

International Journal of Mass Emergencies and Disasters
August 2011, Vol. 29, No. 2, pp. 95–131.

**Planning for a Temporary-to-Permanent Housing Solution in Post-Katrina
Mississippi: The Story of the Mississippi Cottage**

**Jennifer Evans-Cowley
Joseph Kitchen**

Department of City and Regional Planning
Ohio State University

Email: cowley.11@osu.edu

Abstract

Immediately following Hurricane Katrina, the Mississippi Governor's Commission for Recovery, Rebuilding, and Renewal collaborated with the Congress for the New Urbanism to generate rebuilding proposals for the Mississippi Gulf Coast. One of the ideas generated from this partnership was the Katrina Cottage—a small home that could serve as an alternative to the FEMA Trailer. The State of Mississippi participated in the Pilot Alternative Temporary Housing (PATH) program, which was funded by the U.S. Congress. This study examines how local governments and residents responded to the Mississippi Cottage Program. This study finds that while the Mississippi Cottage program did provide citizens with needed housing following Hurricane Katrina, there are significant policy and implementation challenges that should be addressed before future disasters. The paper concludes by offering recommendations on how communities across can prepare to provide temporary housing in their communities.

Keywords: disaster housing, Hurricane Katrina, FEMA, Mississippi Cottage, post-disaster planning

Introduction

Hurricane Katrina brought Category Three winds and Category Five storm surge to the Gulf Coast. After the hurricane, the Federal Emergency Management Agency (FEMA) deployed trailers and manufactured homes, the typical forms of temporary housing deployed by the agency after disasters (Garratt 2008). After Hurricane Katrina,

FEMA had to deploy 140,000 different temporary housing units in the form of travel trailers, mobile homes, and manufactured housing (Garratt 2008). In the past, FEMA used these forms of temporary housing “adequately, if not terrifically” (Garrett 2008). These forms of housing became standard following Hurricane Andrew in Florida, in 1992, but Katrina brought a scale of disaster that resulted in the national opinion that “there have got to be more ways of responding to the needs of disaster victims” (Garratt 2008).

The scale of this disaster can be recognized by the tremendous demand for temporary housing in Mississippi following the hurricane. Katrina damaged 220,384 housing units and destroyed 61,386 in the State of Mississippi, with 52,512 of the units in the three coastal counties (Womack 2009). It damaged one quarter of the state’s housing stock (US Census 2000). Due to the scale of the disaster, FEMA was unable to immediately provide temporary housing for everyone. This resulted in residents living in shelters, tents, and hotels, and with family and friends.

In November of 2005, FEMA accelerated the distribution of trailers and manufactured homes, and over the following three months it distributed tens of thousands of trailers in Mississippi, as illustrated in Figure 1. At the peak of the temporary housing efforts following Hurricane Katrina, there were approximately 37,000 FEMA trailers and manufactured homes in place. The need for temporary housing along the coast of Mississippi, coupled with the limited number of trailers available for temporary housing, prompted both FEMA and the public to realize that the scope of the disaster was beyond the capacity of the agency. In response to public outcry, Congress developed the Alternative Housing Pilot Program. Congress gave FEMA \$400 million and charged the agency to work with states to develop alternative forms of housing

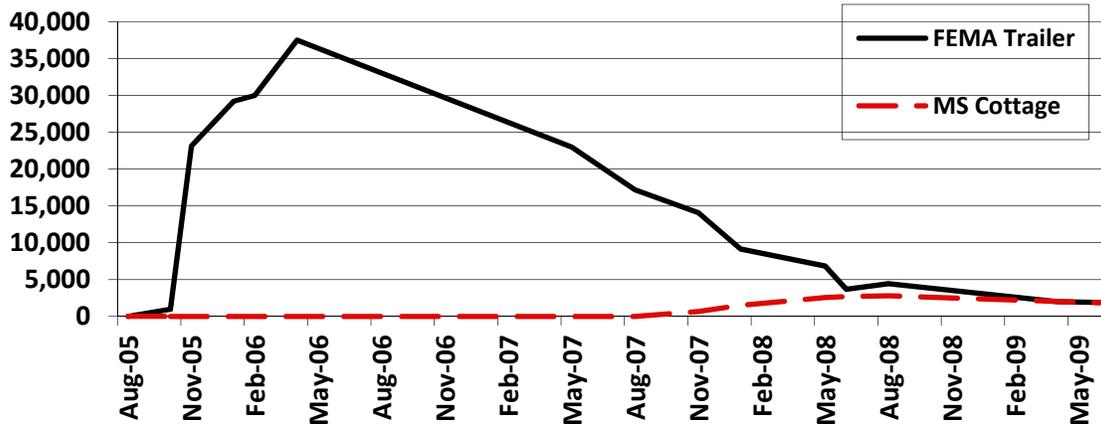
...that not only would serve the needs of disaster victims right now, who are in desperate need of housing, but it would also allow FEMA and the federal government, in particular, our partners in the Department of Housing and Urban Development, HUD, to evaluate these units and determine, are any of these worth adding to our tool box? Are any of these units disaster-worthy? (Garratt 2008).

FEMA then challenged the states to come up with alternatives to the FEMA trailer and manufactured home.

Mississippi, which was thinking about alternatives to the FEMA trailer before the FEMA Alternative Housing Pilot Program, was out in front of the issue due to leadership at the state level. Governor Barbour undertook two critical actions that shaped the future of temporary housing in Mississippi after the hurricane. First, he formed the Governor’s Commission for Recovery, Renewal, and Rebuilding, which addressed the long-term

housing needs of Mississippians, and second, he collaborated with the Congress for the New Urbanism to host a week-long charrette aimed at addressing the rebuilding needs of coastal cities.

Figure 1. Number of FEMA Trailers and Mississippi Cottages in South Mississippi



Source: FEMA News Releases, Mississippi Office of Recovery and Renewal, Mississippi Emergency Management Agency, Gulf Coast News, LaFontaine (2007), Associated Press (2007).

The Mississippi Renewal Forum, as the week-long charrette was called, triggered a unique approach to temporary housing. The Forum focused on a variety of rebuilding topics, including needs for an alternative to the often-maligned FEMA trailer and a housing alternative that also had the potential for permanency. At the forum, the idea arose to create a single shotgun-style house—a narrow, rectangular home popular in the south from the mid 1800s through the 1920s—to replace other types of temporary housing (Womack and Rent personal communication, March 18, 2008). The shotgun-style house could either be added to over time or become a guest cottage after the rebuilding of the original home. By the end of the Renewal Forum, the temporary-to-permanent housing concept had begun to gain ground.

Following the forum, a number of groups continued to move the concept forward. Marianne Cusato developed a model 300-square-foot house, and later a 700-square-foot house, as part of her efforts to investigate housing solutions. Her design concept led to a version sold by Lowe’s Home Improvement store, another was used by Habitat for Humanity, and still another was developed for the Mississippi Emergency Management

Agency (MEMA). The Cottages developed for MEMA as part of the FEMA PATH Program are the focus of this article.

This article explores the process of transforming the idea of the Cottage into a pilot housing program for the State of Mississippi. The key concept of the pilot program was to create a housing solution that could offer a permanent home for residents. However, this concept had two critical barriers to overcome: Would local governments and residents accept the Mississippi Cottages? This study seeks to answer two research questions: 1) Did local governments, through zoning, serve as an impediment to the permanent siting of Mississippi Cottages? 2) Do residents plan to use Mississippi Cottages as permanent housing?

To address these research questions, the article first explores the literature on social vulnerability, temporary housing, and exclusionary land use policies. This is followed by the history of the MEMA Cottage program. Then the article presents an analysis of local government policies for siting of Cottages. The desirability of the MEMA Cottage as permanent housing is appraised through a survey of the Cottage residents. The article concludes with a discussion of the lessons learned from the Mississippi Cottage program.

Literature Review

Several major disasters have resulted in significant displacement of residents into temporary housing, including Hurricane Andrew, the Mississippi River flood, the Loma Prieta and Northridge earthquakes, Hurricane Floyd, and Hurricane Katrina (Burby, 2006; Changnon 1996; Dow and Cutter 2000; Eadie 1998; Olshansky et al. 2003; Maiolo et al. 2001; Morrow 2005; Peacock et al. 1997; Sanders et al. 2004). These disasters displaced thousands of residents, resulting in the need for FEMA to provide temporary housing. However, Hurricane Katrina raised serious concerns about the long-term displacement of hundreds of thousands of households, which in turn raised a whole new level of policy concern for governments at all levels (Levine et al.2007).

Social Vulnerability

Social vulnerability is a measure of the sensitivity of a population to hazards, as well as its ability to recover from the hazards' impacts. Field studies have been conducted to aid in understanding the social groups that are more sensitive to the effects of disasters (National Research Council, 2006). Characteristics such as racial/ethnicity minority status, lower socioeconomic class, female gender, very young and old age, and renters are commonly identified as being related to vulnerability to natural disasters. People with these characteristics may have physical, mental, or financial limitations that affect their ability to respond to and recover from disasters (Mayhorn 2005; Ngo 2001; Phillips and

Morrow 2007; Seplaki et al. 2006). For example, having low income can impact people's ability to repair damaged homes.

There are a number of disaster studies that have addressed the role of social vulnerability in recovery from disasters (Birkmann 2007; Brooks et al. 2005; Burton and Cutter 2008; Cutter and Finch 2008; Cutter et al. 2006; Dilley et al. 2005; Esty et al. 2005; Green et al. 2007; Morrow-Jones and Morrow-Jones 1991). Kamel and Loukaitou-Sideris (2004) found that after the Northridge earthquake, marginalized groups continually encountered problems in accessing housing assistance. A study of U.S. coastal counties found that vulnerability is highly variable, often based on social, economic, and physical indicators (Boruff et al. 2005). The research found that Gulf Coast vulnerability is a product of social characteristics and physical attributes. The Louisiana and Mississippi coasts have the highest levels of physical vulnerability due to barrier islands, sand beaches, salt marshes, mud flats, and deltas.

Cutter and Finch (2008) found that between 1960 and 2000, the Mississippi Gulf Coast had an average social vulnerability score. A series of studies have focused on indicators in specific locations in the U.S. (Cutter et al. 2000 and Kleinosky et al. 2007). Cutter and Finch's (2008) research indicates that there are concentrations of high social vulnerability along the lower Mississippi River region, which encompasses parts of southern Mississippi. Burton (2010) found that there is a relationship between social characteristics, hurricane winds, storm surge inundation, and disaster impact on the Mississippi Gulf Coast. While there have been a variety of studies examining social vulnerability in a disaster context, there are methodological difficulties, as well as data access and quality concerns, that limit the ability to use consistent measures (Cutter and Finch 2008).

