




Fleeing from the
Hurricane's Wrath

EVACUATION AND THE TWO AMERICAS

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The 2008 Atlantic hurricane season was another one for the record books. In addition to its firsts—listed in the box below—the season tied with 2003 for fourth place in the number of named storms, and fifth for the number of hurricanes in a season, a ranking it shares with seven other seasons but that places it above three-fourths of the 64 years for which such statistics have been kept.¹ Sixteen named storms gathered over the Atlantic last year, eight of which became hurricanes; five of those were classified as major hurricanes (category 3 strength or higher on the Saffir-Simpson scale) (see Table 1 on page 29). The 2008 season was the only season in recorded history in which six consecutive tropi-

2008 HURRICANE SEASON FIRSTS

The 2008 Atlantic hurricane season set a number of records, including the following firsts:

- Six consecutive tropical cyclones (Dolly, Edouard, Fay, Gustav, Hanna, and Ike) made landfall in the United States.
- A major hurricane (category 3) formed in each consecutive month (July–November).
- Hurricane Bertha, lasting 17 days, was the longest-lived July tropical cyclone on record.
- Fay is the only storm on record to make landfall four times in Florida.
- Fay is the only storm to prompt hurricane watches and warnings for the entire coastline of Florida at various times during its August lifespan.
- Paloma (category 4) was the second-strongest November hurricane on record.
- Three major (category 3) hurricanes (Gustav, Ike, and Paloma) struck Cuba.

SOURCE: National Oceanic and Atmospheric Administration, "Atlantic Hurricane Season Sets Records," 26 November 2008, http://www.noaanews.noaa.gov/stories2008/20081126_hurricanesseason.html (accessed 13 January 2009).

cal cyclones made landfall on the U.S. mainland (Dolly, Edouard, Fay, Gustav, Hanna, and Ike).

Residents in coastal areas from North Carolina to Texas temporarily fled the coast during four of the storms. Authorities in Louisiana and Texas ordered major evacuations for Hurricanes Gustav and Ike, which made landfall within 12 days of each other; altogether, nearly 3 million people left their homes in advance of the two storms.

Nothing speaks more to improvements in evacuation management than repeat experience. The gross mismanagement in protecting lives and public safety that emerged during the 2005 hurricane season will likely remain infamous for some time, largely due to the response to Hurricane Katrina, although the reactions to Rita, which prompted massive traffic jams as it approached the Texas-Louisiana border a month later, and Wilma, which left many Floridians without power or emergency supplies for several days, offered tremendous room for improvement. How much better did Louisiana and Texas fare during 2008 in getting people out of harm's way, especially the poor, sick, disabled, and elderly—the most vulnerable populations?

Protective Actions and the Precautionary Principle

Emergency managers employ two primary protective actions to shield coastal populations from hurricanes: sheltering in place and evacuation. One or both may be used; their selection and implementation depend on the nature of the storm—its size, how fast it is moving, and its projected strength at landfall—as well as the likely severity of its impacts and the location of the population relative to the coast. Four specific hazards associated with hurricanes help inform decisionmaking: high winds, tornadoes, heavy rainfall and rain-induced flooding, and storm surge. Evacuation is the protective method of choice for storm surge risk and high wind areas—generally applied to those people

located directly on the coast, such as barrier island populations. Sheltering in place is an easier protective action to implement because residents remain where they are, hunkering down to wait out the storm in basements or safe interior rooms, or move to community shelters if they live in mobile homes. Emergency managers most frequently advise residents to shelter in place in inland locations where storm surge risk is negligible and the wind threat has diminished somewhat, but where some localized flooding may occur.

Evacuations are a local responsibility, with the authority for ordering them stipulated under state law and local ordinances.² All states have legislation providing their governors the authority to take emergency action in response to impending threats of all types—natural disasters, enemy attacks, public health, or civil disorders. While gubernatorial powers vary from state to state, in general, emergency declarations activate state and local emergency response plans and give governors or their designates the authority to order and direct the evacuation of residents. Most state governors can compel residents to comply with mandatory evacuation orders under state law and the emergency powers granted therein. Implementing an evacuation also starts at the local community level with additional support provided by state agencies.³ However, local public safety officials will not forcibly remove residents from their homes during mandatory evacuations. Instead, they cut power, water, and sewage service and close the main transportation routes (especially bridges) out of the area. Such actions prevent further damage to infrastructure but, when communicated effectively, also encourage residents to leave.

