

**Being Black: Examining the Relationship between Sociodemographic Characteristics,  
Racial Residential Segregation, and Evacuation Behavior in Hurricane Katrina**

Ysaye Zamore

Colorado State University

[yzamore@rams.colostate.edu](mailto:yzamore@rams.colostate.edu)

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### **Abstract**

This study analyzes a subset of data ( $n = 581$ ) from a survey conducted by the Washington Post, the Kaiser Family Foundation, and Harvard University. The purpose of this research was to explore the relationship between racial residential segregation, sociodemographic characteristics such as race, class, and gender, and the evacuation strategies used by Hurricane Katrina victims. The results indicate that both sociodemographic features and residential location are significant when analyzing evacuation choices.

**Keywords:** Hurricane Katrina, race, African Americans, segregation, evacuation

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Hurricane Katrina was one of the worst disasters of our time—it destroyed property, ruined lives, and exposed the hyper-vulnerability of hyper-segregated minority neighborhoods. The hurricane first made landfall on August 26, 2005 in southern Florida, then forcefully hit the Gulf Coast region, specifically Louisiana, Mississippi, and Alabama, on August 29, 2005. Katrina caused significant damage to the physical and built environment, destroying over 300,000 homes and 150,000 businesses and affecting about 90,000 square miles of land (Peek and Erikson, 2007). The human impact of Katrina, while far more difficult to capture in statistical terms, was perhaps most devastating of all. Indeed, Rodríguez, Trainor, and Quarantelli (2006) assert that Hurricane Katrina was no “ordinary disaster,” and instead should be classified as a major catastrophe due to the profound interruption of individuals’ lives and normal societal functions.

As the size and scope of Hurricane Katrina became more apparent, issues of race, class, and segregation began to take on increasing significance in the national media and scholarly literature. In particular, the sociodemographic characteristics of the majority of Hurricane Katrina’s victims led to an ongoing debate about the evacuation techniques, or lack thereof, of those from minority neighborhoods.

Accordingly, this study explores how sociodemographic characteristics, such as race, class, and gender interacted and affected the ability of black New Orleans residents to evacuate prior to Hurricane Katrina. The paper begins with a literature review evaluating past research that has examined race, class, and gender in disaster contexts. I also present the theory of Racial

Residential Segregation to help explain black isolation. Next, I analyze data from a survey conducted by the Washington Post, the Kaiser Family Foundation, and Harvard University. Specifically, I draw on a subset of the overall survey sample to focus on African Americans involved in the evacuation process. Then I present the findings and offer a concluding section where I explore the theoretical and applied implications of this research.

### **The Evacuation**

Theoretically, the best strategy to protect people from the harmful effects of hurricanes is to move them out of the hurricane zone. However, as Wolshon (2006) indicates, it is much more difficult in practice to actually evacuate people. Regardless of how threatening the conditions or how dire the warnings, there will always be some people who cannot or will not leave the threatened region.

In the days and hours leading up to Hurricane Katrina, many people heard the official warnings and took action. In fact, an estimated 1.5 million people left prior to Katrina's landfall (Peek and Erikson, 2007). The evacuation was deemed "successful" by some experts because so many people left in such a short amount of time, but clearly many people were still left behind (Wolshon, 2006).

### **Who Left?**

There were approximately 460,000 people living in the city of New Orleans before Hurricane Katrina, and it is estimated that about 350,000 of those residents evacuated prior to landfall (Peek and Erikson, 2007). Those most likely to evacuate before Hurricane Katrina were more likely to be middle or upper class individuals and families who had access to resources. In order to evacuate, individuals needed to own an automobile (or know someone who had one). They also were more likely to have money to evacuate and could take time off from work.

Those with denser social networks outside of the city were more likely to have friends or family whom they could stay with during the evacuation. Since income is closely correlated with race in this nation, it is no surprise that Whites were more likely to evacuate than their African American counterparts.