Morrow (2005) found that twelve years after Hurricane Andrew struck South Florida, many vulnerabilities remained, particularly with regard to rental housing. The poor, ethnic minorities, the elderly, large households, and female-headed households were disproportionately affected by Hurricane Andrew. There was a clear recovery delay in the lower-income neighborhood of the Lower Ninth Ward as compared to other heavily damaged neighborhoods in New Orleans (Green et al. 2007; Elliott and Pais 2006). It is these socially vulnerable people that will have the strongest need for longer term housing assistance after a disaster.

Temporary Housing

Following a natural disaster, many people need temporary housing assistance. Temporary housing can take on different physical forms and different phases. According to Quarantelli (1995), there are four stages of post-disaster housing. The first phase is the emergency shelter, which may include public shelters, homes of family members, hotels,

or other shelters. An emergency shelter is typically used for a few days during a disaster. Due to the short length of stay, the availability of goods and medical services in emergency shelters is limited. The second phase is the temporary shelter, which may include tents or public shelters that are used for a few weeks following a disaster. This type of shelter includes food, water, and medical treatment. The third phase is temporary housing, which includes FEMA trailers, rented apartments, prefabricated homes, or even small shacks. Temporary housing allows households to return to daily activities, such as food preparation. The final phase is permanent housing, where the household is able to either return to their home after reconstruction or move into a new home (Quarantelli 1995). Households affected by a disaster may pass through any number of these stages, ranging from all to none.

Following a major disaster, humanitarian and government agencies try to provide resources and information to satisfy immediate recovery needs such as temporary housing (ISDR 2007). According to Turner et al. (1986), temporary housing can also be defined as a part of a process of re-housing, which means that temporary housing is a process rather than product. Post-disaster housing includes housing policies and applications for meeting the urgent and temporary needs of the survivors following a disaster (UNDRO, 1982). The supply of adequate temporary housing is a necessity for quick recovery, and it allows extra time for safe rebuilding of permanent housing (Johnson 2007a).

Past research has shown that there are several challenges in providing temporary housing, including cultural differences, social problems inside camps, locating/finding temporary housing, procurement of temporary housing, and a lack of organizational capacities (Bolin and Stanford 1991; Davis 1977). Following Hurricane Katrina, the largest challenge was the procurement of temporary housing and, later, the deployment of FEMA trailers to those in need. FEMA reported only 5,000 trailers had been distributed two months after the storm (FEMA 2005a).

Hurricane Katrina illustrates the difficulties in the phase between response and full recovery. Quarantelli's four-stage model described above assumes that people move from response to recovery in a relatively short time period. However, this fails to acknowledge the social vulnerability dimensions of recovery (Levine et al. 2007). It is important to recognize that the slow recovery of housing is not always the result of extensive damage. Rather, it may be related to economic and social inequalities that existed before the disaster occurred.

Jurisdictional overlap and duplication of responsibilities are likely to occur because of the diversity and complexity of the many public agencies involved in the provision of temporary housing. This can lead to unwarranted and risky delays in communication and effective implementation. Because time is of the essence in the aftermath of a natural disaster, local agencies should have the authority to make immediate decisions based on

available information and resources (Gopalakrishnan and Okada 2007). A lack of coordination compounds the impacts of a natural disaster, resulting in a man-made institutional disaster (Peacock et al. 1997; Kapucu 2005). There are recurring gaps between the various government agencies that are responsible for recovery and reconstruction, including the redevelopment agencies, land use planners, building officials, and infrastructure officials (Levine et al. 2006).

Temporary housing, especially when provided by governments and international agencies, has been criticized for its unnecessary use of resources that could be directed to permanent reconstruction (Bolin 1990; Bolin and Stanford 1991; Dandoulaki 1992; UNDRO 1982). However, temporary housing is needed immediately after a disaster and should offer a level of comfort that is consistent with standard living. Once it is no longer needed, temporary housing units should be removed or converted for other purposes. However, in reality, temporary housing can be expensive and, later, temporary housing sites can be an environmental blight and hotbeds of social dysfunction (Johnson 2007b). As the disaster recovery period progresses, temporary housing can begin to take on a permanent character even if the housing is unsuitable for long-term habitation. This remains a concern of many planners and policy makers (Schwab et al. 1998), particularly in hurricane-prone areas where victims may be provided with small travel trailers.

Although local governments prefer to repair or rebuild homes on their pre-disaster sites (Mileti and Passerini 1996), replacement is often not in the interest of either the homeowner or community in cases where the housing is located in hazardous coastal environments. Past studies have found that rental housing stock is not likely to be rebuilt, with property owners often collecting insurance payments without rebuilding (Morrow 2005; Whoriskey 2006). This leaves renters without safe places to live.

In terms of recovery, cost effectiveness, and environmental concerns, temporary housing has to consider various factors in the larger environment, including local living standards, local industries, local politics, and permanent reconstruction (Johnson 2007a). Moreover, when designing temporary housing, several key components must be addressed such as efficiency, affordability, adaptability, equity, and sustainability (Gopalakrishnan and Okada 2007). Efficiency can embrace all of the elements that are essential in building temporary housing, including affordability, accountability, and adaptability.

The Northridge California earthquake necessitated institutionalized disaster relief, such as the temporary housing aid made available through FEMA among other programs (Bolin and Stanford 1998). The temporary housing service made available through FEMA included grants for rental assistance: two months for renters and three months for owners, which could be extended to 18 months (Bolin and Stanford 1998). The number of applicants for individual assistance after Northridge was double that the number of applicants after Hurricane Hugo in 1989 (Bolin and Stanford, 1998). An important policy

outcome of the Northridge earthquake was that FEMA gave applicants a maximum of one year to apply for housing assistance (Bolin and Stanford 1998). Regardless, a year after the initial cut off, FEMA continued to accept late applications for temporary housing on a case-by-case basis (Bolin and Stanford 1998).

The FEMA aid application process was chronicled by the Office of Audits, Office of Inspections, and Office of Investigations following Hurricane Andrew (FEMA 1993). The report details the lengthy process of registering for FEMA aid, highlighting the wait that households must undergo after registering for temporary housing. The report was critical of the disaster relief application process following Hurricane Andrew, stating that disaster victims should only have to provide the necessary information once at a single location rather than enduring a lengthy process to receive the necessary aid. Indeed, this study of the Mississippi Cottage program found that many Katrina victims felt that the temporary housing application process was lengthy and confusing.

Another lesson from both the Northridge earthquake and Hurricane Andrew was that temporary housing should not be framed in terms of months, but in terms of years. The Kates and Pijawka (1977) “Model of Recovery Activity” subdivides recovery into four phases: Emergency, Restoration, Functional Reconstruction, and Betterment Reconstruction; with each phase lasting ten times longer than the prior phase. The emergency phase of the post-Katrina recovery timeline lasted six weeks. Based on the model, this means that the restoration period will last sixty weeks and Cutter et al. (2006) estimated that recovery may take as long as 11.5 years. A study of building permit activity in post-Katrina rebuilding along the Mississippi Gulf Coast found wide variability in the degree of recovery, with the hardest hit areas recovering the most slowly (Stevenson et al. 2010). The continuing demand for temporary housing five years post-Katrina suggests that the decade plus estimate of recovery time may be quite reasonable. It follows that new and innovative measures must be taken to create quality temporary housing that achieves its purpose in the event of a disaster.

Exclusionary Zoning

Many local jurisdictions assume that recovery quickly follows response. Local governments are focused on short-term, localized displacement. However, there is a real difficulty in managing the immediate shelter needs and the permanent housing needs of those who are displaced (Levine et al. 2007). Mitigation efforts that will reduce vulnerability to future disasters are given little attention because of the pressure to rebuild permanent housing as soon as possible (Evans-Cowley and Gough 2007).

There is discussion after many disasters about whether the urban environment will be rebuilt or possibly moved. However, Kates and Pijawka (1977) contend that it can take 100 times the emergency period and ten times the restoration period to achieve complete

reconstruction, and the dramatic improvement of a city may take two to three times longer. The existence of prior plans, community consensus, and widespread dissemination of information on reconstruction can speed the reconstruction process. However, reconstruction accelerates existing trends such as sprawl and local disaster policies can work to eliminate the marginal and the less desirable uses from a city, resulting in greater segregation based on social class and/or ethnic origin (Kates and Pijawka, 1977). As reconstruction occurs, value choices are made, with some having weight over others—for example, providing equitable social access versus the physical appearance of the city (Kates 1977). Kates (1977) refers to the invisible city, the area larger than the damage zone that is required to replace the housing and other functions of the city. In this disaster zone, focus is placed on appearance, but he points out that the focus should be on the areas miles from the damage zone, often in other jurisdictions, where further redevelopment is likely to occur.

State and local government policies have focused primarily on short-term and localized displacement issues. However, Hurricane Katrina has illustrated that we may now be entering an era in which long-term and long-distance displacement may become more common. States in the hurricane belt, such as Mississippi, are poorly equipped to address the relocation, land development, infrastructure, and market problems associated with widespread long-term displacement. Mississippi has relied on model planning and zoning ordinances prepared in the 1920s (Levine et al. 2007), while Florida requires its comprehensive plans to have an emergency planning element. This has led to uneven levels of hazard planning along the Gulf Coast.

The assumption has been that housing will be provided in the general vicinity of the disaster and that minor updating of zoning regulations, combined with adequate financing, can allow most housing needs to be met adequately. However, what little experience we have with these issues indicates that this is typically not the case. Efforts to address long-term housing needs may face such obstacles as environmental constraints, growth containment policies, or even a shortage of buildable or otherwise vacant land, especially in mature communities (Eadie 1998). At present, temporary housing consists almost entirely of mobile homes (or smaller travel trailers) provided by FEMA and vacant rental units within commuting distance of an affected area.

Local governments would prefer to have minimal zoning intervention, which leads to policies that support construction on land at the urban fringe that, in turn, increase infrastructure costs to service these areas (Eadie 1998). Zoning policies are necessary to balance creating disaster-resistant communities, while supporting new development in appropriate locations to meet housing demand (Burby 1998; Godschalk et al. 1998).

It is within the poorly understood post-disaster transition period that issues of displacement, temporary housing, and long-term housing rise to prominence. Among the concerns are social vulnerability, displacement of populations, resettlement and housing

provision, return decisions, and short-term thinking about land development that often leads to ineffective outcomes (Levine et al.2007).

One ineffective outcome is exclusionary zoning practices, which can include a variety of land use controls with the potential to exclude minorities (Danielson, 1976). These practices can include low-density zoning, building permit caps, building permit moratoria, adequate public facilities ordinances, urban growth boundaries, and limitations on urban expansion (Pendall, 2000).

For decades, local governments have been labeled as exclusionary in their zoning practices. This affects the socially vulnerable because local governments seek to “minimize its social problems, and caring less what happens to all the others” (Bosselman and Callies 1972). There has been a history of exclusionary zoning practices on the Gulf Coast. Blackwell (2006) argued that as the focus moves from recovery to long-term rebuilding, there is a critical need to address economic and social inequity. She pushes for zoning policies that would allow for a mix of housing types to help achieve economically integrated neighborhoods. However, it was clear in New Orleans that not-in-my-back-yard attitudes affected the siting of temporary housing. While it wasn’t always clear that socially vulnerable populations were the intended target of exclusionary zoning ordinances, the effect was to block low income households from areas of opportunity.