Prior to Hurricane Katrina, evacuations were a state and local responsibility, with limited federal involvement. Since Katrina, the federal role in evacuations has become more active as outlined in the National Response Framework.⁴ In addition, the amendments to the Stafford Act (Post Katrina Emergency Management Reform Act of 2006) provide for federal assets to assist in transporting evacuees out of the affected areas and back again

as they return to their homes.⁵ The Pets Evacuation and Transportation Standards (PETS) Act of 2006 (which also amends the Stafford Act) now stipulates a federal role in planning for and evacuating pet owners and their pets.⁶ While improvements were mandated by federal agencies, not all of the changes have been implemented at state and local levels. For example, identification and subsequent evacuation of special needs and vulnerable populations are now part of the local-state-federal emergency planning process, but many jurisdictions lack a fundamental understanding of the size or composition of such vulnerable groups in their jurisdictions.⁷ In addition, communication

problems and insufficiently articulated roles and responsibilities among local, state, and federal authorities have compounded deficiencies in integrating and implementing evacuation plans across jurisdictions.⁸ These shortcomings could compromise the management of future evacuations, especially for the most vulnerable populations.

Differential Treatment of the Underserved

Race and class have been a part of the social fabric of America since before its inception as a nation, and this has been

most unambiguously and systematically true in the South. The social and racial stratification of communities began in the colonial period, matured during the antebellum era, and took especially tenacious hold after the failure of Reconstruction following the Civil War—culminating in Jim Crow segregation. Although the Civil Rights Movement gained momentum in the mid-1950s in its fight against the discriminatory practices against African Americans, many community structures remained segregated—“separate but equal,” as the justification went—well into the 1960s. Coastal communities were no exception. From 1959 to 1960, conflict erupted near the Biloxi lighthouse

Table 1. The 2008 Atlantic hurricane season at a glance

| Named storm | Category | Month | Landfall location | U.S. evacuation? | U.S. deaths | Estimated losses* (US\$) |
|-------------|----------|-----------|--|------------------|-------------|--------------------------|
| Arthur | TS | May | Belize | No | 5 | 78 million |
| Bertha | 3 | July | Bermuda | No | 0 | n/a |
| Cristobal | TS | July | No landfall | No | 0 | n/a |
| Dolly | 2 | July | Mexico and Texas | Yes | 1 | 525 million |
| Edouard | TS | August | Texas | No | 1 | None reported |
| Fay | TS | August | Dominican Republic, Cuba, and Florida (4 times) | No | 5 | 245 million |
| Gustav | 3 | August | Haiti, Jamaica, Cuba, and Louisiana | Yes | 53 | 2.36 billion |
| Hanna | TS | August | Turks and Caicos Island, Bahamas, and the North Carolina-South Carolina border | Yes | 1 | 80 million |
| Ike | 4 | September | Texas | Yes | 125 | 8.9 billion |
| Josephine | TS | September | No landfall | No | 0 | 0 |
| Kyle | 1 | September | Nova Scotia | No | 0 | 0 |
| Laura | TS | September | No landfall | No | 0 | 0 |
| Marco | TS | October | Mexico | No | 0 | 0 |
| Nana | TS | October | No landfall | No | 0 | 0 |
| Omar | 4 | October | Puerto Rico and Virgin Islands | No | 0 | 5 million |
| Paloma | 4 | November | Cayman Islands, Jamaica, and Cuba | No | 0 | 1.42 billion |

TS=Tropical storm

* The National Hurricane Center reports direct insured losses using property and casualty data and then doubles the figure to derive the total direct loss estimate. This table reports the insured losses.

SOURCE: Compiled from the National Hurricane Center's Tropical Cyclone Reports for the 2008 Atlantic hurricane season; <http://www.nhc.noaa.gov/2008atlan.shtml> (accessed 3 February 2009).

between African Americans and whites over access to Mississippi's Gulf Coast beaches. White segregationists, beachfront property owners, and law enforcement routinely harassed African American recreationists, and the confrontations finally came to a head in May 1959, when nine African American citizens defied segregationists by visiting a popular spot on the beach favored by locals.⁹ Neither verbal threats nor forcible removal would deter the activists, and nearly a year later the confrontations began again, this time leading to one of the most violent race riots in Mississippi. The "wade in" protest and bloody confrontation resulted in federal intervention and a federal challenge to Mississippi's segregation laws, which many historians point to as the beginning of the civil rights movement in Mississippi.¹⁰ However, the disparities between the "Two Americas" did not end with civil rights, nor were they limited to access to such public areas. Racial segregation also guided other community functions and structures, such as emergency preparedness and response, in which it has a considerable legacy.