### **Who Was Left Behind?**

Estimates vary widely, but it is likely that somewhere between 100,000 and 150,000 people did not or could not evacuate before Hurricane Katrina smashed into the Gulf Coast (Peek and Erikson, 2007). Some people made the decision to stay behind and face the storm because prior evacuations that did not end in major disasters (“near misses”) were viewed as resulting in wasted time and money, and consequently, the Katrina evacuation orders were taken less seriously (Brezina, 2008). Some did not evacuate because the warnings they received only informed them of the impending hurricane—not of the potential for the levees to break. Had the levees not failed, their decision would not have been so derided in the media, as New Orleans did not bear the full force of the hurricane (Peek and Erikson, 2007).

Many who stayed behind wanted to leave, but they lacked the resources to follow the mandatory evacuation order. Transportation was a major determinant in predicting who did and did not get out of the city before the storm. As many as 112,000 residents of New Orleans did not have their own vehicle at the time of the storm (Russell, 2005). Many New Orleanians, especially those from minority and low-income households, relied on public transportation before the storm (Bullard, Johnson, and Torres, 2009). In the face of disaster, they did not have the means to find reliable transportation, and the city offered no plan to move the most vulnerable citizens out of harm’s way.

Even with the access to transportation, the cost of evacuation and time lost at work were too significant of barriers to overcome (Haney, Elliott, and Fussell, 2007). Others had caretaking responsibilities for young children or elderly family members that kept them from evacuating, while others did not know anyone outside of New Orleans whom they could stay with or rely on for support (Kaiser Family Foundation, 2005).

Certain groups were much less likely to evacuate than others. In particular, the elderly, African Americans, the poor, hospital patients, and nursing home residents were disproportionately represented among the non-evacuees (GAO, 2006). Non-evacuation came with a significant price, as those most likely to die in the disaster were those aged 65 and older, the frail and the infirm, and African Americans (Peek and Erikson, 2007; Sharkey, 2007).

## **Literature Review**

The current study examines the relationship between race, class, and gender and how those and other sociodemographic features contribute to evacuation opportunities. Barnshaw and Letukas (2009) note that sociodemographic features overlap and interact, otherwise known as intersectionality (Collins, 1990). Characteristics such as age, gender, and race play an important role in understanding evacuation techniques, but their interaction is perhaps more important than their individual roles. For example, evacuation is less likely for the elderly, the poor, and the disabled because these populations are more vulnerable than others, but when these and other vulnerable characteristics intersect, they produce “hyper-vulnerability.”

### **Race in Disaster**

Frye (2007) argues that oppression is the key explanation for why Blacks are socially disadvantaged, and she asserts that oppression is meant to mold and reduce. In the case of Blacks, their way of living was molded from stereotypes and racism, and then reduced to

isolation from other races and the consequences that come along with that isolation. Bullard and Wright (2009) indicate that “race seems to be the most significant predictor of disparities which privilege some and discriminates against others.” Therefore, although this study is controlling for race by using only black evacuee responses, race is obviously an important factor to discuss.

In 1995, a devastating heat wave hit Chicago and took the lives of mostly poor, Black, and elderly people isolated in the city’s primarily black neighborhoods (Klinenberg, 2003). That disaster exposed the injustices that are rooted deep in the black neighborhood. Those not living in predominantly black neighborhoods could afford air conditioning or transportation to get out of the city while the heat wave was present.

During Katrina, the victims who suffered the worst proportional dollar losses were those living in predominantly black neighborhoods. In fact, most neighborhoods with 75-100% black residents suffered moderate to catastrophic damage as a result of Hurricane Katrina (Logan, 2006). In addition, much public housing (which was almost entirely occupied by African American residents) was closed and barred from being reopened. After the four largest public housing projects in New Orleans were demolished by the city, it became next to impossible for thousands of black New Orleanians to move back home. Whites are more likely to be able to return to their neighborhoods because they are more likely to own their homes, less likely to be living in poverty (Logan, 2006), and less likely to face structural racism. Many black Katrina victims believe that they would have received better help if they lived in the more affluent suburban neighborhoods that the hurricane affected (Kaiser Family Foundation, 2005). This shows a lack of trust in the government and the outside world from those in black neighborhoods.

## Class in Disaster

Class status is one of the foremost explanations for the failure to evacuate among low-income blacks of New Orleans. Wilson (1978) stressed that the disadvantages blacks face are mostly due to their class status rather than any other factor. Wilson (1987) refers to those in the black ghettos as members of the underclass rather than the lower class; underclass is a sociological term for a separate group that is qualitatively different from the working class. In both classes, members have little or no money, and that makes them more susceptible to natural disasters that can become social disasters (Andersen and Hill Collins, 2007). As indicated by Shapiro (2004), the best way to understand differences between whites and blacks is the amount of wealth they possess.