Some planners argue that planning actions for post-disaster reconstruction and temporary housing should begin before a disaster (Johnson 2007a; Fothergill and Peek 2004; Gopalakrishnan and Okada 2007). Unfortunately, many communities do not have well-organized pre-impact disaster recovery plans (Johnson 2007a). Even communities that have pre-established recovery plans tend to rely on ad hoc tactical decision making in planning for housing reconstruction. This is even true for temporary housing, where decisions need to be made quickly and actions are initiated to house people until permanent reconstruction can be completed. One solution is to develop staged temporary housing programs that can be activated based on the type of damage to housing and the availability of housing in the market at the time of the disaster (Comerio, 1998). In general, there is a lack of will to plan in advance, resulting in stopgap emergency planning after disasters. This results in decision making based on incomplete information (Johnson, 2007a).

The History of the MEMA Cottage Program

Each of the Gulf Coast states affected by Hurricane Katrina was challenged to rethink temporary housing. Alabama, Louisiana, Mississippi, and Texas all developed alternative pilot housing programs to address their needs for temporary housing. Each state developed its own pilot program, submitting 29 different projects for consideration. Five were selected—two from Mississippi and one each from Alabama, Louisiana, and Texas (Kinder, 2008). The states sought housing solutions that would blur the line between

temporary and permanent, attempting to create housing that could transition over time based on the needs and resources of the housing recipients. Louisiana proposed what are termed Louisiana Cottages and Carpet Cottages, both of which are steel-frame constructions built on-site. These Cottages will be used on infill sites and on group sites in multiple sites, as well as in multi-family sites. Alabama purchased land that is not in the flood plain and is planning to have 200 houses built there, with 100 as alternative housing pilot homes. The homes will be sold, with profits going to build more houses targeted for firefighters, police, and other essential personnel. The units will be 900 to 1,300 square feet (Kinder, 2008). The community will integrate community development programs as well. Texas is using a pre-fabricated, panelized house known as the Heston Home that expands to any size. For example, a resident can add height to build an apartment complex. The lifespan of the Heston Home is approximately 20 years (Kinder, 2008). Mississippi was the first to launch its program (Dupuy 2008). The Mississippi program is discussed further in the following sections.

The initial Katrina Cottage was designed to be constructed at the same cost as a FEMA trailer and to be resistant to hurricane-force winds. Following the Mississippi Renewal Forum, a group of representatives began to work with representatives from the Governor's Office of Recovery to obtain funding for a pilot program for Mississippians. The governor emphasized his desire for something safer, more livable, and more attractive than the FEMA trailer. Using the basic Katrina Cottage design as a starting point, Joe Haggerman, an architecture student at Mississippi State University, was hired as a consultant to complete the design and take it from concept to plan. Along with Haggerman, volunteers worked on the development process for the state (Womack and Rent personal communication, March 18, 2008). The ultimate concept was a temporary-to-permanent housing solution that would allow residents still in FEMA trailers to transition into another form of temporary housing that could become permanent if residents chose.

Through the MEMA Cottage design process, two primary housing models were produced: the Park Model and the Mississippi Cottage (see Figure 2). The Park Model is 340 square feet with one bedroom—a size similar to FEMA travel trailers—and is designed to stay on wheels permanently. The Mississippi Cottage is available in two- or three-bedroom models (700 square feet and 850 square feet, respectively) that can be installed on a permanent foundation or kept on wheels (FEMA 2008a). Both models are designed to be accessible to the disabled. MEMA wanted to ensure that the Cottages would be able to withstand 150-mile-per-hour winds (Womack and Rent personal communication, March 18, 2008) because Hurricane Katrina's wind speed at landfall was approximately 140 miles per hour—a Category 4 Hurricane based on the Saffir-Simpsons scale (Rice 2005).

Figure 2. The Mississippi Cottage (left) and the Park Model (right) Are the Two Types of Cottages.



Source: Christopher Cunningham

The Cottage and Park models were designed to have the features of a typical home, including bathrooms with both a shower and bathtub, four-burner stoves in the kitchen, taller roofs to give a feeling of roominess, and an actual bedroom. This is in contrast to the FEMA trailers, which have only a shower, a two-burner stove, and a cove for a bed with a screen. The intent of the Cottages was to create a place that felt like a home. The cost of constructing the units is between \$48,500 and \$51,400 (FEMA 2008a). The State also embarked on a temporary housing project that develops energy-efficient, affordable green housing with the goal of reduced energy consumption that will make living more affordable. The result of this effort is a third design, the Green Mobile, which is currently under development.

After clear plans had been developed for the Cottages, Mississippi asked the U.S. Congress to fund a temporary housing program that would allow the state to move forward with them. Congress allocated \$400 million for a temporary housing pilot

program, with Mississippi receiving \$281 million (FEMA 2008b). Of these funds, \$275 million was to go to the Mississippi Cottage program and \$5.8 million was to go to the Green Mobile.

After the award of the pilot program, MEMA moved forward to establish a process whereby citizens could receive a Cottage. When MEMA conducted the evaluation of Cottage eligibility for individuals in FEMA trailers, they received a list of everyone in them as of April 2007. They then contacted all of the approximately 14,000 families by phone and mail to alert them of their eligibility for a Mississippi Cottage (Womack and Rent personal communication, March 18, 2008).

Each individual chose to accept or decline the offer of a Cottage. If they accepted, then a MEMA official would evaluate their eligibility by sending a housing advisor to evaluate housing needs, such as household size, ADA needs, and site assessment (including soils and room for a permanent home) (Womack and Rent personal communication, March 18, 2008). If the site was appropriate for the placement of a Cottage and had received local government approval, the household would receive a Cottage (Womack and Rent personal communication, March 18, 2008). Some jurisdictions in Harrison County, Mississippi, such as Biloxi, have been very receptive and facilitative towards the placement of Mississippi Cottages, while others have required a lengthier process in which each household must bring its request for placement before the city council; this is discussed further below (Womack and Rent personal communication, March 18, 2008).

The Cottage program was set to span a 24-month period and be administered by MEMA, with approximately 4,000 Mississippi Cottages to be placed, of which approximately 200 would be donated to non-profits for use as affordable housing. By September 2008, 3,000 Cottages had been placed. At that time, the state was still working to find ways to permanently install the units after the temporary program was complete (Office of Recovery and Rebuilding 2008). Households would be able to purchase the homes at a cost based on their incomes (Womack, 2009). The long-term intent of the program is to provide permanent housing that can be modified over time through, for example, the addition of modules, or that can serve as a guest Cottage after a home is rebuilt. For example, in Hancock County, Habitat for Humanity has created modules to add onto Mississippi Cottages to transform them into larger units (Lee, 2008b). Ocean Spring and Pascagoula have created small Cottage villages, allowing the units to serve as homes, live/work units, and businesses (Kessie, 2008; Sun Herald, 2008).

MEMA hopes that at least half of those residing in Mississippi Cottages will choose to purchase and retain them as permanent residences by the end of the program (Womack and Rent personal communication, March 18, 2008). Those individuals who have Mississippi Cottages will continue to be eligible for homeowner's grants from the Community Development Block Grant Program if they otherwise meet the criteria

(Womack and Rent personal communication, March 18, 2008). The cost each Cottage, depending on each resident's income, ranges from \$500 to \$10,000 (Swope, 2009). A homeowner's grant provides funds to help pay for replacement housing. MEMA believes that it has demonstrated that the Mississippi Cottages have proven to be a good alternative to the temporary FEMA trailers, and they hope that this alternative will be considered in future disasters.

Method

Since the goal of the Mississippi Cottage program is to provide a temporary-to-permanent housing solution, local government siting policies have an important impact on the ability of MEMA to achieve the goal of the cottage program. One key research question of this study is whether local governments, through zoning, served as an impediment to the permanent siting of the Mississippi Cottages.

Based on the authors' research question and the availability of data and data types, we chose to use a qualitative research design, including interviews and analysis of documents. Qualitative methods were necessary in this study to uncover and understand people's experiences and intentions in post-Katrina zoning processes. Following the suggestions by Mason (1996), we determined that qualitative data sources, including people's experiences, accounts, interpretations, opinions, ideas, emotions, practices, and actions, were necessary to answer this research question.

We used a case study approach as our overall research strategy. Case studies are intensive descriptions examining communities, programs, decisions, or other elements that have characteristics of interest. This design is suitable for learning about how and why something happened as it did (O'Sullivan and Rassel, 1999). We used a case study approach because we wanted to understand influences on decisions zoning for Mississippi Cottages in the Mississippi Gulf Coast following Hurricane Katrina. Moreover, we limited the cases to include officials who played a role in land use planning in the three Mississippi coastal counties—Hancock, Harrison, and Jackson—following the storm. These counties include eleven cities and unincorporated communities. These counties had the most significant impact from Hurricane Katrina, resulting in extensive housing damage and a strong demand for temporary housing.

We categorized this research as an embedded single-case research design, following the rationales set forth by Yin (2003). The main distinction in case study research is between single-case and multiple-case designs. Prior to data collection, the authors determined that the single-case study was appropriate design based on two main rationales. First, as defined by Yin (2003, 40), the Mississippi Gulf Coast represents a "critical case" for studying post-disaster housing. A second rationale for the single-case study is that the case represents an "extreme" or "unique" case (Yin 2003, 40). Hurricane

Katrina was the worst natural disaster to impact the United States (perhaps to be surpassed by the Gulf oil spill as the worst man made disaster also affecting this same region), and therefore, it represents an extreme case through which to study post-disaster housing.

Another distinction within a specific research design is between holistic and embedded case studies. An embedded case study occurs when there are multiple units of analysis within the same case study (Yin, 2003). This study was designed as an embedded case study. It is about a single phenomenon—the Mississippi Gulf Coast planning community—which represents a single case. However, it involves a large number of different governmental units, which represent the embedded units of analysis—cities within counties and counties within the State.

The sample consisted of planners and public officials responsible for planning in Hancock County, Harrison County, and Jackson County. We focused on the 11 cities within these counties, as well as officials from the unincorporated areas of the counties. In each of the larger jurisdictions, the Zoning Administrator/Planning Director was contacted for an interview regarding siting policies. In some cases, the initial contact with the Zoning Administrator led to an interview with another public official. For example, in Harrison County part of the regulations deal with flood zones, and I was referred to the Chief Building Official for further information. In the smaller jurisdictions where there is not a full-time zoning office, an elected official was contacted for an interview, as they are the officials with the highest level of knowledge about their Cottage siting policy. In addition to the local jurisdictions, we conducted an interview with the MEMA Director and Associate Director about the Mississippi Cottage program. An interview was also conducted with the senior attorney for the Mississippi Center for Justice, which had been actively following the policies being developed by local jurisdictions. The sample was, therefore, purposive and small, which is typical for qualitative studies (Merriam 1998, 8).

