elderly than the general population. Only about 13% of the missing are at least 65 years old, compared to 12% of New Orleans's population.

However, the missing are similar to the deceased in that African Americans and men are much more likely to be missing than Whites and women. For instance, 84% of the missing are Black, compared to 68% of New Orleans's general population. The missing rate for Blacks is more than double that for Whites (8.4 per 10,000 residents

compared to 3.1 for Whites). Men compose 56% of the missing and only 47% of the general population. The missing rate for men is 8.1 per 10,000 New Orleans's residents, compared to 5.6 for women.

Without a clear understanding of whether the missing were washed away in the storm or have simply relocated and failed to contact anyone, it is difficult to interpret these findings. If most of the missing are in fact deceased, these data only reinforce the findings in Table 2. If the latter scenario is more accurate, data on the missing could be interpreted to reflect the social isolation of African Americans and men within the city. Regardless of how one interprets Table 3, the results reinforce the fact that Blacks and men were overrepresented among the populations most directly affected by Katrina.

GEOGRAPHY OF RISK: THE NEIGHBORHOODS OF THE DECEASED

As described earlier, the only available source of information on the locations of the deceased is a file listing the address at which bodies were found during the recovery effort. These locations are mapped in Figures 1 and 2. In each figure, the white dots show the locations where bodies were found. The size of the dot reflects the number of bodies found in the given location (in most cases just one body was found). In Figure 1, census tracts are shaded based on the severity of the worst flooding within the tract. In Figure 2, tracts are shaded according to the percentage of African American residents in the tract as of the 2000 census.

As is clear from the figures, bodies were fairly well scattered throughout the city, though there were a few locations at which large numbers of bodies were found. Figure 1 shows that flooding was most severe in the northern sections of the city bordering Lake Pontchartrain; however, there were many areas of the city where flood waters rose to at least 5 feet in depth. The figure shows more bodies of the deceased found in areas with severe flooding. However, severe flooding does not appear to be a necessary condition for death during Katrina; bodies were found throughout the city, even in neighborhoods with minimal flooding. Figure 2 demonstrates that bodies were found in both White neighborhoods (e.g., the Lakeview neighborhood in the northwest of the city)

FIGURE 2: The Locations of the Deceased and the Percentage of Black Residents in New Orleans Neighborhoods

and primarily Black neighborhoods (e.g., the Lower Ninth Ward and Gentilly). Though the map seems to suggest that more bodies were found in Black areas of the city, it does not demonstrate this conclusively.

I explore the social characteristics of the neighborhoods where the deceased were found in more detail in Figure 3. To do so, I split the full sample of census tracts in New Orleans into four groups: tracts where no deceased were found, tracts with one body, tracts with anywhere between two and nine bodies, and tracts with 10 or more bodies found within them. Although this classification is somewhat arbitrary, the general pattern that arises is present no matter how tracts are categorized and analyzed.

Figure 3 shows the average level of several social and demographic characteristics of tracts in each category. I find, first, that two characteristics of neighborhoods that might be thought to be associated with high death counts—the proportion of residents without access to a car (or any vehicle) and the proportion of poor residents—do not appear to be associated with the number of bodies found within the census tract. For instance, in neighborhoods

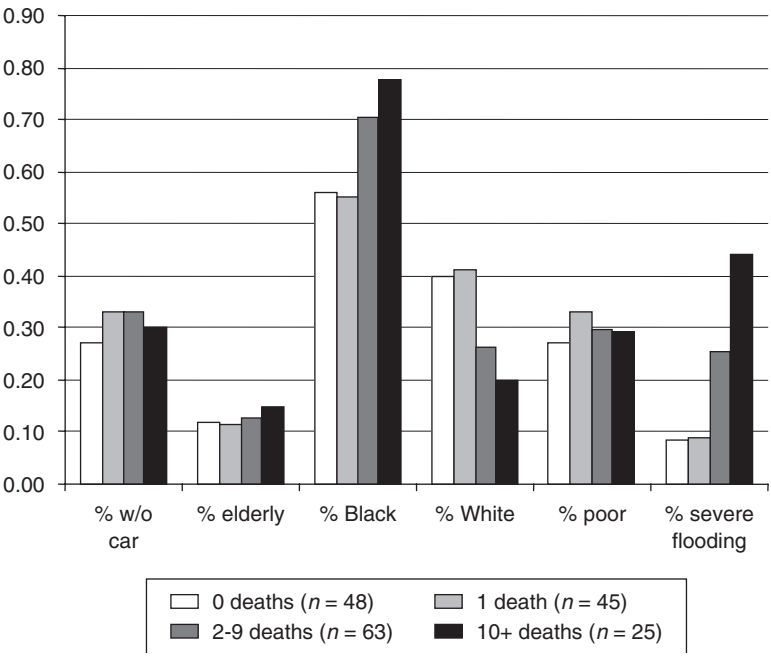

FIGURE 3: Characteristics of New Orleans Neighborhoods by Death Count

where only one body was found, the average poverty rate and the average percentage of residents without cars were both about 33%; in neighborhoods where at least 10 bodies were found, the average poverty rate was 29% and the average percentage without cars was 30%.