When it comes to class status, the relationship is undeniable—the lower the class, the lower the likelihood to evacuate from disaster. Also, class status is exacerbated by race. Whites are almost three times less likely to live in poverty when compared to blacks (Gault, Hartmann, Jones-DeWeever, Werschkul, and Williams 2005). They could afford homes that were higher in elevation and consequently less likely to be damaged by the flooding from the damaged levees, and they could afford the resources needed to evacuate before the storm even hit. Environmental inequities put blacks in low lying areas more vulnerable to flooding (Elliot and Pais, 2006)—the same low-income blacks who could not garner the resources to leave in advance of the storm's landfall.

Instead of helping to evacuate those who could not evacuate themselves, warnings urged people to hitch a ride with a friend, neighbor, or relative. Unfortunately, this type of “emergency plan” does not take into consideration the problem with living in a neighborhood where no one

has a car, or where most of the neighbors have been living in the same place their whole lives and do not know others outside the immediate neighborhood (Litman, 2006).

Poor blacks were most likely to remain in New Orleans and stay through the hurricane; many had to wait for help because they could not leave on their own (Elliot and Pais, 2006). Some journalists claimed that the primary reason for evacuees not leaving prior to the devastation was their dependency on welfare and how government aid makes poor people reliant and helpless (Pinkney, 2005; Pisaturo, 2005; Poranski, 2005). These commentators also said that those who did not leave were “irresponsible” and relied too heavily on the government for assistance. Brezina (2008) argues against this and explains that those who did not evacuate usually had little or no means to do so. While some believe the underclass is reliant on government money and other hand-outs to stay alive, Fothergill’s (2003) research specifies that most people remain on welfare only until they can survive on their own, and the amount of money they receive is barely enough to live on.

### **Gender in Disaster**

Historical and cultural patterns have determined gender vulnerability in disaster, which increases women’s risk to disaster losses both in the United States and in countries around the world (Enarson, 1998). Gender, when mixed with inequalities such as income and race, puts poor women of color at extreme risk during disasters (Blaikie et al., 1994). Although the literature has grown significantly over the past three decades (Enarson, Fothergill, and Peek, 2006), gender was largely absent from the analysis of Hurricane Katrina. Instead, the story of Katrina, as framed by the media and many social scientists, was one of *race* and *class* disparities. Yet gender shaped everything from the preparedness to the evacuation to the recovery of women along the Gulf Coast (Williams, Sorokina, Jones-DeWeever, Hartmann 2006).

Prior to Hurricane Katrina, white New Orleans women are twice as likely to have a job as black New Orleans women (Williams, Sorokina, Jones-DeWeever, and Hartmann, 2006). This means white women on average had more money than black women and likely had more resources to evacuate prior to the storm. Black New Orleans women working full time all year earn half of what white women do (Williams, Sorokina, Jones-DeWeever, and Hartmann, 2006), showing that being of a minority race often intersected with a lower class standing, resulting in less ability to successfully evacuate from Katrina's torrent. Louisiana is worst in the country for women in poverty (Gault, Hartmann, Jones-DeWeever, Werschkul, and Williams 2005), and there is a higher percentage of women in poverty in New Orleans than any other place in the U.S. (Litt, 2008). These statistics clearly show the disadvantage that New Orleans women faced even before the disaster hit.

As Katrina approached, women worked to evacuate people before the storm (Litt, 2008; Peek and Fothergill, 2008). Women activated whatever ties they have with neighbors, friends, and other family members to successfully get people out of harm's way before Katrina, and they drew on those same networks after the disaster (Litt 2008). Research has also shown that one of the reasons women face extra liability during disaster is because parenting is still viewed as women's work, and that gives women an extra task during disaster because they are expected to watch out for other vulnerable members of their families such as children and elderly parents (Peek and Fothergill, 2008). In terms of evacuation, this means that women are not only responsible for evacuating themselves, but they are also expected to get their more vulnerable family members to safety first.