The data collection method for the study consisted of open-ended qualitative interviews. Semi-structured questions served as conceptual guideposts that allowed each participant to reflect on his or her experience, knowledge, and feelings about the issues surrounding collaboration and planning. Because specific information was desired from each interview, there were structured sections to the interviews, but the less-structured format allowed us to respond to the situations and ideas on the topic that were generated during each conversation. More pragmatically, interviews were used because the data required to answer the research questions was not easily available in any other form. For example, while it was possible to obtain information about the zoning policies from document analysis, this was not as straightforward as one would hope. The policies were rapidly changing, and most communities did not provide their zoning ordinances on their websites. Interviews were necessary for obtaining initial information about siting policies that could then be confirmed through document analysis.

The information collected in the interview protocol was public information. Officials were asked to provide information that is available to any citizen upon request. Prior to conducting each interview, consent was obtained from the interviewee. In each case, consent was given to participate in the interview, to identify their response as representative of themselves and their community, to use the data generated from the interviews, and to publish and reproduce the data and the analysis.

In the review of the local zoning policies and the interviews with officials, it became clear that there were significant differences of opinion about whether the Cottages should be viewed as temporary or permanent housing. While the intent of the MEMA program was to provide a temporary-to-permanent housing solution, local governments varied in their opinions and policies on siting for temporary or permanent use. This led to a second research question, do residents of Mississippi Cottages plan to use the housing on a permanent basis?

In order to address this second research question, we wanted to learn the opinions of the Mississippi Cottage residents. While it would have been ideal to conduct a survey of all Mississippi Cottage residents across the three counties, access to information was limited. Harrison County permitted the researchers to review its records of applicants for Mississippi Cottages in its unincorporated areas. This meant going to the Zoning Office to look through every zoning application over a 12-month period, a time-consuming process that required reviewing each case to determine if it was for a Cottage and then pulling relevant information to be used to contact the applicant. Given the time and location constraints, the survey was limited to Cottage residents in Harrison County only. After reviewing the zoning application files, we discovered that 269 applications for Mississippi Cottages had been approved through March of 2008.

We mailed a survey to each of the 269 approved Mississippi Cottage applicants who had received approval for their Mississippi Cottages in unincorporated Harrison County. The recipients were offered a chance to win a \$50 gas card if the survey was returned by July 31st. Survey responses were received from 76 respondents (30 percent response rate). Twenty-three surveys were returned with no forwarding address available.

The key focus of the survey was to determine whether residents intend to stay in their Mississippi Cottages permanently and their level of satisfaction with them. The questions asked and issues addressed are grouped into three general categories, each aimed at assessing a particular component of post-disaster temporary housing to arrive at a dynamic assessment of the program. The three categories are temporary housing after the hurricane (where residents went after the disaster and their satisfaction with temporary housing); their Mississippi Cottage (location, why residents chose the Cottage, and intention to keep the Cottage permanently); and social vulnerability characteristics of the household.

Results

The results section is in two parts. The first part presents the local government siting policies. The second part presents the survey of Mississippi Cottage residents. The meaning and context behind the results follows in the discussion section.

Local Government Zoning Policies

The interviews with planning officials revealed that prior to Hurricane Katrina, the communities along the Mississippi Gulf Coast had not engaged in planning for temporary housing. As a result, they made ad hoc decisions regarding temporary housing. Immediately following Hurricane Katrina, a group of planners across the Mississippi Gulf Coast came together to talk about what they were going to do to permit temporary housing and tried to share ideas and come up with policy that could be consistent across the jurisdictions (G. Carbo personal communication, September 17, 2006). Communities recognized the need to house people quickly, but, at the same time, they were concerned about the longer-term impacts of permitting FEMA trailers and other types of temporary housing. While the communities discussed how to handle temporary housing together, each community ultimately came up with its own policies to deal with FEMA trailers and, later, the Mississippi Cottages. The initial Mississippi Cottage policies varied, depending on each policy maker's attitudes about the Mississippi Cottage program and perception of whether the units would be temporary or permanent housing. After setting initial policies, which tended to be significantly restrictive, there was a backlash from Cottage residents and from advocacy organizations.

The Mississippi Center for Justice recognized both the inequalities and the negative reactions of local governments in their initial Mississippi Cottage policies. The Center sued Waveland over its initial policy of only allowing Cottages in mobile-home parks. The Center's lawsuit resulted in most of the jurisdictions working out some sort of arrangement to allow the permanent siting of Cottages (Morse, 2009). Most of the jurisdictions are now allowing permanent placement (shown in Table 1), but with very specific conditions.

Some communities developed specific policies that could be implemented at a staff level, while others wanted the ability to take a case-by-case approach. Long Beach uses a case-by-case basis and has no real standards except to consider whether the property owner intends to rebuild (K. Price personal communication, May 23, 2008).

Flood elevation was a significant issue in some, but not all, communities. The City of Pass Christian is not concerned about elevating the Cottages since 70-80 percent of the city is in the floodplain. The Cottages are intended to be temporary and the City wants to encourage residents to move back (D. Welch personal communication, March 2008).

MEMA worked out an agreement with FEMA that would allow them to site the Cottages on a temporary basis without elevating as long as they were insured. Some jurisdictions, such as Pass Christian, allowed this, but 230 Cottages there were damaged due to lack of elevation when Hurricane Gustav hit in 2008 (Womack, 2009). If residents wish to keep their Cottages permanently, they will be responsible for elevating them to meet flood elevation requirements in any community in which they are located.

Harrison County will not permit the Cottages in a floodplain unless they are elevated to meet the new flood elevation requirements (P. Bonck personal communication, March 18, 2008). Harrison County Code Administrator Richard Herrin notes that the “County is worried that if the Mississippi Cottage is located in a flood zone, then it may become a permanent home and he doesn’t want residents endangered... We are very supportive of the program, we just want folks to meet the flood requirements” (R. Herrin personal communication, March, 2008). Herrin and other county leaders are concerned that permitting the Cottages in flood zones would jeopardize the county’s participation in the National Flood Insurance Program. “We believe the flood elevation issue is very serious. It’s not a matter of if we get a storm, it’s a matter of when and we know these homes are going to flood. A category two storm would cause them to flood,” said Herrin (R. Herrin personal communication, March 18, 2008). Herrin has engaged in conversations with MEMA and FEMA and has noted that if these agencies could assure the county that there would be no impact on the flood insurance program, then they would be willing to issue temporary permits for Cottages in floodplain areas.

Different communities have approached setbacks differently. Some have followed the typical zoning requirements, while others have offered more flexibility. The City of D’Iberville does not deal with setbacks or lot size requirements because it only intends to allow the Cottages on a temporary basis (D’Iberville Planning and Zoning Department personal communication, September, 2008). Ocean Springs prefers the Cottage to be at the rear of a lot, requiring most Cottages to be 60 feet from the front property line. They also prefer the Cottages to be 10 feet from other structures, but this is decided on a case-by-case basis (T. Agar personal communication, May 23, 2008).

The districts where Mississippi Cottages are permitted vary, based on each community’s view of this type of housing. In addition, communities developed policy based on whether they viewed the Cottages as temporary or permanent. The City of Moss Point will only allow the placement of Mississippi Cottages in areas that are zoned for multi-residential use. Cottage placement is considered on a case-by-case basis, based on the nature of the parcel and the placement potential specific to each parcel (T. Lee personal communication, September 2008).

Evans-Cowley: Post-Katrina Housing

Table 1. Mississippi Cottage Policies by Jurisdiction

Jurisdiction	Number of Cottages in 2008	Policy or Case by Case	Allowed in Floodplain without Elevation	Allowed Permanently	Setback Requirements	Districts Permitted
Hancock County	n/a	Case by case	Yes	Yes	No	Mobile Home or by special permission
Bay St. Louis	159	Case by case	Yes	No, but possibility of individual approval	Same as zoning district	Mobile Home Park; Residential
Waveland	140	Policy	Yes	Yes, only larger models	No	Residential
Harrison County	269	Policy	No	Yes	Same as zoning district	Any Mobile Home Park, Residential Manufactured Home, Agriculture, Residential Estate, by condition in SF Residential
Biloxi	182	Policy	Yes	Yes	No	
D'Iberville	43	Policy	Yes	No	No	Any
Gulfport	n/a	Policy	Yes	Yes, but only if no neighbors object within 160 feet	Same as zoning district	Any
Long Beach	62	Case by case	Yes	Yes	Not too close to the original house footprint	Only if replacing a manufactured home or mobile home
Pass Christian	100	Case by case	Yes	Yes	Prefer 7 foot setback and placement of Cottage on side	Multifamily, Commercial, conditional in Residential

Evans-Cowley: Post-Katrina Housing

Table 1. Mississippi Cottage Policies by Jurisdiction (Continued)

Jurisdiction	Number of Cottages in 2008	Policy or Case by Case	Allowed in Floodplain without Elevation	Allowed Permanently	Setback Requirements	Districts Permitted
Jackson County	417	Policy	No	Yes	Same as zoning district	Manufactured housing, Agriculture, High Density Residential
Gautier	50	Case by case	No	No	n/a	n/a
Moss Point	103	Case by case	Case by case	Case by case	Case by case	Multifamily
Ocean Springs	12	Case by case	No	No, except for Cottage Square	Prefer 60 feet from front property line and 10 feet from structures	Any
Pascagoula	n/a	Policy	Only for largest model and must meet all other ordinances	No, except for retail village	None	Any

Bay St. Louis decided, since the Cottages are similar to trailers, that they would only be allowed in locations properly zoned for trailers. Council members expressed concern that both the Cottages and manufactured homes have wheels. They were also concerned that the Cottages would be impossible to move after the Cottage program is discontinued (Welsh, 2007). At the end of the program in March 2009, Hancock County will only allow Mississippi Cottages in areas that are zoned for mobile homes (J. Gregory personal communication, September 26, 2008). Waveland officials set rules for permanent siting in mobile home parks and on properties where residents had their primary houses prior to the storm. However, the Cottages are not allowed in flood zones and may not be used as rental properties (T. Longo personal communication, September 26, 2008). If a property owner rebuilds, they must remove the Cottage. In order to permanently site the Cottage, a permit from the City had to be obtained by May 1st, 2009. The City of Gulfport allows permanent siting, but only if there are no objections from neighbors within 160 feet of each property—although this policy is currently being debated and a new policy was expected in mid-2010. Bay St. Louis voted against allowing the Cottages to remain on a permanent basis as a rule, but City Attorney Don Rafferty reports, “We have denied a blanket variance to let the Mississippi Cottages in. However, we are looking at each one that comes across the building department’s desk on a case by case basis” (Showers, 2009). Biloxi approves of Cottages being permanently sited in any location as long as a property owner or an immediate relative lives in the Cottage (Lawson, 2009).