Historical Malfeasance

Many historical examples of the differential treatment of residents in emergency preparedness and response proved harbingers of the response to Hurricane Katrina decades later. Author John Barry documented one such example in his 2007 book on the 1927 Mississippi River flood.¹¹ Torrential rains beginning in 1926 swelled the Mississippi River's tributaries, and by early spring 1927, the resultant flooding had left a million people homeless along much of the river's reach. In April, New Orleans's white power barons successfully demanded that the state destroy the levee at Caernarvon, a community just downstream from the city, to alleviate the flooding potential. The decision to dynamite the levee flooded vast stretches of St. Bernard and Plaquemines Parishes, destroying thousands of homes, farms, and small businesses, the majority of which belonged to poor African Ameri-



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Biloxi's lighthouse, which in 1959 was the backdrop of violent confrontations over a nearby segregated beach, has since survived Hurricanes Camille and Katrina.

cans. That the state of Louisiana agreed to sacrifice a poor region to ensure that a wealthy city stay dry and offered little in the way of compensation (less than 10 cents on the dollar) was a circumstance made possible by the prevailing segregationist attitudes and social stratification in the South and the embedded white patriarchy of Louisiana's political culture.¹²

Forty-two years later and less than a 100-mile stretch of coast east of New Orleans, the evacuation response to Hurricane Camille made it clear, if less notoriously so, that Mississippi's emergency preparedness system had not made tremendous strides forward. Shortly before midnight on 17 August 1969, Hurricane Camille made landfall just west of Biloxi, Mississippi, as a category 5 with more than a 25-foot storm surge. Based on the forecast advisories from the National Weather Service, planning for mandatory evacuations, which involved preparing and staffing Red Cross shelters and placing law enforcement and highway patrol units on alert, began in earnest along the Mississippi coast earlier that day. Governor John Bell Williams ordered mandatory evacuations for coastal Mississippi. Some residents obeyed the orders; others chose to remain and ride out the storm. Still others received no warnings to evacuate at all.

The episode revealed a stark contrast in perceptions about the emergency response: while African Americans complained about the treatment of evacuees (before, during, and after the disaster), white officials spoke in self-congratulatory tones about the importance of "community-sharing" in preparing for Camille.¹³ African Americans argued that segregation had guided the very process of evacuation in advance of Camille's landfall. According to a newspaper account the following week, African American community leaders and a "coalition of 15 civil rights groups" pointed out that only African Americans were sent to the "Negro Jackson State College" and that "Negroes were not welcome at the evacuee center set up in the old Robert E. Lee Hotel" in Jackson. State Representative Robert Clark—the only African American in the legislature at the time—acknowledged that some blacks had managed to find refuge at the hotel but only because "they are courageous and refused to obey state orders."¹⁴

Evidence suggests that even the evacuation buses were segregated. "Spokesmen for a group of Negro evacuees from Pass Christian," reported the Biloxi-Gulfport *Daily Herald*, "were told at the Gulfport Seabee Center they would be segregated on buses to Jackson and at the evacuation centers."¹⁵ It remains unclear to what

extent this segregated evacuation was enforced. Likely, some of the buses were segregated, although African American evacuees from Pass Christian protested loudly enough that the policy, such as it was, was “rescinded.”¹⁶ In this respect, the very process of evacuation functioned as a microcosm of the long battle between white segregationists and African Americans who pressed hard to enforce their civil rights. According to congressional testimony offered by Aaron E. Henry, president of the NAACP’s Mississippi State Conference, even medical assistance in the immediate aftermath of the storm was allocated according to segregation protocols. Students and doctors at the University of Mississippi “were dispatched only to Robert E. Lee to take care of the white patients while the black patients were given medical assistance only because of the private acts” of individuals.¹⁷

As accustomed as they were to segregation, even African Americans expressed surprise at the tenacity of the system of segregation under such exceptional circumstances. Henry expressed his amazement—underwritten by a pointed sense of injustice—that evacuation could be segregated when, during the hurricane itself, “black and white . . . had worked together pulling each other out of water, off the roof-tops, out of trees.” Even some whites seemed embarrassed. White Mississippi officials, including the Governor Williams, denied the charges; his one-sentence refutation was, “This is absolutely not true.” Nevertheless, race and segregation were plainly inextricable from the evacuation process, before, during, and after the storm made landfall.¹⁸ In the face of an imminent, devastating natural disaster, southern Mississippi’s commitment to segregation proved it had the tenacity of Camille’s most uncompromising winds.

The differential treatment of residents based on race and class stratifications continued into the disaster response and recovery. After nearly 5,500 survivors who sheltered in place in Pass Christian and Long Beach lost their homes to Camille, Governor Williams placed the area under martial law, ordered these



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During Hurricane Gustav in September 2008, the hurricane evacuation center at Louisiana State University housed roughly 2,700 evacuees.

homeless to evacuate, and provided state-ent and segregated buses to transport the mostly low-income, African American, and now jobless residents north.¹⁹ Here and elsewhere, disaster assistance was differentially allocated and certainly consistent with the segregationist culture in Mississippi at the time. How much has changed in the disaster experience of the Two Americas since Hurricane Camille?

Katrina and Beyond: Separate and Unequal

Hurricane Katrina was a wake-up call for Americans on many levels, and much has been written about the failures of the government and social institutions to adequately protect the affected residents from harm.²⁰ The preparations for Hurricane Katrina, and the response afterward, followed the historic pattern of class and racial divides and differential responses; it showed that the intersection of race and class continues to influence the vulnerability of disadvantaged groups to future disasters and clearly influences their capacity to recover.²¹ However, with so much media attention, academic interest, and governmental inquiry, the likelihood of a repeat of the Hurricane Katrina experience, especially for disadvantaged

populations seemed rather low. Yet, three years after Katrina, it happened again.