By contrast, tracts with relatively high death counts had, on average, relatively high proportions of African American residents and relatively few White residents. For example, the average tract with zero deaths was 56% Black and 40% White, whereas the average tract with 10 or more deaths was 78% Black and only 20% White. Tracts with large numbers of deaths had slightly higher proportions of elderly residents as well. In tracts with the highest number of deaths, the proportion of elderly residents was about 15%, on average, compared to 12% in tracts with no deaths. These

slight differences clearly do not explain the extraordinarily high death rates among the elderly, suggesting that elderly individuals within all neighborhoods were more vulnerable to the storm.

The second clear pattern that is present in Figure 2 is the relationship between the level of flooding and counts of the deceased. I find that neighborhoods with the highest death counts were much more likely to experience flood waters that rose to at least 7 feet in depth. Specifically, about 44% of tracts with 10 or more deaths experienced severe flooding (roughly more than 7 feet), compared to 8% of tracts with no deaths. This is an expected finding, but it leads to a natural question: How was flooding distributed across the tracts within the city? Figure 4 shows the social characteristics of neighborhoods with relatively minimal flooding (4 feet or less), significant flooding (5 to 7 feet), and especially severe flooding (more than 7 feet).

The figure demonstrates that flooding occurred in a wide variety of neighborhoods in New Orleans. Tracts with the most severe flooding actually had smaller proportions of residents without access to a car and lower rates of poverty than tracts with less flooding. Compared to tracts with minimal flooding, those with flooding of at least 5 feet had higher proportions of Black residents and fewer White residents. However, the most racially segregated tracts were not the tracts that experienced the most flooding. In tracts with significant flooding, the average percentage of Black residents was about 73%, compared to 66% in tracts with the most severe flooding. In brief, tracts that experienced substantial flooding tended to have higher proportions of Black residents, but the worst flooding did not occur exclusively in Black neighborhoods. These results suggest that part of the reason why we see relatively high death rates in primarily Black neighborhoods is that flooding was more extensive in these neighborhoods.

THE NEIGHBORHOODS OF THOSE STILL MISSING

The locations of those still missing from Katrina are based on information about their residential address within New Orleans, geo-coded to the level of the census tract. Similar to the neighborhoods of the deceased, I find that tracts with the largest numbers of