It is clear from the opinions and information gathered from officials in each jurisdiction that there is no unified, standard approach to the placement and provision of Cottages. Each jurisdiction subscribes to standards as it sees fit for its community—some are flexible while others are much stricter. Many jurisdictions are focused on promoting standard permanent housing and making sure that temporary housing remains just that, temporary. However, some jurisdictions seem to be open to a more permanent arrangement for the Mississippi Cottages that meets the intent of the Alternative Housing Pilot Program. While MEMA has strived to create a permanent housing solution, local governments have, in many cases, raised serious concerns. In part, this may be attributed to the lack of involvement of the local governments in the design of the program, in part to the speed of implementation without clear guidance as to whether the homes would be temporary or permanent, and in part due to fear about the impacts that the units could have on each community. These concerns are raised again in the *Discussion* section.

Residents’ Views of Mississippi Cottages

This section is dedicated to a discussion of the views expressed by Mississippi Cottage residents in Harrison County. Seventy-six Mississippi Cottage residents responded to the survey about their Mississippi Cottages. One of the key issues raised by

the local governments was whether or not the Cottages were temporary or permanent. The key focus of the survey was to determine whether residents intend to stay in their Mississippi Cottages permanently and their level of satisfaction with them.

The authors were surprised at how passionate the respondents' answers to the survey were. They repeatedly expressed joy at being asked for their opinions, writing that finally someone had come along that actually cared about what was happening to them. The written responses were emotional and heartbreaking, and the respondents often provided much more information than was requested. The results are included below, followed by some of the stories that the respondents told about their challenges in finding housing following the storm.

Respondent Demographics

Respondents were initially asked about their pre-Katrina living situations. The majority of them had lived in either manufactured homes or site-built, single-family homes (see Figure 3). This is consistent with the general pre-Katrina living arrangements in the unincorporated county (US Census, 2000). Respondents lived in their previous homes for more than 14 years on average, and 79.7 percent had owned them before the storm.

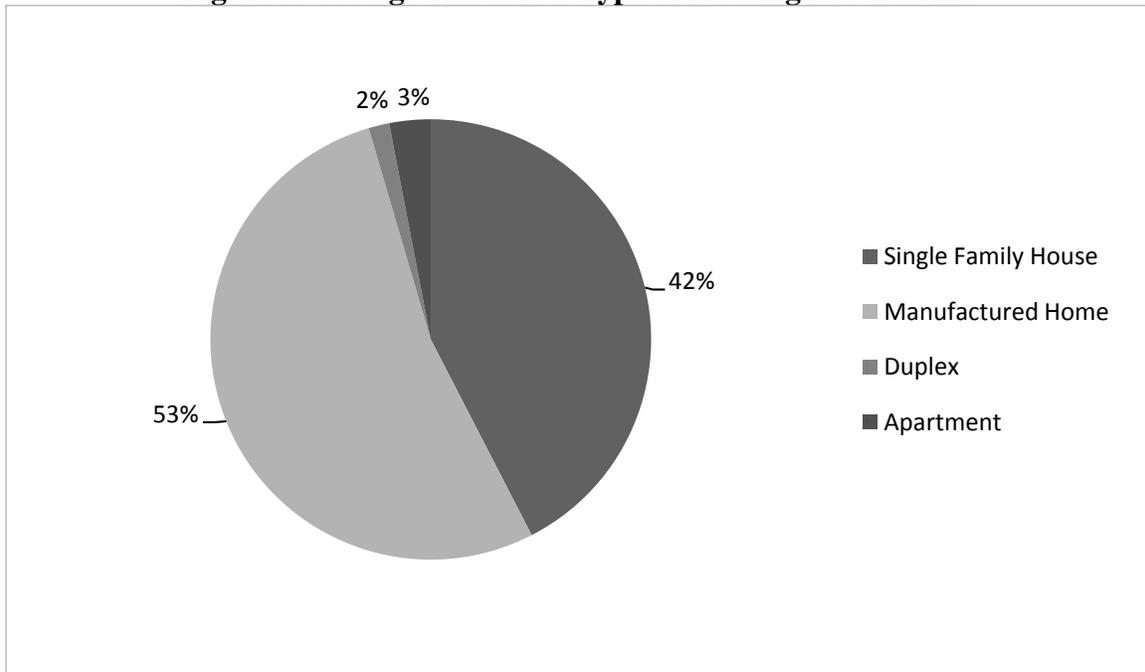
The average age of the respondents was 51, with 18 percent 65 or older. Forty-five point five percent of households had children living in the home (with half of those households having at least one child over the age of 18 living in the home) and thirteen percent of households had a single head with children under the age of 18. Only 38 percent of respondents chose to indicate their race/ethnicity. Ninety percent were white, 7 percent were black, and 3 percent were American Indian.

Sixty percent of respondents had household incomes of less than \$20,000 per year, with 22.7 percent at \$20,001 - \$30,000 and three percent at \$50,001 or more. Thirteen percent of respondents indicated that their insurance had helped to cover the costs of rebuilding after Hurricane Katrina.

Mississippi Cottage Experience

Respondents were asked to estimate how long they anticipated living in their Mississippi Cottages. The majority, 71.2 percent, planned to stay in their Cottages permanently, with half of these intending to build an addition in the future. Seventeen percent planned to build new homes, 11.4 percent planned to repair their pre-Katrina homes, and less than 2 percent planned to rent homes or apartments.

Figure 3. Cottage Resident’s Type of Housing Pre-Katrina



The preferences for staying in the Cottage may, in part, have to do with income. As previously reported, 60 percent of households made less than \$20,000 per year, with only three percent having incomes higher than \$50,001. Table 2 reflects the preferences for permanent housing by income. Those who intended to stay in their Cottage permanently had proportionately lower incomes, with none higher than \$40,000 per year.

Respondents were asked how satisfied they were with their Mississippi Cottages, as well as their pre-Katrina homes. On average, respondents rated their pre-Katrina homes with a high level of satisfaction—1.96 on a scale of one to seven, with one being highly satisfied. Interestingly, the Mississippi Cottages received a rating of 1.97, which is nearly equal to residents’ satisfaction scores for their pre-Katrina homes. This raises the question of why residents were equally satisfied with their pre-Katrina housing and their Mississippi Cottages. In part this may be attributed to the degree to which residents intend to use the Cottages as their permanent residences, and in part it may be a result of their pre-Katrina type of housing (see Table 3). Residents whose pre-Katrina housing was a manufactured home reported higher satisfaction with their Mississippi Cottages than their pre-Katrina homes. However, it is interesting to note that residents who lived in single-family homes prior to Hurricane Katrina reported the highest levels of satisfaction with their Cottages (1.52 average rating).

The Mississippi Cottages were praised for improving living standards that had been lower in the FEMA trailers. One respondent indicated that having the Mississippi Cottage was much better than having nothing or living in a tent. Another respondent even referred to the Cottage as a "mobile mansion". Others indicated feelings of being blessed to have

received a Cottage and feelings of finally having settled down in their Cottages. A number of respondents regarded their Cottages as their chance to start their lives over again after Hurricane Katrina.

Table 2. Intention to Live in Mississippi Cottage Permanently Based on Income

Household Income	Live Permanently In Cottage or Build an		
	Addition on the Cottage	Build/Buy New or Repair Existing Home	Rent a Home or Apartment
< \$30,001 (54)	89.4%	64.7%	50.0%
\$30,001-\$60,000 (10)	10.6%	29.4%	0%
\$60,001 and up (2)	0%	5.6%	50.0%

While the Mississippi Cottage received high levels of satisfaction, some respondents had complaints. One respondent, who lives in a one-bedroom Cottage with her five-year-old son, reported that the Mississippi Cottage was very small. A number of other complaints included the inconvenience of the Cottage, fire hazards, small breakers running all electricity for the Cottage, roof leaks, and limited space. Other complaints were not specific to the Cottage but were about utility connections, including sewer and electricity. Many individuals expressed health concerns regarding "black mold" and formaldehyde that they claimed were affecting their well-being and health.

Table 3. Cottage Satisfaction by Pre-Katrina Living Condition

Pre-Katrina Housing Type	Average Satisfaction with pre-Katrina Home	Average Satisfaction with MS Cottage	Percentage Difference in Satisfaction
Single Family Home (28)	1.36	1.52	-11.7%
Manufactured Home (35)	2.56	2.15	+16.0%
Duplex (1)	3.00	2.00	+33.3%
Apartment (2)	1.00	2.00	-50.0%
Other (3)	3.00	3.30	-10.0%

The majority of respondents, 57.1 percent, located their Mississippi Cottages on their own properties where their houses were located before the storm. Another 8.6 percent located them on land they owned before the storm and 8.5 percent located them on land they purchased after the storm. A significant minority, 15.7 percent of respondents, located their Mississippi Cottages on land given to them by family members, while 12.9 percent located them on land that was owned by family members.

Respondents were asked about the main reasons that they chose to obtain a Mississippi Cottage. The most frequent answers were that they could not afford to rebuild my home (72.8 percent), damage to my home because of flooding or wind (52.9 percent), financial difficulties—i.e., unable to pay rent or a mortgage (45.7 percent), and health reasons (48.5 percent). The following responses all were reported by less than 20 percent: overcrowding in previous residence, dissatisfaction with previous living situation, asked to leave by family or friends I was staying with, loss of rented housing, and loss of job. When respondents were invited to provide other reasons, most offered answers related to the choices above and the following: it was offered at no cost, this is what we were looking to buy before the storm, and travel trailers were being taken away.

Respondents were asked to report how important each item in a list was when deciding to live in a Mississippi Cottage. The most important factors were better energy efficiency, it was better than where I lived before, and the quality of construction. They also were asked how safe they would feel in their Cottage if another major hurricane were to occur. Twenty-six percent felt unsafe, 5.7 percent felt very unsafe, and 46 percent felt safe or very safe. Moreover, respondents were asked to identify the three most important housing issues in Harrison County. They identified high construction costs for rebuilding, a lack of affordable rental housing, and lack of affordable homes for purchase.

Finally, respondents were invited to offer any closing thoughts on their decisions to obtain Mississippi Cottages. Most expressed their gratitude for the Mississippi Cottage program and their strong desire to purchase their Cottages. They repeatedly expressed that they were finally safe and happy, with many saying that they “love their Cottage.” One respondent said, “I hope the government considers putting Cottages in place after natural disasters. It was the best plan they [FEMA/MEMA] had.”

Respondents appreciated that the Cottages were energy efficient and that they were soundly constructed for storms. One commented, “We love the porch, it also has living space.” Respondents expressed uncertainty about how to go about keeping their homes permanently—what financing options might be available, what paper work to fill out, and whether they could get permits from the county to keep the homes.

Respondents believed that the Cottages were safe and stable, that they were well built, and that they accommodated the disabled. The only additional concerns were that people often wished they could have gotten three-bedroom models rather than one- or two-bedroom models so that they could better accommodate the number of children in their households.