Hurricane Gustav

Hurricane Gustav made landfall on 1 September 2008 in southern Louisiana as a category 2 storm. At least 53 deaths were attributed to Gustav, and more than 1.1 million people in Louisiana and Mississippi lost power for a week or more. In advance of the storm, Governor Bobby Jindal ordered a full evacuation of southern Louisiana, including the city of New Orleans. By most accounts, the evacuation was successful, and local, state, and federal officials patted themselves on the back for a job well done. However, as an editorial in the *New York Times* suggests, “Three years to the week after Hurricane Katrina’s landfall, Louisiana executed a fundamentally unfair evacuation plan and did it badly.”²²

The response to Gustav showed that emergency management had made some progress; the effort successfully evacuated nearly 1.9 million people, roughly 90–95 percent of the coastal population.²³ Estimates for New Orleans place the figure around 200,000, roughly 90 percent of the city’s population, although estimates vary, ranging as high as 97 percent.²⁴ Yet there was some concern that as many as 20,000

of the city's most vulnerable populations did not heed evacuation orders less than 24 hours before the storm's impact.²⁵

Interestingly, as Gustav approached, officials implemented two evacuations from New Orleans: one for residents with cars, and one for residents without. People with cars found shelter with family and friends out of the area, in hotels away from the danger, or in public shelters operated by the parishes, local churches, or the Red Cross. They were able to return to their homes three days after the storm.

Evacuation plans for residents without cars was designed to be race and class neutral. However, the historical legacy of the South and the structural racism it produced meant that those households without cars were largely poor and African American. Those without cars—estimated at 86,000 and mostly low-income and minority residents—were transported on state buses to shelters. They were not told where they were going or how long the trip would last. At least 18,000 of the poorest residents were sent by bus and train to out-of-state shelters, some as far away as Memphis.²⁶ Nearly 36,000 remained in Louisiana in shelters in Port Allen, Shreveport, Monroe, Baton Rouge, and at the Louisiana State University campus in Alexandria.²⁷ Upon arriving at their destinations, many of the evacuees sent to in-state facilities found insufficient toilets and bathing facilities, sleeping cots squeezed to fit in warehouses with minimal facilities, little or no privacy, and long lines for disaster food stamps.²⁸ More than half of bussed evacuees did not return to New Orleans until five days after the storm.²⁹ It is not clear at this time how long it took for the remaining bussed evacuees to return home.

Special needs populations (other than the poor) were handled separately. For example, residents with medical problems, including nursing home residents, were sent to special shelters; inmates (nearly 8,000) were moved inland to other parish or state prisons. Registered sex offenders were told to fend for themselves; they were not allowed in shelters. It is not known how long such special needs populations were sheltered, nor when they returned home.

Hurricane Ike

While the evacuation experience for Hurricane Gustav in Louisiana showed clear race and class differences, did this hold true for Galveston, Texas, during Hurricane Ike? As Hurricane Gustav was making landfall, Hurricane Ike was forming in the Atlantic as the ninth named storm of the season. During its journey through the Caribbean as a major hurricane, Ike caused more than 82 fatalities and \$4.5 billion in damages.

Ike made landfall at Galveston on 13 September 2008 as a strong category 2 hurricane with a large wind field; hurricane-force winds extended up to 100 nautical miles outward from the eye. The associated storm surge exceeded 15 feet in some places. Damages from Hurricane Ike totaled more than \$8.9 billion, making it the fourth costliest hurricane on record in the United States. The storm claimed 125 lives, a number that includes those missing and presumed dead.³⁰

Because of its strength, size, and projected path into Galveston, President Bush made an emergency declaration for Texas three days before landfall, thus opening up federal assistance to the state

for evacuation preparation and response. More than 1 million people evacuated in advance of Hurricane Ike, but more than 100,000 people did not.³¹ Buses transported roughly 12,500 people to shelters; however, the majority of evacuees used private automobiles to get out of harm's way. Special needs populations, especially infirm evacuees, were flown out on military planes as the forward movement of the storm narrowed the evacuation window.³² Despite dire warnings of storm surge and certain death from forecasters, an estimated 40 percent of Galveston's residents did not evacuate in response to the mandatory order. This contrasts sharply with the response to Hurricane Rita in 2005: then, with the horrific images of Hurricane Katrina still fresh on their minds, nearly 100 percent of Galveston residents complied with the mandated evacuation order.