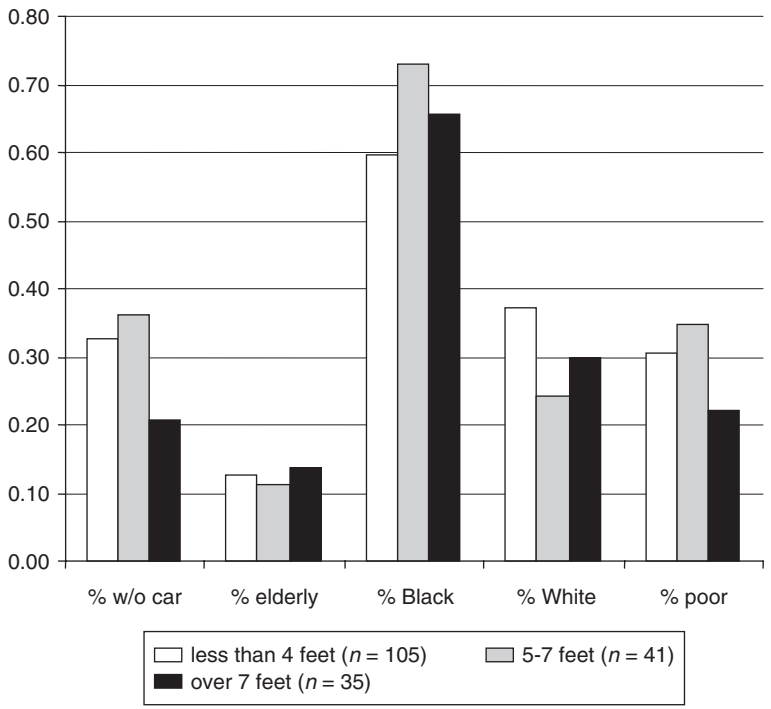

FIGURE 4: Characteristics of New Orleans Neighborhoods by Extent of Flooding

missing residents are characterized by having relatively high percentages of African Americans and few Whites (Figure 5). Tracts with two or more missing residents were, on average, 81% Black; tracts with just one missing resident were 71% Black, and those without any missing residents were 52% Black. By contrast, neighborhoods with two or missing residents were only 17% White, whereas those with no missing were 44% White.

Other than racial composition, the neighborhoods of the missing were distinguished by having slightly higher proportions of residents without access to a car and higher poverty rates. These results suggest that poverty may help explain who went missing after Katrina, whereas neighborhood poverty was shown to have

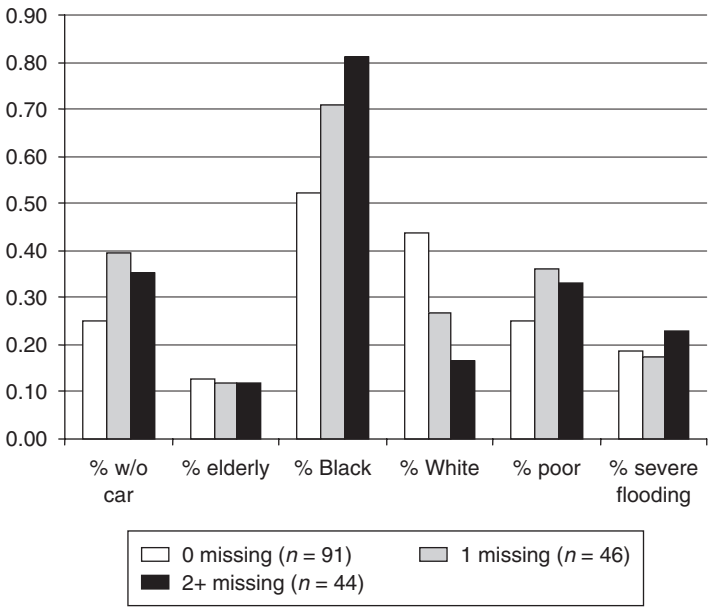

FIGURE 5: Characteristics of New Orleans Neighborhoods by Number Missing

no relationship to neighborhood death counts. Considering the small number of individuals within each neighborhood who remain missing, however, these interpretations should be treated with caution. More research on the individual characteristics of the missing and a more in-depth analysis of what happened to these people are needed to make any firm conclusions about how they were affected by Katrina.

SUMMARY AND DISCUSSION

As I have repeated throughout the analysis, data on those who died in Katrina and those who remain missing are limited in what they reveal about the social aspects of this horrible American tragedy. Still, a rough picture emerges from these data that offers a

more informed perspective on the social impacts of Katrina than the conjecture and overly simplistic analyses that have appeared in the popular press since the hurricane swept through New Orleans.

The primary conclusion to be made from these data is that the impact of the storm was felt most acutely in specific sections of the city and among specific groups within New Orleans. The elderly were clearly the most vulnerable to Katrina, as evidenced by their extraordinarily high death rates. Although a great deal of media attention has focused on the negligent actions of specific nursing homes during Katrina, the overrepresentation of the elderly among Katrina's casualties is consistent with findings from other environmental disasters. For instance, Klinenberg (2002, p. 18) found that 73% of deaths during the Chicago heat wave of 1995 occurred among the elderly. Other research on heat waves has emphasized the susceptibility of the elderly in urban areas to specific heat-related health risks (e.g., Conti et al., 2005). In effect, this research emphasizes biological explanations for the high death rates that are common among the elderly living in cities during heat waves. The current analysis demonstrates that the vulnerability of the old is not limited to heat-related crises, reinforcing the idea that the source of the elderly's vulnerability likely lies in the combination of biological as well as social factors. Klinenberg's study documents how elderly populations, especially within disadvantaged or violent urban areas, often shield themselves from the perceived dangers of the street by shutting themselves off from the social world that surrounds them. This perspective on the social isolation of the elderly, especially in violent urban areas, represents a promising interpretation of the extraordinarily high death rates found among the elderly in New Orleans.