Discussion

The key research question of this study is whether local governments served as an impediment to the provision of MEMA Cottages as permanent housing. The view of the

Mississippi Cottages as permanent was a critical issue for MEMA, whose intent was to create permanent housing. MEMA Director Mike Womack reported that there was a lot of reluctance to having the Cottages sited at all. He noted that local governments were asking why, two years after the storm, they should be looking at more temporary housing. MEMA tried to emphasize that, for people living in a trailer two years after the storm, a MEMA Cottage was a better option (Womack, 2009). However, this points to the confusion over the temporary-to-permanent housing solution. Local governments struggled with whether and how to handle the Cottages if they were to be permanent additions to their communities.

There was much debate in communities around what permanent placement of Mississippi Cottages in neighborhoods would mean. Council member Doug Seal of Bay St. Louis stated, “Katrina Cottages are, to me, similar to FEMA campers, and we really need to move forward in rebuilding our areas. I believe it’s time to move forward. We have places for the Cottages in commercial parks. We need to continue to rebuild our neighborhoods with permanent housing” (Thomas, 2007). The view of some public officials was that this was a simple shotgun shack on wheels that would negatively affect property values. Gautier, for example, wanted to make sure that the Cottages would meet minimum home square footage requirements of 1,325 feet. This minimum size requirement effectively shut the Cottages out from the city. City administrators also worried that the Cottages would end up on properties still in need of repair. John Kelly, the Chief Administrative Officer for Gulfport, noted, “You end up with a house that’s below code and you’re going to put a Cottage in front of it, and that will end up being an unsightly situation and none of us want that in this city” (Roberts, 2007). A Gulfport council member worried that too many of the Cottages would be located in her ward.

The concerns over the appearance of the Cottages and the concentration of Cottages in neighborhoods led to restrictive placement policies in a number of communities. The Mississippi Center for Justice was disappointed with Waveland’s rules, noting that this left most of the Cottage residents without the ability to keep their Cottages permanently (Morse, 2009). The continuous changing of policy and detailed siting requirements made it difficult for residents to make decisions about their future. For example, five years after the storm, the City of Gulfport is still debating where to allow permanent siting of Cottages.

The other key research question in this study asked whether the Mississippi Cottage has had the intended effect of creating permanent housing for residents. While the local siting policies limit the ability of residents to permanently keep their Cottages, this has not stifled the satisfaction of Cottage residents. The survey respondents indicated a high degree of satisfaction with their Cottages, and the majority, 68.5 percent, intend to live in them permanently. Out of the approximately 3,000 Mississippi Cottages sited, MEMA Director Womack reported that, as of April 2009, 2,012 Cottage households indicated

that they wished to purchase their units. This indicates high potential for program success in creating permanent housing for residents.

In part, this high demand for the Cottages is driven by the social vulnerability of households recovering from Hurricane Katrina. According to the US Census, Harrison County's 2008 median household income was \$45,604. Only 18 percent of the responding Cottage residents had a household income of more than \$40,000 per year, and the majority had incomes of less than \$20,000 per year. Compared to county residents overall, a higher portion of Cottage residents are over the age of 65 (18 percent of Cottage residents compared to 11.8 percent of county residents). Socioeconomic class and age are indicators of social vulnerability because income limitations make these people less able to repair their damaged homes (Cutter and Finch, 2008; Mayhorn 2005; Ngo 2001; Phillips and Morrow 2007; Seplaki et al. 2006). This is consistent with Cutter and Finch's (2008) study, which concluded that socioeconomic status and age are indicators of social vulnerability on the Mississippi Gulf Coast.

While there is high need for permanent housing based on social vulnerability, local governments appear to serve as one of the biggest barriers to siting the Cottages. The review of local zoning policies revealed that while the recipients of the Mississippi Cottages favored the program, local government officials did not always share their enthusiasm. For example, Bay St. Louis was initially very opposed to the Mississippi Cottage program, with Mayor Eddie Favre noting "we told them [MEMA] we could find a better use of the \$282 million." By contrast, neighboring Waveland's Mayor Longo said, "removing the FEMA trailers and getting the Mississippi Cottages in is good for everyone" (Showers, 2007). It is this mix of opinions that led to diverse policy responses, some in support of, and others in opposition to, the State's efforts at creating a permanent housing solution. Residents of the Cottages have had a hard time understanding what the problem is. As one Cottage resident in Waveland noted, "everyone who has one wants to keep it unless they've rebuilt. I don't want to leave. It's home" (Swope, 2008).

The disjointed approach to local standards for the siting of Mississippi Cottages has led to confusion among program applicants. One respondent complained about the difficulty in getting a Cottage permitted, reporting, "if I would have known how difficult it would have been dealing with the Harrison County Code Office, I would have never tried to get a Cottage. They threw every obstacle they could to doing it. The City of Gulfport was not much better but they were more direct in discouraging Cottages."

As with any pilot program generated in response to a natural disaster, it is not surprising that there would be administrative challenges in implementation (Bolin and Stanford, 1991; Davis, 1977). One of the key challenges was that the Cottages were not available until two years after the storm. By that point, all but the poorest residents had already identified other permanent housing solutions. In some cases, local government officials were resistant to the Cottages because of concerns that these poorest residents

were not rebuilding or that the Cottages were permanently bringing low-income people back into their communities. Others, such as a representative of Harrison County, have said, “heck, this is the nicest house many of these people have ever had, the County should be encouraging the Mississippi Cottages as a replacement for their house trailers” (personal communication, P. Bonck, 2008).

Ultimately, the participants in the Mississippi Cottage program were largely low-income families that had been affected by economic and social inequalities before the storm (Green et. al, 2007). Because the program was implemented two year after the storm, these inequalities were apparent. Had the program been implemented immediately after the disaster, or if it were implemented nationally, there may have been a different location reaction to the Cottages. It is also possible that local governments would be more receptive to Cottages if both middle class and lower-income families were recipients.

Availability of affordable housing is still a major issue that the Mississippi Gulf Coast continues to face. Four years after the storm, there were still 2,000 FEMA trailers and manufactured homes in use, in addition to the 2,000 Mississippi Cottages (Womack, 2009). The Mississippi Gulf Coast Business Council estimates that 6,000 additional affordable rental units are needed. While new homes have been built, skyrocketing insurance costs at rates escalating up to 400 percent have resulted in new homes, many of which are valued at under \$185,000, sitting vacant (Mississippi Gulf Coast Business Council, 2008). The collapse of the financial market has made it increasingly difficult for residents to get mortgages to purchase homes or loans to repair their homes. During 2009 and 2010, FEMA worked with households with cottages on permanent placement. Many of the residents in these temporary houses did not have other permanent housing options. To avoid evictions, FEMA is offering to sell the trailers for as little as \$1 and mobile homes for \$5, or to pay security deposits and rent for those still in need (Bohrer, 2009).

MEMA hoped to provide assistance to allow residents to purchase their homes. However, many of the jurisdictions limited the permanent placement of the Cottages. Some early reports indicate that all of the communities in Pearl River County and Hancock, Harrison, and Jackson counties will allow for the permanent placement of the homes (Office of Recovery and Rebuilding, 2008). Gulfport had been one of the strongest opponents of the program, but this position may be softening. In November 2008, the Gulfport City Council voted to allow the Cottages in “established trailer parks” in the city. In an editorial on WLOX-TV, an editor urged Gulfport to consider allowing the homes permanently on private home sites (WLOX, 2008). In 2010, the Gulfport City Council began to discuss changing their policy on Mississippi Cottages again (Andrew Canter, personal communication, June 23, 2010). Biloxi asked the Planning Commission to make recommendations on if and where Mississippi Cottages should be permanently located in the city. The local government zoning and building requirements limited the ability of Cottages to be permanently sited (Evans-Cowley and Canter, 2011). As of

2010, the purchase process is moving forward through MEMA to allow for the permanent purchase of Cottages.

The Cottage program is one small piece of the overall affordable housing solution, and it will be important to watch whether this pilot program has long-term success in meeting the permanent housing needs of Mississippians and also whether it has potential as a national housing program following disasters. In particular, the MEMA Pilot Alternative Housing Program attempted to blur the line between temporary and permanent housing by reducing the phases of temporary housing from four to three (Quarantelli, 1995). The program ties into Gopalakrishnan and Okada's (2007) a number of the eight key components for successful temporary housing. The key elements include awareness/access, autonomy, affordability, accountability, adaptability, efficiency, equity and sustainability. In this case, the pilot alternative housing met affordability allowing public agencies and residents access to an affordable post-disaster housing option. The cottages are adaptable and can be used on a temporary and permanent basis. The units were to be equitably distributed to vulnerable households in need.

While this study has focused on the barriers to successful siting of Cottages, there are examples of communities that are considering creative alternatives. The Pascagoula City Council approved the development of a Mississippi Cottage Retail Village. The Cottages would be used as residences for two years while citizens finish rebuilding their homes and, when complete, they would convert to small retail spaces, including the possibility of live/work units (Biloxi Sun Herald 2008).

In Ocean Springs, Cottage Square is the first Cottage neighborhood. It consists of Mississippi Cottages and Katrina Cottages (which can be purchased from Lowe's and other retailers). The project has 19 Cottages on a two-acre property. The idea is that it can be a live-work neighborhood, allowing for businesses and houses. For example, one location is a beauty salon (Kessie, 2008).

In Hancock County, Habitat for Humanity developed an adaptation of the Katrina Cottage for homes that were placed in Diamondhead. They used the Mississippi Cottage as a starting point, adding a modular addition to create a permanent home. Governor Barbour has praised the project and the people of Diamondhead for accepting the project. He wants to send the message, "Come see this and don't say, 'I don't want them in my town'" (Lee, 2008).

FEMA Official Garrett notes that "even though we haven't made the progress that we'd like, we haven't gotten nearly as many alternative houses stood up across the four states as we'd like, there are reasons for that and those reasons have produced lessons, and those lessons are things that we're factoring into how we're going to do business in the future, and that's the whole point of this particular effort" (Garratt, 2008). Garratt further notes that "we've got high hopes for this particular effort [Alternative Housing Pilot Program] and we're hoping that this effort will lead into a much larger national

effort to examine and come up with new forms of alternative housing” (Garratt, 2008). Future research should focus on evaluating the results of other states’ pilot programs to determine what may be learned about the possibilities for future temporary housing programs.

FEMA is currently testing new temporary housing models, noting “the diversity among the units is needed to deal with different conditions across the country” (Naylor, 2009). One of the units, which is similar to the Mississippi Cottage, is described as “a shotgun fishing Cottage” (Naylor, 2009).

Many researchers have emphasized the importance of planning for temporary housing before a disaster (Fothergill and Peek, 2004; Johnson, 2007a; Schwab et al., 1998, Wu and Lindell, 2004). As a next step, FEMA should evaluate the pilot alternative housing programs in Gulf Coast states to determine the feasibility of replacing the FEMA trailers with Cottages as a temporary-to-permanent post-disaster solution. This study illustrates that the state/federal government is not the sole partner in temporary housing. Without local government policies on post-disaster housing, a program of this nature will not be successful. In the best case, housing policies should be consistent across a region rather than on a jurisdiction-by-jurisdiction basis, as is currently the case in Mississippi. Local siting regulations should be supportive of permanent placement of housing instead of serving as a barrier. Planners should recognize the importance of planning in advance for temporary housing, rather than following the ad hoc approach seen in Mississippi.