Ike's storm surge ranged 11–15 feet, flooding more than 100,000 homes in the region and swamping most of the buildings in downtown Galveston in five or more feet of water. In Houston, hurricane force winds caused extensive damage to buildings and infrastructure. The region also experienced widespread power out-



Hurricane Ike's storm surge caused extensive damage on Galveston Island, pictured here two weeks after the storm had passed.

ages, lasting in some areas for two or more weeks. After the storm, primarily due to health and safety concerns, urban search and rescue teams evacuated more than 9,000 Galveston Island residents who had defied evacuation orders.³³ Three days after landfall, more than 37,000 people remained in 284 public shelters, while rescues continued of recalcitrant Galveston Island residents, many still stranded by floodwaters.³⁴ A week after landfall, Galveston residents were allowed reentry to the island to check on their homes and begin the cleanup process.³⁵

The response to Hurricane Ike highlights another side of the role of race and class along America's hurricane coasts. More often than not, hurricanes making landfall in the United States have done so in rural areas or the suburbs that have sprung up and expanded along the Southeast and Gulf Coast shorelines over the past 50 years. As a result, most hurricane evacuations have reflected the suburban experience: majority white residents with the resources and private transportation to do so temporarily evacuate the coast, and after staying with family or friends or in motels, quickly return to begin the cleanup.³⁶ Many residents on the Texas

coast determined that the risks of a category 2 storm did not give them sufficient motivation to evacuate, but they failed to understand the potential consequences of Hurricane Ike's extensive wind field and the storm surge it produced. While Ike's winds were category 2, the storm surge was synonymous with a category 4 storm.³⁷ It was this erroneous risk calculus and the local indifference to the storm surge hazard that reduced evacuation compliance and ultimately led to a significant loss of life in the Galveston area, fatalities mostly of white, middle-income residents.

Reflections on the Two Americas

Galveston and New Orleans differ significantly in their demographic characteristics, and how they differ reflects the disparities in evacuation experiences during the 2008 hurricane season. Galveston County and New Orleans Parish have nearly the same population (284,000 versus 223,000, respectively), but the composition of that population is quite different (see Table 2 on this

page). New Orleans has a larger population of African Americans and other people of color than Galveston does, and its poverty level is more than twice as high. Galveston's residents are mostly homeowners (67 percent), and very few (6 percent) households do not have a car. In contrast, renters occupy 50 percent of New Orleans's housing units, and 22 of the city's households do not have a car. In New Orleans, 12 percent of the housing units lack plumbing or kitchen facilities or phone service, whereas in Galveston, only 6 percent lack such basics. Lastly, Galveston has a slightly younger population, while Orleans Parish has a higher percentage of elderly people.

While the social vulnerability of these two cities is different and manifested itself in the evacuation experiences of its residents, the circumstances under which each storm exacted its human toll and hardship suggests that race and class do make a difference. Race and class had a significant influence on conduct of the response to Gustav, and many New Orleanians experienced distress and privation as a result. Death tolls attributed to Hurricane Ike in Galveston were highest among middle class whites because they ignored warnings to evacuate.

The treatment of the most vulnerable and underserved populations in evacuations must be improved, as Gustav, like Katrina before it, illustrated for Louisiana. The inability of residents to discern the true hazards of hurricanes—wind, rain and rain-induced flooding, and storm surge—and heed official warnings poses significant problems for emergency managers. When local residents perceive threats individually and subsequently underestimate risks and the potential harm that hazard events pose, this places public safety officials and emergency responders in a no-win situation. Moreover, the willful dismissal of evacuation orders—seen in both New Orleans and Galveston—has far-reaching consequences that most individuals do not recognize or understand, and it is an issue that needs much attention, policy development, and stakeholder engagement.

Table 2. Demographic comparisons for New Orleans and Galveston

| Characteristic | New Orleans Parish, Louisiana | Galveston County, Texas |
|---|-------------------------------|-------------------------|
| Total population (2006 estimate) | 223,388 | 283,551 |
| Percent under 18 | 22.4 | 25.5 |
| Percent over 65 | 14.4 | 10.9 |
| Percent Black, Native American, Asian, or of Hispanic descent | 66.3 | 38.5 |
| Percent below poverty | 27.0 | 13.4 |
| Percent housing units without a car | 21.8 | 6.4 |
| Percent renter-occupied housing | 49.9 | 32.9 |
| Percent housing units lacking plumbing or kitchen facilities or phone service | 12.1 | 6.8 |

SOURCE: U.S. Census Bureau, *State & County Quickfacts*, <http://quickfacts.census.gov> (accessed 3 February 2009); and U.S. Census Bureau, *American Factfinder*, <http://factfinder.census.gov> (accessed 3 February 2009).

Such recurring problems pose significant challenges for local, state, and federal emergency managers. The challenges are threefold: residents must actually receive the warning message, including critical evacuation information; they must understand and internalize the information; and they must act on hazard warnings and evacuation orders, overcoming whatever factors impede the decision to do so.