## Racial Residential Segregation

Segregation, which Williams and Collins (2001) define as the physical separation of races in residential contexts, is the foundation for disparities in health, socioeconomic mobility, education, and employment opportunities. Massey and Denton (1993) assert that racial residential segregation is the “missing link” when explaining the creation of a minority lower class. Many Americans believed residential segregation would end after the Fair Housing Act of 1968 was passed. Yet decades of discriminatory practices, including segregation redlining, blockbusting, racial steering, contemporary discrimination, and de facto segregation have kept minority and white neighborhoods separate.

There are three central propositions that racial residential segregation aims to explore. The first of these three is that ghettos—where there is almost exclusively one race, usually African Americans—were created through a series of public policies, individual practices, and private behaviors that make way for extreme isolation. The second proposition is that segregation locates poverty in areas of underperforming schools, high unemployment, poor healthcare, and few social resources. Minority neighborhoods are missing out on parks, sidewalks, banking, supermarkets, and other things that suburban neighborhoods take for granted (Bullard and Wright, 2009). The third proposition states that without systematic intervention, these factors will compound upon one another and reproduce systematic inequality. This means that outside forces must offer to help the situation because those trapped in the ghetto cannot do it alone.

Even without the formal legislation that used to legally separate white neighborhoods from other races, residential segregation is still high for blacks (Williams and Collins, 2001). In fact, since blacks and whites have the highest segregation rate among any two races, blacks are hyper-segregated (Massey and Denton, 1993). There is great disparity in many urban areas

between the spatial concentration of blacks and other racial groupings, mainly whites. Although residential segregation can be seen in all races, African Americans have the highest levels (Williams and Collins, 2001). In this paper, I explored how the hyper-segregation of blacks in New Orleans led to their hyper-vulnerability during peak evacuation times and consequently the lack of evacuation they faced during Katrina.

## **Methodology**

This research uses data from a survey done by the Washington Post, the Kaiser Family Foundation, and Harvard University to explore the possible relationship between sociodemographic characteristics such as gender and class and the evacuation techniques used by black Hurricane Katrina victims. The original sample includes 680 randomly selected adult evacuees at the Reliant Astrodome, the Reliant Center, the George R. Brown Convention Center, and 5 of 14 Red Cross shelters in Houston, Texas. Participants were selected in one of two ways. First, interviewers systematically counted off by a random number to select those in non-mobile areas. Non-mobile means that people were either sitting or lying on their designated beds or in some other area rather than walking around. Second, an interviewer stood next to a doorway, counted off by a random number, and asked every certain number of people to complete the survey. Ninety percent of all evacuees asked to participate agreed. Those not included in this survey were most likely better-off and could afford to evacuate in time to stay with people they knew outside of the city.

For my research, I used a subset of the overall survey sample to focus on the African American participants; therefore, the participant number I draw on in this paper is 581. The survey asked many different things about the evacuees and had 142 total variables. A few sample questions include: "What is the last grade or class that you completed in school?" "How

old are you?" and "Before the hurricane, were you yourself employed full-time, part-time, or not at all?"

Ninety-eight percent of those interviewed were from the New Orleans area, and 93% of the original interviewees were black; therefore, I am controlling for race by using only black responses. The other respondents were five percent white and two percent some other race. From the original data, I used only responses from African American New Orleans residents because the other races were too small in size to analyze and offer comparisons. Therefore, income, gender, education level, and age are the variables that were analyzed when compared with whether or not each person evacuated before the storm.

I used the Statistical Package for Social Scientists (SPSS) to analyze the data. Frequencies were run to understand the data and to get an idea of the characteristics of the subsample, and Cross Tabulations were performed to look for an association between sociodemographic features when interpreting the evacuation techniques of New Orleans blacks in the face of Hurricane Katrina. For analysis during this study, sex (male or female) was used instead of gender, which is important to differentiate because some people's gender roles may not match their biological sex. Close to half (50.9%) of the subsample was female (see figure 1), which is a slightly higher than the 50% females from the original sample.