References

- Agar, Terry. 2008. Personal communication, City of Ocean Springs Building Official and Code Enforcement Officer. May 23, 2008.
- Associated Press. 2007. “Indiana Firm to Build Cottages for Mississippi Katrina Families.” May 8. Broadcast on WLOX-TV.
- Associated Press. 2009. “Cottages Park Proposed in Moss Point,” *Biloxi Sun Herald*, June 2. Accessed June 3, 2009: www.sunherald.com/newsupdates/story/1383629.html
- Biloxi Sun Herald. 2008. “It Takes a Lot of Houses to Be the Home of the State’s Largest Employer,” *Biloxi Sun Herald*, July 15, p. B2.
- Birkmann, Jörn. 2007. *Measuring Vulnerability to Natural Hazards: Towards Disaster Resilient Societies*. Tokyo: United Nations University Press.
- Bonck, Patrick. 2008. Personal communication, Harrison County, Mississippi Zoning Administrator March 18.
- Blackwell, Angela G. 2006. “Equitable Gulf Coast Renewal: Creating Housing Opportunity Through Inclusionary Zoning.” Accessed July 2, 2010: www.americanprogress.org/kf/policylink_brief.pdf.
- Bohrer, Becky. 2009. “HUD Sets Options for Hurricane Victims in Trailers.” *Biloxi Sun Herald*. June 3. Accessed June 3, 2009: www.sunherald.com/218/story/1387087.html

- Bolin, Robert C. 1990. *The Loma Prieta Earthquake: Studies of Short-term Impacts. Program on Environment and Behavior, Monograph #50*. Boulder, Colorado: Institute of Behavioral Science, University of Colorado.
- Bolin, Robert and Lois Stanford. 1991. "Shelter, Housing and Recovery: A Comparison of U.S. Disasters." *Disasters*, 15 (1): 24–34.
- Bolin, Robert and Lois Stanford. 1998. *The Northridge Earthquake: Vulnerability and Disaster*. New York: Routledge.
- Boruff, Bryan J., Christopher Emrich, and Susan L. Cutter. 2005. "Erosion Hazard Vulnerability of US Coastal Counties." *Journal of Coastal Research* 21(5): 932-942.
- Bosselman, Fred and David Callies, 1972. *The Quiet Revolution in Land Use Control*. Washington, D.C.: U.S. Government Printing Office.
- Brooks, Nick, W. Neil Adger, and P. Mick Kelly. 2005. "The Determinants of Vulnerability and Adaptive Capacity at the National Level and the Implication for Adaptation." *Global Environmental Change* 15: 151–163.
- Burby, Raymond J. 2006. "Hurricane Katrina and the Paradoxes of Government Disaster Policy: Bringing About Wise Governmental Decisions for Hazardous Areas." *Annals of the American Academy of Political and Social Science* 604:171-191.
- Burby, Raymond J. 1998. "Natural Hazards and Land Use: An Introduction: Pp. 1-26 in *Cooperating with Nature: Confronting Natural Hazards With Land Use Planning for Sustainable Communities*, edited by R. J. Burby. Washington, D.C.: Joseph Henry Press.
- Burton, Christopher G. 2010. "Social Vulnerability and Hurricane Impact Modeling." *Natural Hazards Review* 11(2): 58-68.
- Burton, Christopher and Susan L. Cutter. 2008. "Levee Failures and Social Vulnerability in the Sacramento-San Joaquin Delta Area, California." *I August*: 136-149.
- Carbo, George. 2006. Personal communication, City of Gulfport, Mississippi Development Director. September 17.
- Changnon, Stanley A. 1996. *Great Flood of 1993: Causes, Impacts, and Responses*. Boulder, CO: Westview Press.
- Comerio, Mary C. 1997. "Housing Issues After Disasters." *Journal of Contingencies and Crisis Management* 5 (3): 166-178.
- Congress for the New Urbanism. 2000. *Charter of the New Urbanism*. Retrieved April 17, 2007 from <http://www.cnu.org>.
- Cutter, Susan L., Jerry T. Mitchell, and Mitchell S. Scott. 2000. "Revealing the Vulnerability of People and Places: A Case Study of Georgetown County, South Carolina." *Annals of the Association of American Geographers* 90(4): 713–737.
- Cutter, Susan L., Christopher T Emirch, Jerry T. Mitchell, Bryan J Boruff, Melanie Gall, Matthew C Schmidlein, Christopher G Burton, and Ginni Melton. 2006. "The Long Road Home: Race, Class, and Recovery from Hurricane Katrina." *Environment: Science and Policy for Sustainable Development* 48(2): 8-20.
- Cutter, Susan L. and Christina Finch. 2008. "Temporal and Spatial Changes in Social Vulnerability to Natural Hazards." *Proceedings of the National Academy of Sciences of the United States of America* 105(7): 2301-2306.
- Dandoulaki, Miranta. 1992. "The Reconstruction of Kalamata City after the 1986 Earthquakes: Some Issues on the Process of Temporary Housing." Pp. 136–145 in

- Disasters and the Small Dwelling: Perspectives for the UNIDNDR*, edited by Y. Aysan, and I. Davis. London: James and James.
- Danielson, Michael N. 1976. *The Politics of Exclusion*. New York: Columbia University Press.
- Davis, Ian. 1977. "Emergency Shelter." *Disasters* 1: 23–40.
- Dilley, Maxx, Robert S Chen, Uwe Deichmann, Arthur L. Lerner-Lam, and Margaret Arnold 2005. *Natural Disaster Hot Spots: A Global Risk Analysis*. Washington, D.C.: World Bank.
- Dow, Kirstin and Susan L. Cutter. 2000. "Public Orders and Personal Opinions: Household Strategies for Hurricane Assessment." *Global Environmental Change Part B: Environmental Hazards* 2 (4): 143-155.
- Dupuy, Ben. 2008. *The Alternative Housing Pilot Program: The Louisiana Cottages and Carpet Cottages Project*. National Building Museum. November 18, 2008. Accessed at: www.nbm.org/media/audio/the-alternative-housing-pilot.html
- Eadie, Charles. 1998. "Earthquake Case Study: Loma Prieta in Santa Cruz and Watsonville, California." Pp. 281-310 in *Planning for Post-Disaster Recovery and Reconstruction*, edited by J. Schwab. Planning Advisory Service Report 483/484. Chicago, IL: American Planning Association.
- Elliott, James R. and Jeremy Pais. 2006. "Race, Class and Hurricane Katrina: Social Differences in Human Responses to Disaster." *Social Science Research* 35: 295-321.
- Esty, Daniel C., Marc Levy, Tanja Srebotnjak, Alex de Sherbinin 2005. *2005 Environmental Sustainability Index: Benchmarking National Environmental Stewardship*. New Haven, Connecticut: Yale Center for Environmental Law and Policy.
- Evans-Cowley, Jennifer S. and Andrew Canter. 2011. "Hurricanes, Oil Spills, and Discrimination, Oh My: The Story of the Mississippi Cottage" *Environmental Law Reporter*. 41(2): 101-136.
- Evans-Cowley, Jennifer and Meghan Z. Gough. 2007. "Is Hazard Mitigation Being Incorporated into Post-Katrina Plans in Mississippi?" *International Journal of Mass Emergencies and Hazards* 25(3): 177-217.
- FEMA. n.d. *Fact Sheet Awards: Selected Grant Awards for Alternative Housing Pilot Program*. Retrieved January 16, 2008 from http://www.fema.gov/media/fact_sheets/ahpp_awards.shtm
- FEMA October 2005a. News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=19620>
- FEMA December 2005b. News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=21026>
- FEMA January, 2006a. News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=22242>
- FEMA February, 2006b. News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=23243>
- FEMA March, 2006c. News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=24158>
- FEMA April, 2006d. News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=24979>

- FEMA September, 2006e. News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=29523>
- FEMA August, 2007a. News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=39319>
- FEMA November 2007b. News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=20349>
- FEMA May, 2008a. Hurricane Katrina Mississippi Recovery Update: May 2008 News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=43660>
- FEMA August, 2008b. By the Numbers: FEMA/MEMA Mississippi Recovery Effort Aug 2008 News Release. Retrieved September 1, 2008 from <http://www.fema.gov/news/newsrelease.fema?id=45538>
- Federal Emergency Management Agency 1993. "FEMA's Disaster Management Program: A Performance Audit after Hurricane Andrew." Washington, D.C.: Federal Emergency Management Agency.
- Fothergill, Alice and Lori A. Peek. 2004. "Poverty and Disasters in the United States: A Review of Recent Sociological Findings." *Natural Hazards*, 32: 89-110.
- Garratt, David. 2008. "The Alternative Housing Pilot Program Building a Framework for Future Disaster Recovery." Public lecture at the National Building Museum. June 19. Accessed June 1, 2009: http://www.nbm.org/assets/pdfs/microsoft-word-community_in_the_aftermath_5-19-08.pdf
- Giardina, A.J. 2008. "County Rules Leave Some Henderson Point Residents Out of Cottage Program." WLOX –TV. January 4, 2008.
- Godschalk, David R., Timothy Beatley, Philip R. Berke, David J. Brower, and Edward J. Kaiser. 1998. *Natural Hazard Mitigation: Recasting Disaster Policy and Planning*. Washington, DC: Island Press.
- Gopalakrishnan, Chennat and Norio Okada. 2007. "Designing New Institutions for Implementing Integrated Disaster Risk Management: Key Elements and Future Directions." *Disasters* 31 (4): 353–372.
- Green, Rebekah, Lisa K. Bates, and Andrew Smyth. 2007. "Impediments to Recovery in New Orleans' Upper and Lower Ninth Ward: One Year after Hurricane Katrina." *Disasters* 31 (4): 311–335.
- Gregory, Jaime. 2006. Personal communication. Hancock County, Mississippi Permit and Zoning Office Manager. September 26
- Herrin, Richard. 2008. Personal communication, Harrison County, Mississippi Building Official. March 12.
- ISDR—International Strategy for Disaster Reduction. 2007. *Learning from Disaster Recovery: Guidance for Decision Makers. May, 2007. Accessed July 13, 2010: http://www.preventionweb.net/files/726_10110.pdf*
- Johnson, Cassidy. 2007a. "Strategic Planning for Post-disaster Temporary Housing." *Disasters* 31 (4): 435–458.
- Johnson, Cassidy. 2007b. "Impacts of Prefabricated Temporary Housing after Disasters: 1999 Earthquakes in Turkey." *Habitat International*, 31: 36–52.
- Kamel, Nabil M.O. and Anastasia Loukaitou-Sideris. 2004. "Residential Assistance and Recovery Following the Northridge Earthquake." *Urban Studies*, 41 (3): 533-562.