- *Improved and targeted warnings.* Warnings must be specific and must relay information on the need to evacuate based on wind speed or storm surge. It is also crucial to reach all audiences by communicating via the appropriate channels. This means that the warnings must be distributed in print, on the radio, through the Internet, and on television; expressed in multiple languages; and communicated from neighbor to neighbor, friend

to friend. The warnings should provide specific information on when to evacuate, what routes to take, and the location and availability of shelters and other needed services, such as food and fuel.

- *Warnings and risk information residents can understand and internalize.* Increasing evacuation response can be improved through education of local residents (and their children) through programs run at local schools, places of worship, local educational television programming, and community meetings. Simple maps showing storm surge zones and the height of potential flooding with the street addresses superimposed on the map provides quite a graphic illustration, one that can easily be accomplished via Web-based mapping. Relating one's location to the risks (likely wind speeds, storm surge, and rainfall) posed by hurricanes in the area will help personalize

the information and make it more salient to residents.

- *Compliance with mandatory hazard warning and evacuation orders.* Factors that reduce compliance include the presence of pets in the household, incorrect risk and threat perception, transportation issues, and the perceived inability to return quickly to the region once the storm has passed. Many people also harbor significant distrust of or disbelief in emergency management officials.³⁸ Many residents, including those with the requisite resources to evacuate, simply do not because they fear local officials will impede their timely return to the damaged area. This tension creates a conflict between local officials, who need to ensure public safety and provide basic services (power and water), and the residents themselves, who need to return home to assess damage and begin the



A National Guardsman speaks to a man during curfew in New Orleans's French Quarter the day after Hurricane Gustav made landfall.



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Galveston officials ordered a mandatory evacuation as Hurricane Ike approached, but many did not heed the warnings.

cleanup. The lack of systematic reentry plans often complicates and frustrates the evacuation process for emergency managers and local residents alike.

The larger problem is evacuation policy and its management. As the 2008 hurricane season proved, the nation still has a way to go to ensure equitable treatment of evacuees. An important part of the planning process involves identifying special needs and vulnerable populations, but few guidelines describe appropriate methods for carrying out such an inventory or help determine the means to fund one. Considerations to include these vulnerable populations should be part of a larger comprehensive preparedness and response plan that is updated regularly and subject to mock drills and exercises that assess its effectiveness.

No state or federal agency has implemented an integrated evacuee monitoring system to track their points of origin, where they were taken or where they go, or when they returned. Louisiana experimented with such a system during Gustav, but officials there quickly abandoned it because it did not work with wireless devices. To ensure special needs and vulnerable populations are included in the evacuation process, more extensive pre-impact planning efforts will be required

at all levels of government. This planning process should use hazard analyses as the determinants of the danger zones and as a means for communicating the risks to households. Further, the use of advanced geospatial information and tools should be at the core of the planning efforts: successful response (including evacuation) starts with a map.³⁹

Finally, the Federal Emergency Management Agency and the larger Department of Homeland Security community needs to expand its funding to support these extensive planning efforts by local and state entities. The federal government will not receive the type of effort that is required or the planning outputs that are necessary to truly account for special needs and vulnerable populations, especially if state and local officials perceive such efforts as just another “federal unfunded mandate.” Now is the time to make a national commitment to fostering community disaster resilience along the nation’s hurricane coasts by engaging in purposeful and risk-based planning to reduce the impacts of hurricanes. Many of these ideas have been around for quite a while, and we simply rediscover them after every major hurricane. The Obama administration’s agenda for Homeland Security in the area of natural disasters

is a step in the right direction. Under the heading, “Protect Americans from terrorist attacks and natural disasters,” it calls for the following list of actions:

- *Allocate funds based on risk*
- *Prepare effective emergency response plans*
- *Support first responders*
- *Improve interoperable communication systems*
- *Work with state and local governments and the private sector.*⁴⁰

However, it will take partnerships between governmental agencies at all levels (federal, state, and local), nonprofit organizations, the private sector, and academe to develop effective preparedness, response, recovery, and mitigation plans that ensure that vulnerable populations do not bear a differential burden from hurricane impacts as was seen in Hurricane Katrina and, more recently, in Hurricanes Gustav and Ike.

Hurricanes are equal opportunity disaster agents and do not care if you are rich or poor, black or white, male or female. They require personal responsibility for one’s own safety and for the safety and security of loved ones. Taking individual responsibility for the decision to evacuate out of harm’s way, whether assisted

by state and federal resources or without government help or support, separates those who survive from those who do not. While disaster preparedness and response to threats is not totally about race, class, and gender, these descriptors do influence the impacts of hurricanes and the experiences of evacuees along the nation's hurricane coasts, especially given the historical construction of race and gender in the South.