## **Findings**

Table 1 details the demographic characteristics of the individuals in this sample. General trends of this sample include low education—with almost 30% of this sample not having a high school degree—and low income/high poverty—with almost 40% of this sample making less than \$10,000 a year. The Ninth Ward and Uptown/Carrollton were home to the most evacuees from this sample, with 38.4% reporting that they lived in these areas before Katrina hit. Almost half

(46.8%) of this sample was single and had never been married. Over a quarter (26.5%) of this sample did not hear the evacuation order, and of those who heard it, almost a third (32.6%) did not think it was clear.

**Table 1. Sample Demographics**

Gender	
Female	50.9%
Male	49.1%
Education	
Some HS or less	29.9%
HS degree or more	70.1%
Income	
Under \$10,000	38.3%
\$10,000+	61.7%
Age	
18-34	32.4%
35-54	49.3%
55+	18.3%
Marital Status	
Married	22.9%
Living as married	6.4%
Single, never married	46.8%
Separated	4.5%
Divorced	10.7%
Widowed	8.3%
Those with children under 18	
Yes	44.9%
No	54.6%
Refused	.5%
Did you hear the evacuation order?	
Yes	72.4%
No	26.5%
Don't know	1%
Evacuation order clear?	
Yes	65%
No	32.6%
Location in New Orleans	
Ninth Ward	19.4%
New Orleans East	13.3%
Gentilly	10%
Mid-city	11.7%
Algiers	5%
Uptown/Carrollton	19.4%

As illustrated in Table 2, evacuation choice was affected by many factors. Those characteristics most likely to have influenced evacuating before Katrina made landfall include living with a partner, hearing the evacuation order, being female, earning an income in excess of \$10,000 annually, and having a high school education or higher. Most significant was whether or not people heard the evacuation order, and consequently whether or not they thought it was clear. Those who clearly heard the evacuation order were most likely to evacuate.

**Table 2. Sample Demographics and Evacuation Choice of blacks in New Orleans**

	Evacuated Before	Evacuate After
Living as a couple	34%*	66%
Not living as a couple	45%	55%*
Heard evacuation order	44%**	56%
Thought message was clear	54%**	46%
Thought message was unclear	25%	75%**
Did not hear evacuation order	17%	83%**
Income		
Below \$10,000/year	34%	66%^
Above \$10,000/year	42%^	58%
Gender ^		
Female	40%^	60%
Male	34%	66%^
Education ^		
Less than High School degree	34%	66%
More than High School degree	44%	56%

^ p < .1, \* p < .05, \*\* p < .01

The research question for this study focused on the investigation of the potential relationship between the sociodemographic characteristics and the residential location of black New Orleans evacuees. Table 3 shows the significance of how these interact. Most significant is the importance of where evacuees lived. In fact, every neighborhood in the sample was significant.

**Table 3. Sociodemographic Characteristics and Evacuation Behavior**

	Evacuate Before	Evacuate After
Gender		
Female	40.4%^	59.6%
Male	33.5%	66.5%^
Income		
Under \$10,000/year	33.7%	66.3%^
\$10,000+/year	42.0%^	58.0%
Education		
Some High school or less	33.3%	66.7%
High school degree or greater	38.9%	62.7%
Age		
18-34 years	34.7%	65.3%
35-54 years	38.4%	61.6%
55+ years	34.7%	65.3%
Location of Blacks		
Ninth Ward	44.1%*	55.9%**
Uptown/Carrollton	29.7%*	70.3%**
New Orleans East	47.9%*	52.1%**
Mid-City	32.8%*	67.2%**
Gentilly	37.9%*	62.1%**
Algiers	51.7%*	48.3%**
Other New Orleans areas	27.5%*	72.5%**
Don't Know	28.6%*	71.4%**

^  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$

Table 4 shows the analysis of the two neighborhoods with the most reported evacuees in this sample—Ninth Ward and Uptown/Carrollton—when compared to all other New Orleans neighborhoods that evacuees reported being from and how sociodemographic characteristics interact to affect evacuation. When analyzing those two neighborhoods against all other cities however, sociodemographic characteristics and residential location are insignificant.