- Kapucu, Naim. 2005. "Intergovernmental Coordination in Dynamic Context: Networks in Emergency Response Management." *Connections*, 26 (2): 33-48.
- Kates Robert W. and David Pijawka. 1977. "From Rubble to Monument: The Pace of Recovery." Pp. 1-23 in *Reconstruction Following Disaster*, edited by J. E. Haas, R. W. Kates and M. J. Bowden. Cambridge: The MIT Press.
- Kessie, Brad. 2008. "Cottage Square to Be Unveiled in Ocean Springs." WLOX. Retrieved August 27, 2008 from www.wlox.com/Global/story.asp?S=8910829&nav=menu40_2
- Kleinosky Lisa R., Brent Yarnal, and Ann Fisher. 2007. "Vulnerability of Hampton Roads, Virginia to Storm-Surge Flooding and Sea Level Rise." *Natural Hazards* 40: 43-70.
- LaFontaine, Ryan. 2007. "Cottage Ordinances Vary: Deadline Looms for Some Trailers." *Biloxi Sun Herald*, July 25.
- Lawson, Jeff. 2009. "Biloxi Council Approves More Cottages." February 3. Accessed June 3, 2009: <http://www.wlox.com/Global/story.asp?s=9783772>
- Lee, Anita. 2008. "The FEMA Shuffle," *Biloxi Sun Herald*. August 20, Retrieved from <http://www.sunherald.com/local/story/751945.html>
- Biloxi Sun Herald*. 2008. "Barbour likes what he sees in Diamondhead." August 29, Retrieved from <http://www.sunherald.com/212/story/779205.html>
- Lee, T. 2008. Personal communication, City of Moss Point. Department of Community Development. September 2008.
- Levine, Joyce N., A. Wallis, and L. Alpert. 2006. *Network-Based Regional Governance: A Case Study of Hurricane Response in South Florida*. Report to the MacArthur Foundation. Ft. Lauderdale, FL: Center for Urban and Environmental Solutions.
- Levine, Joyce N., Ann-Margaret Esnard and Alka Sapat. 2007. "Population Displacement and Housing Dilemmas Due to Catastrophic Disasters." *Journal of Planning Literature* 22(3): 3-15.
- Longo, Tommy. 2008. Personal communication, Mayor City of Waveland, Mississippi. September 26, 2008.
- Maiolo, John R., John C. Whitehead, Monica McGee, Lauriston King, Jeffrey Johnson, and Harold Stone, eds. 2001. *Facing Our Future: Hurricane Floyd and Recovery in the Coastal Plain*. Wilmington, NC: Coastal Carolina Press.
- Mayhorn, Christopher B. 2005. "Cognitive Aging and the Processing of Hazard Information and Disaster Warnings." *Natural Hazards Review* 6: 165-170.
- Mason, Jennifer. 1996. *Qualitative Researching*. Thousand Oaks, CA: Sage.
- Merriam, Sharan B. 1998. *Qualitative Research and Case Study Applications in Education*. San Francisco: Jossey-Bass Publishers.
- Mileti, David S. and Eve Passerini. 1996. "A Social Explanation of Urban Relocation After Earthquakes." *International Journal of Mass Emergencies and Disasters* 14 (1): 97-110.
- Mississippi Governor's Office of Recovery and Renewal. 2008. Progress Reports Retrieved August 2008 from www.governorbarbour.com/recovery/
- Mississippi Gulf Coast Business Council. 2008. "Mississippi Gulf Coast 3.0: Three Years after Hurricane Katrina." Retrieved August 18, 2008 from <http://www.msgcbc.org/docs/Three%20Year%20Report.pdf>

- Morse, Reilly. 2009. Personal communication, Mississippi Center for Justice. June 3.
- Morrow, Betty H. 2005. "Recovery: What's Different, What's the Same?" Presentation at National Academies of Science Disaster Roundtable, Lessons Learned Between Hurricanes: From Hugo to Charley, Frances, Ivan and Jean." The National Academies, Washington, D.C., March. <http://dels.nas.edu/dr/docs/dr13/Morrow.pdf> (accessed July 5, 2010).
- Morrow-Jones, Hazel A. and Charles R. Morrow-Jones. 1991. "Mobility Due to Natural Disaster: Theoretical Considerations and Preliminary Analyses." *Disasters* 15(2):126-132.
- National Research Council. 2006. *Facing Hazards and Disasters: Understanding Human Dimensions*. National Academy Press, Washington, DC.
- Naylor, Brian. 2009. "FEMA Works to Avoid Formaldehyde In New Units." National Public Radio June 3. Accessed at: <http://www.npr.org/templates/story/story.php?storyId=104203598>
- Ngo, Ehren B. 2001. "When Disasters and Age Collide: Reviewing Vulnerability of the Elderly." *Natural Hazards Review* 2: 80-89.
- Office of Recovery and Rebuilding. 2008. "Three Years After Katrina." Retrieved September 5, 2008 from www.mississippirenewal.com/documents/GovKatrinaThreeYearReport.pdf
- Olshansky, Robert B., Laurie A. Johnson, and Kenneth C. Topping. 2003. "Rebuilding Communities Following Disasters: Lessons from Kobe and Los Angeles." Abstract presented at the Third Workshop for Comparative Study on Urban Earthquake Disaster Management, Kobe, Japan, 31 January.
- O'Sullivan, Elizabeth and Gary Rassel. 1999. *Research Methods for Public Administrators, Third Edition*. New York: Longman Publishers.
- Peacock, Walter G., Betty H. Morrow, and Hugh Gladwin, 1997. *Hurricane Andrew: Ethnicity, Gender and the Sociology of Disasters*. New York: Routledge.
- Pendall, Rolf. 2000. "Local Land Use Regulation and the Chain of Exclusion." *APA Journal* 66(2): 125-142.
- Phillips, Brenda D and Betty H Morrow. 2007. "Social Science Research Needs: Focus on Vulnerable Populations, Forecasting and Warnings." *Natural Hazards Review* 8(3): 61-68.
- Price, K. 2008. Personal communication, City of Long Beach, Mississippi Planning and Zoning Department. May 23.
- Quarantelli, E.L. (1995). "Patterns of Shelter and Housing in US disasters." *Disaster Prevention and Management*, 4(3): 43-53.
- Rice, Doyle. 2005, August 31. "Hurricane Katrina Stronger than Andrew at Landfall." *USA Today*.
- Roberts, E. 2007. "Gulfport Council Torn on Whether or Not to Accept MS Cottages." WLOX-TV. July 26.
- Sanders, Sara, Stan L. Bowie, and Yvonn D. Bowie. 2004. "Lessons Learned on Forced Relocation of Older Adults: The Impact of Hurricane Andrew on Health, Mental Health and Social Support of Public Housing Residents." *Journal of Gerontological Social Work* 40 (4): 23-35.

- Schwab, James, Kenneth C. Topping, Charles Eadie, Robert E. Deyle, and Richard A. Smith. 1998. *Planning for Post-disaster Recovery and Reconstruction*. Planning Advisory Service Report 483/484. Chicago: American Planning Association.
- Seplaki, Christopher L, Noreen Goldman, Maxine Weinstein, Yu-Hsuan Lin. 2006. "Before and After the 1999 Chi-Chi Earthquake: Traumatic Events and Depressive Symptoms in an Older Population." *Social Science and Medicine* 62: 3121–3132.
- Showers, Al. 2007. "Waveland Begins 30 Day 'Cottage Blitz'". WLOX-TV, Sept 13.
- Showers, Al. 2009. "MEMA Cottages Rules to Be Modular Homes." WLOX-TV. January 9.
- Stevenson, Joanne R., Christopher T. Emirch, Jerry T. Mitchell, and Susan L. Cutter. 2010. "Using Building Permits to Monitor Disaster Recovery: A Spatio-Temporal Case Study of Coastal Mississippi Following Hurricane Katrina." *Cartography and Geographic Information Science* 37(1): 57-68.
- Swope, Christopher 2009. "Road to Katrinaville." *Governing*: April. Accessed June 3, 2009: <http://www.governing.com/articles/0904Cottages.htm>
- Taylor, Jeff. 2008. Personal communication, City of D'Iberville, Mississippi Director of Community Development, September 16.
- The Ethics of Disaster Relief. 2002. Markulla Center for Applied Ethics, Santa Clara University. Retrieved August 2008 from www.scu.edu/ethics/publications/briefings/philanthropy.html
- Thomas, Danielle. 2007. "Bay St. Louis Man Upset over City's Stance on MS Cottages." WLOX-TV. July 19. Retrieved January 16, 2008 from www.wlox.com/Global/story.asp?s=6813881v
- Tizon, Tomas A. and Doug Smith. 2005. "Evacuees of Hurricane Katrina Resettle along a Racial Divide," *Los Angeles Times*, December 12, p. A1.
- Turner, Ralph H., Joanne M. Nigg, and Denise H. Paz. 1986. *Waiting for Disaster: Earthquake Watch in California*. Berkeley: University of California Press.
- UNDRO (United Nations Disaster Relief Organization). 1982. *Shelter After Disaster: Guidelines for Assistance*. New York: United Nations.
- US Census Bureau. 2000. *2000 US Census*. Retrieved August 20, 2008 from <http://factfinder.census.gov>
- US Department of Housing and Urban Development (HUD). 2008. *Community Development Block Grant Program*. Retrieved October 10, 2008 from <http://www.hud.gov/offices/cpd/communitydevelopment/programs/>
- Welch, D. 2008. Personal communication, City of Pass Christian, Mississippi Code Office. March.
- Whoriskey, Peter. 2006. "Silence after the Storm: Life Has Yet to Return to Much of a City Haunted by Katrina." *The Washington Post*, August 27, p. A1+.
- WLOX. 2008. "Cottages Need Permanent Home." November 7.
- WLOX. 2009. "Waveland Sets Rules for Permanent Cottages." June 2.
- Womack, Michael and Jeff Rent. 2008. Mississippi Emergency Management Agency Director and Associate Director, personal communication, March 18, 2008.
- Womack, Michael. 2009. "The Alternative Housing Pilot Program: The Mississippi Cottage Program." April 19. Accessed June 1, 2009: <http://www.nbm.org/media/video/the-mississippi-Cottage.html>

- Womack, Michael and Jeff Rent. 2008. Personal communication, Director and Associate Director of the Mississippi Emergency Management Agency. March 18.
- Welsh, J.R. 2007. "Council Cool Toward Cottages." Biloxi Sun Herald May 23.
- Wu, J.Y. and Lindell, M.K. 2004. "Housing Reconstruction After Two Major Earthquakes: The 1994 Northridge Earthquake in the United States and the 1999 Chi-Chi Earthquake in Taiwan." *Disasters*, 28, 63-81.
- Yin, Robert K. 2003. *Case Study Research: Design and Methods*, 3rd ed. Thousand Oaks, California: Sage Publications.