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NOTES

1. National Oceanic and Atmospheric Administration (NOAA), "Atlantic Hurricane Season Sets Records," 26 November 2008, http://www.noaanews.noaa.gov/stories/2008/20081126_hurricanesseason.html (accessed 13 January 2009). The 16 named storms that formed in the Atlantic in 2008 tied that season with 2003 for fourth place for named storms. Since 1944, when aircraft were first flown into tropical storms and hurricanes to study them, only 1969 (18), 1995 (19), and 2005 (28) had more named storms. The eight hurricanes in 2008 rank that season as fifth most active for hurricanes, along with 1951, 1954, 1961, 1990, 1999, 2000, and 2004. Four years (1955, 1980, 1996, and 2001) had 9 hurricanes; two had 10 (1969 and 1998); two had 11 (1950 and 1995); and only one, 2005, with 15, had more than 11. Dennis Feltgen, public affairs officer and meteorologist, National Hurricane Center, Miami, Florida, via email, 28 January 2009.

2. K. Bea, L. C. Runyon, and K. M. Warnock, *Emergency Management and Homeland Security Statutory Authorities in the States, District of Columbia, and Insular Areas: A Summary*, Congressional Research Service (CRS) Report RL32287 (Washington, DC, 17 March 2004).

3. K. Bea, *Disaster Evacuation and Displacement Policy: Issues for Congress*, CRS Report RS22235 (Washington DC, 2 September 2005).

4. U.S. Department of Homeland Security, "National Response Framework" (Washington, DC, January 2008), <http://www.fema.gov/pdf/emergency/nrf/nfr-core.pdf> (accessed 16 January 2009).

5. B. R. Lindsay, *Federal Evacuation Policy: Issues for Congress*, CRS Report RL34745, (Washington, DC, 12 November 2008).

6. A. S. Edmonds and S. L. Cutter, "Planning for Pet Evacuations during Disasters," *Journal of Homeland*

Security and Emergency Management 5, no. 1 (2008): Article 33, <http://www.bepress.com/jhsem/vol5/iss1/33> (accessed 3 February 2009).

7. U.S. Government Accountability Office, *Disaster Preparedness: Preliminary Observations of the Evacuation of Vulnerable Populations due to Hurricanes and Other Disasters*, GAO/GAO-06-790T (Washington, DC, 18 May 2006); U.S. Government Accountability Office, *Transportation-Disadvantaged Populations*, GAO/GAO-08-544R (Washington, DC, 1 April 2008).

8. U.S. Department of Transportation and U.S. Department of Homeland Security, *Catastrophic Hurricane Evacuation Plan Evaluation: A Report to Congress* (Washington DC, 1 June 2006), <http://www.fhwa.dot.gov/reports/hurricaneevacuation/> (accessed 3 February 2009).

9. P. D. Hearn, *Hurricane Camille: Monster Storm of the Gulf Coast* (Jackson, MS: University of Mississippi Press, 2004).

10. G. Mason, *Beaches, Blood, and Ballots: A Black Doctor's Civil Rights Struggle* (Jackson, MS: University Press of Mississippi, 2007).

11. J. M. Barry, *Rising Tide: The Great Mississippi Flood of 1927 and How It Changed America* (New York: Touchstone, 2007).

12. E. Zembrowski and J. A. Howard, *Category 5: The Story of Camille* (Ann Arbor, MI: University of Michigan Press, 2005).

13. "Jackson County Meeting Helped Offset Hurricane," *Biloxi-Gulfport Daily Herald*, 27 August 1969.

14. "Segregation Not Evident In Evacuation," *Biloxi-Gulfport Daily Herald*, 25 August 1969.

15. *Ibid.*

16. *Ibid.*

17. U.S. Congress, *Federal Response to Hurricane Camille (Part 1)—Hearings Before the Special Subcommittee on Disaster Relief of the Committee on Public Works, United States Senate* (Washington, DC, 7 January 1970), 637–38.

18. *Ibid.*; "Segregation Not Evident in Evacuation," note 14.

19. Zembrowski and Howard, note 12, page 220.

20. J. Horne, *Breach of Faith: Hurricane Katrina and the Near Death of a Great American City* (New York: Random House, 2006); and D. Brinkley, *The Great Deluge: Hurricane Katrina, New Orleans, and the Mississippi Gulf Coast* (New York: William Morrow, 2006).

21. M. E. Dyson, *Come Hell or High Water: Hurricane Katrina and the Color of Disaster* (New York: Basic Civitas, 2006); K. A. Bates and R. S. Swan, eds., *Through the Eye of Katrina: Social Justice in the United States* (Durham, NC: Carolina Academic Press, 2007); S. L. Cutter et al., "The Long Road Home: Race, Class, and Recovery from Hurricane Katrina," *Environment* 48, no. 2 (March 2006): 8–20; and W. A. Anderson, "Mobilization of the Black Community Following Hurricane Katrina: From Disaster Assistance to Advocacy of Social Change and Equity," *International Journal of Mass Emergencies and Disasters* 26, no. 3 (2008): 197–217.