**Table 4. Cross-Tabulations of Sociodemographic Characteristics and Residential Location**

	Ninth Ward	Uptown/Carrollton	Other
Gender			
Female	19.4%	20.1%	60.5%
Male	20.2%	18.8%	61.0%
Income			
Under \$10,000/year	17.9%	20.6%	61.5%
\$10,000+/year	23.1%	18.1%	58.8%
Education			
Some High school or less	18.0%	21.0%	61.0%
High school degree or greater	20.4%	19.4%	60.2%
Age			
18-34 years	20.1%	22.4%	57.5%
35-54 years	19.7%	17.9%	62.4%
55+ years	19.6%	18.6%	61.8%

<sup>^</sup>  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$

### Conclusions and Policy Implications

This study investigated a possible relationship between sociodemographic characteristics, the likelihood of receiving a hurricane warning, and the ability of residents to evacuate in advance of Hurricane Katrina's landfall. I used secondary data to analyze the reports of 581 black New Orleanians who sought refuge in a major shelter in Texas in the aftermath of Hurricane Katrina.

The demographics of this population are part of the reason they are hyper-vulnerable when facing disaster, as shown in Table 1. The locations of their neighborhoods are another source of vulnerability, as shown in Table 2. Table 3 showed that when the sociodemographic characteristics are considered with the neighborhood location, the results are significant for this sample.

A significant finding of this research is the relationship between residential location and evacuation, as shown in Table 3. Blacks from New Orleans were generally less likely to evacuate before the storm. By analyzing neighborhood alone, this finding has the potential to showcase

the importance of residential segregation as proposed by Massey and Denton (1993). Hyper-segregation links with the other significant finding to develop the concept of hyper-vulnerability. Black evacuees from New Orleans had multiple factors working against their evacuation chances—hyper-segregation kept them “spatially isolated from the rest of American society” (Massey, 2001), and little education leads to low job opportunity and consequently low income. Place matters, but so does race—regardless of where blacks lived, their race shaped their evacuation behavior. This provides support for the racial residential segregation theory proposed by Massey and Denton (1993) because this finding indicates a potential relationship between where a person lives and that persons’ ability to evacuate from a disaster.

There are many steps that should be taken to reduce the devastating effects of disaster and segregation. Obviously integration is an important factor when discussing change in the neighborhoods, but it is difficult to make that happen because many urban neighborhoods are intensely segregated. Rebuilt and improved housing in black New Orleans neighborhoods is a major step that needs to be taken. Better housing means more wealth, which is a significant predictor of success in America, and that leads to better schools, facilities, and various other resources that are positive outcomes from a stable neighborhood. Not only should this be done in black New Orleans neighborhoods, but it should be done all across America in an attempt to make racial residential segregation a thing of the past. Hurricane Katrina was surely a disturbing disaster, but there is much that can be learned from it.

This research has many policy implications. First, if black New Orleanians heard the evacuation order and thought it was clear, then they were much more likely to evacuate than those who did not hear the evacuation order. Thus, it is vital that we ensure that evacuation

orders are disseminated broadly, and across all communities, including communities segregated by race, class, and family structure.

Second, my research showed that living with a partner increased the likelihood of pre-hurricane evacuation. This finding seems to indicate that having at least one other trusted person in the household is important, likely in terms of raising risk perception and assisting with the necessary resources to evacuate. From a policy perspective, this implies that resources should be directed toward individuals living alone—including everyone from isolated elders to single parents heading households. These individuals may have limited social networks and the least resources, thus affecting their likelihood of evacuating.

My study also confirmed early research which has shown that the higher the levels of income and education, the more likely one is to evacuate pre-event. We can assume that those with the lowest incomes and levels of education would have been living in the most economically precarious situations, thus limiting their options to evacuate. This finding reaffirms earlier calls for better and more comprehensive evacuation planning, especially for our most vulnerable populations.

The major limitation of this research is that a subset of a non-random sample was used. African Americans were the central focus, and this means that the findings are not generalizable to other races. Furthermore, since this study only used responses from blacks, there is no other racial group to compare the findings to. As in most disaster studies, a single disaster was studied, which means that the findings are less generalizable to other disaster situations.

On the other hand, there is a limited amount of disaster research that focuses solely on minorities, and that is a benefit of this study (Bolin, 2006). The fact that minorities have only been a relatively recent focus of disaster research field seems counterintuitive since minorities

carry a heavy burden of disaster aftereffects. This study contributes to the growing number of studies on minorities in disaster.

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