The second unmistakable conclusion is that race was deeply implicated in the tragedy of Katrina. African Americans were disproportionately represented among both elderly and nonelderly victims, and the vast majority of those still missing are Black. These findings run counter to popular press accounts of Katrina's casualties, largely because these accounts fail to consider the age profiles of New Orleans's White and African American populations. When one takes into account the size of the elderly population of Whites and Blacks in New Orleans, it becomes clear that

Whites were underrepresented among Katrina's casualties and Blacks overrepresented.

Data on the locations of recovered bodies reinforce the finding that Katrina took its largest toll on New Orleans's Black community. The group of neighborhoods with the highest death counts and highest numbers of residents who are still missing were, on average, about 80% African American. The neighborhoods hit hardest were not necessarily the poorest in New Orleans, but they were the most segregated. This conclusion confirms that Katrina's impact on African Americans is not attributable to the fact that the storm happened to strike a city with a large Black population; rather, I find that within the city of New Orleans, Black neighborhoods and Black residents were disproportionately affected by the storm.

In addition to the sparse data, the major weakness of my analysis is that it leaves unresolved the question of why Blacks were especially vulnerable to the storm. Data on Katrina's casualties can be used to suggest some hypotheses, but more research is necessary to test these hypotheses and to untangle the sources underlying Blacks' vulnerability to Katrina. The most intuitive explanation is that Blacks lived in neighborhoods that experienced the most severe flooding, leading to the high number of casualties. My results provide qualified support for this explanation. I find that neighborhoods with high death counts were much more likely to have severe flooding than neighborhoods with lower death counts and that neighborhoods with significant flooding (at least 5 feet) had higher proportions of Black residents than those with less extensive flooding. These findings are generally consistent with research on structural damage to New Orleans's neighborhoods (Logan, 2006), which shows that neighborhoods that experienced some damage had far higher proportions of Black residents than neighborhoods that did not suffer any damage. However, it is important to point out that the most severe flooding did not occur exclusively in African American neighborhoods but rather occurred in a wide variety of neighborhoods throughout the city.

A second hypothesis is that differences in income or resources among Blacks and Whites help explain the racial gap in the impact of Katrina. Relatively low income could have made it more difficult for Blacks to evacuate the city, but at a more general level, group

differences in economic resources may have left Blacks in New Orleans in substandard housing within neighborhoods that were especially susceptible to flooding. Although this is a plausible hypothesis, it is well documented that group differences in socioeconomic status generally do not explain much of the gap in the residential environments of African Americans and Whites in urban America (Alba, Logan, & Stults, 2000; Massey & Mullan, 1984). Indeed, my results show that poverty was no more prevalent in neighborhoods with high death counts than in neighborhoods where no bodies were found. A more likely scenario is that racial segregation in New Orleans, arising because of a combination of historical and current discrimination (Massey & Denton, 1993; Yinger, 1995), differences in group resources, and Black/White discrepancies in preferences for "in" and "out group" neighbors (Bobo & Zubrinsky, 1996; Charles, 2001), has left African Americans in residential environments that are more disadvantaged across multiple dimensions, including their vulnerability to natural disaster.

In demonstrating the link between race and Katrina, I build on a line of research that recasts so-called natural disasters as social or economic in essence. Sen's (1981) analysis of the market failures that underlie the impact of famines is perhaps the most powerful example of how a seemingly environmental phenomenon becomes a powerful force in the lives of individuals through their position in the system of production and consumption. The current analysis extends this conceptualization to consider how individuals' and groups' position in the residential structure of the city contributes to the disproportionate vulnerability of certain groups to a tragedy such as Katrina. In this sense, I describe a "geography of risk" (Briggs, 2006) that extends beyond the constant threat of violence and other forms of disadvantage that are prevalent in America's ghettos. The social isolation that results from persistent segregation, economic disinvestment, a lack of political influence, and violence makes the residents of America's disadvantaged urban neighborhoods even more vulnerable to an environmental disaster such as Katrina.

Rather than dismiss the link between race and the impact of Katrina, it seems essential to keep exploring this link to better

understand why New Orleans's Black community was so vulnerable to the storm. In doing so, we shed light on the legacy of racial and economic segregation that has structured residential New Orleans, along with so many other urban centers in America. Equally important, conceptualizing Katrina as both a social and a natural disaster reinforces the role that public policy can play before a disaster occurs. By enforcing fair housing laws, implementing policies designed to deconcentrate poverty, and creating viable, safe communities, urban policy has the potential to mitigate the vulnerability of any single population to everyday forms of disadvantage as well as to the dangers of a disaster such as Katrina.

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