22. "'Never Again,' Again," *New York Times*, 21 September 2008, <http://www.nytimes.com/2008/09/21/opinion/21sun2.html> (accessed 4 February 2009).

23. E. Anderson, "1.9 Million People Evacuate South Louisiana," *Times-Picayune*, 31 August 2008, http://www.nola.com/hurricane/index.ssf/2008/08/11_million_people_evacuate_sou.html (accessed 4 February 2009).

24. M. Kunzelman, "Planners Avoid Evacuation Errors," *The State Newspaper*, 30 November 2008.

25. P. Jonsson, "Exodus Ahead of Hurricane Gustav More Thorough—But Some Won't Go," *Christian Science Monitor*, 31 August 2008, <http://features.csmonitor.com/breaking/2008/08/31/exodus-ahead-of-hurricane>

[-gustav-more-thorough-but-some-wont-go/](http://features.csmonitor.com/breaking/2008/08/31/exodus-ahead-of-hurricane-gustav-more-thorough-but-some-wont-go/) (accessed 3 February 2009).

26. A. Nossiter, "2 Million Flee Storm: G.O.P. Cuts Back," *New York Times*, 1 September 2008, <http://www.nytimes.com/2008/09/01/us/01gustav.html?pagewanted=print> (accessed 3 February 2009).

27. K. Fahim, "New Orleans Residents Seek a Swift Trip Home," *New York Times*, 3 September 2008, <http://www.nytimes.com/2008/09/03/us/03shelter.html> (accessed 4 February 2009).

28. Kunzelman, note 24.

29. A. Nossiter, "In Reversal, New Orleans Lets Residents Return," *New York Times*, 4 September 2008, <http://www.nytimes.com/2008/09/04/us/04orleans.html> (accessed 4 February 2009).

30. All of these losses are tentative estimates based on official post-storm assessments from the National Hurricane Center for Hurricane Gustav and Ike (<http://www.nhc.noaa.gov/2008atlan.shtml>, accessed 3 February 2009). Given the difficulty in identification of missing persons and the actual cause of death, these numbers represent the best estimates to date.

31. C. Krauss and J. C. McKinley Jr., "Storm Damage Is Extensive and Millions Lose Power," *New York Times*, 13 September 2008, <http://www.nytimes.com/2008/09/14/us/14ike.html> (accessed 4 February 2009). Estimates range from 1.2 to 1.9 million evacuees and 140,000 non-evacuees.

32. J. C. McKinley Jr. and I. Urbina, "A Million Flee as Huge Storm Hits Texas Coast," *New York Times*, 13 September 2008, <http://www.nytimes.com/2008/09/13/us/13ike.html> (accessed 4 February 2009).

33. I. Urbina, "After Surviving Storm, Fleeing a Fetid, Devastated Galveston," *New York Times*, 15 September 2008, <http://www.nytimes.com/2008/09/15/us/15galveston.html> (accessed 4 February 2009); J. C. McKinley, Jr., "As Skies Clear, Galveston Copes with Worsening Sanitary Conditions," *New York Times*, 16 September 2008, <http://www.nytimes.com/2008/09/16/us/16ike.html> (accessed 4 February 2009); and Federal Emergency Management Agency (FEMA), "Hurricane Ike Three Months Later: From Disaster to Recovery," FEMA news release (Washington, DC, 15 December 2008), <http://www.fema.gov/news/newsrelease.fema?id=47108> (accessed 19 January 2009).

34. Krauss and McKinley, note 31.

35. A. Feuer, "After Torrent of Water, Galveston Residents Face a Tangle of Red Tape," *New York Times*, 16 September 2008, <http://www.nytimes.com/2008/09/17/us/17galveston.html> (accessed 4 February 2009).

36. S. L. Cutter, L. A. Johnson, C. Finch, and M. Berry, "The U.S. Hurricane Coasts: Increasingly Vulnerable?" *Environment* 49, no 7 (September 2007): 8–20.

37. E. Berger, "Ike's Destruction Points Way to New Warnings," *Houston Chronicle*, 29 November 2008, <http://www.chron.com/disp/story.mpl/ike/galveston/6138812.html> (accessed 22 January 2009).

38. Much of this is documented in the disasters literature. See for example, National Research Council, *Facing Hazards and Disasters: Understanding Human Dimensions* (Washington, DC: National Academies Press, 2006); and K. J. Tierney, M. K. Lindell, and R. W. Perry, *Facing the Unexpected: Disaster Preparedness and Response in the United States* (Washington DC: Joseph Henry Press, 2001).

39. National Research Council, *Successful Response Starts with a Map: Improving Geospatial Support for Disaster Management* (Washington, DC: National Academies Press, 2007).

40. The White House, *The Agenda • Homeland Security*, http://www.whitehouse.gov/agenda/homeland_security/ (accessed 23 January 2009).

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