

Closing Gaps in Local Housing Recovery Planning for Disadvantaged Displaced Households

Mark G. Welsh

Florida Atlantic University

Ann-Margaret Esnard

Florida Atlantic University

Abstract

Severe hurricane disaster events can leave the most vulnerable and disadvantaged households of a community displaced and in limbo for several years following the storm. Long-term recovery coalitions and committees with roots in voluntary nonprofit and faith-based organizations are springing up nationwide to fill unmet needs of displaced households after local, state, and federal agencies have completed their initial recovery missions. In South Florida, Broward County's recovery experience following Category 1 Hurricane Wilma in 2005 demonstrated the valuable role that these coalitions play in reintegrating displaced households into strong, recovering communities. Scaling this success to deal with severe and damaging storms that displace far more disadvantaged households requires a coordinated predisaster recovery planning framework. Long-term recovery coalitions, as currently structured, cannot design such planning frameworks. In this article, the authors make the case for a more formal independent planning agency dedicated to integrating coordinated housing recovery scenarios and priorities into municipal comprehensive plans as they evolve.

Introduction

In 2005, the same year that Category 1 Hurricane Wilma displaced more than 2,000 households in Broward County, Florida, Category 3 Hurricane Katrina struck the U.S. Gulf Coast, leading to a sustained drop in the New Orleans population of more than 50 percent—from 450,000 to

less than 200,000 (Brown, 2006; Weeks, 2006). More than 1 year later, while Broward County struggled to help the 200 or so remaining displaced households, approximately 37,700 Federal Emergency Management Agency (FEMA) trailers still housed more than 100,000 New Orleans residents (FEMA, 2006). An estimated 250,000 Gulf Coast residents had dispersed to permanent homes throughout the United States away from the coast (Brown, 2006). Three years later, in 2008, interviews conducted with a diverse set of housing professionals indicated that almost all Broward County residents displaced by Hurricane Wilma had new homes, while 9,500 New Orleans families were still working to facilitate a transition out of their temporary housing (FEMA, 2008). Despite the severity difference, juxtaposing these two disaster events suggests common gaps in housing recovery planning that leave a community's most vulnerable and disadvantaged households displaced from their prestorm homes and in limbo for several years after the event.

This article characterizes predisaster and postdisaster gaps in local housing recovery planning. The findings are developed primarily from some of the successes and challenges experienced by Broward County's long-term recovery coalition and from planning research reported for Hurricane Katrina. From this information, the article then offers specific recommendations that regions at risk from hurricanes might employ to avoid postdisaster recovery planning delays and procurement shortfalls.

The authors gathered information for this article during interviews with professionals from federal, county, municipal, and nonprofit agencies. All these entities were directly involved with helping Broward County's disadvantaged displaced households find permanent housing following Hurricane Wilma in 2005. The authors also reviewed existing disaster recovery plans for Broward County and several Broward municipalities.

Gaps in Predisaster and Postdisaster Local Housing Recovery Planning

The research described in this article suggests that these planning-related gaps fall into three basic categories. First, coordinated predisaster recovery plans and frameworks at the municipal and county levels remain essentially undeveloped. Without such frameworks, pledges for recovery funding will remain out of sync with approved recovery plans and allocation of funds. Consequently, displaced households that have the most difficulty independently reestablishing homes in the community after the storm run the risk of losing all housing options as time limits run out on public housing disaster funds.

Second, the interviews conducted during the research suggest a fundamental misunderstanding within the municipal professional planning community of the potential number, socioeconomic profile, and specific locations of disadvantaged households that will remain locally in housing limbo after a severe storm. Deriving this type of household information for municipal and county planners within high-risk impact areas may generate "the prerequisite awareness needed for group mobilization" (Paterson, 1998). Without an understanding of the potential size of this displacement problem, local planning agencies run the risk of not addressing large-scale migrations of disadvantaged households from, or even into, their community following a severe hurricane. There

is also a missed opportunity to integrate preferred regional housing recovery options into local comprehensive plans.

Third, the role of long-term, postdisaster housing recovery planning has defaulted to newly emerging recovery entities that are not designed to plan. Long-term recovery coalitions and committees with roots in voluntary nonprofit and faith-based organizations have sprung up to fill unmet needs of displaced households after local, state, and federal agencies have completed their initial recovery missions. These long-term community recovery coalitions and committees, recommended by FEMA, integrate resources from private business, nongovernmental organizations (NGOs), and government agencies to organize and manage a recovery process only after a disaster has struck (FEMA, 2005). In South Florida, Broward County's recovery experience with Category 1 Hurricane Wilma in 2005 demonstrated the valuable role these coalitions can play in reintegrating disadvantaged households into strong, recovering communities. Scaling this success, however, to deal with more locally severe and damaging storms that displace far more disadvantaged households requires predisaster coordinated recovery planning frameworks that these coalitions, as currently structured, cannot be expected to design.

The following section of the article describes the study area and its broader relevance to other metropolitan coastal areas at risk from hurricanes. This section is followed by an explication of the Disadvantaged Displaced Household (DDH) terminology used throughout the article. Three subsequent sections provide specific details about three gaps in predisaster and postdisaster local housing recovery planning: (1) obtaining the "prerequisite awareness" of the DDH problem from estimates and counts, (2) identifying the characteristics of a coordinated predisaster planning framework, and (3) extending the local recovery coalition model. The final section then offers recommendations for closing these gaps with an independent planning agency dedicated to integrating coordinated recovery scenarios and priorities into municipal comprehensive plans as they evolve.

The Study Area and Its Broader Relevance

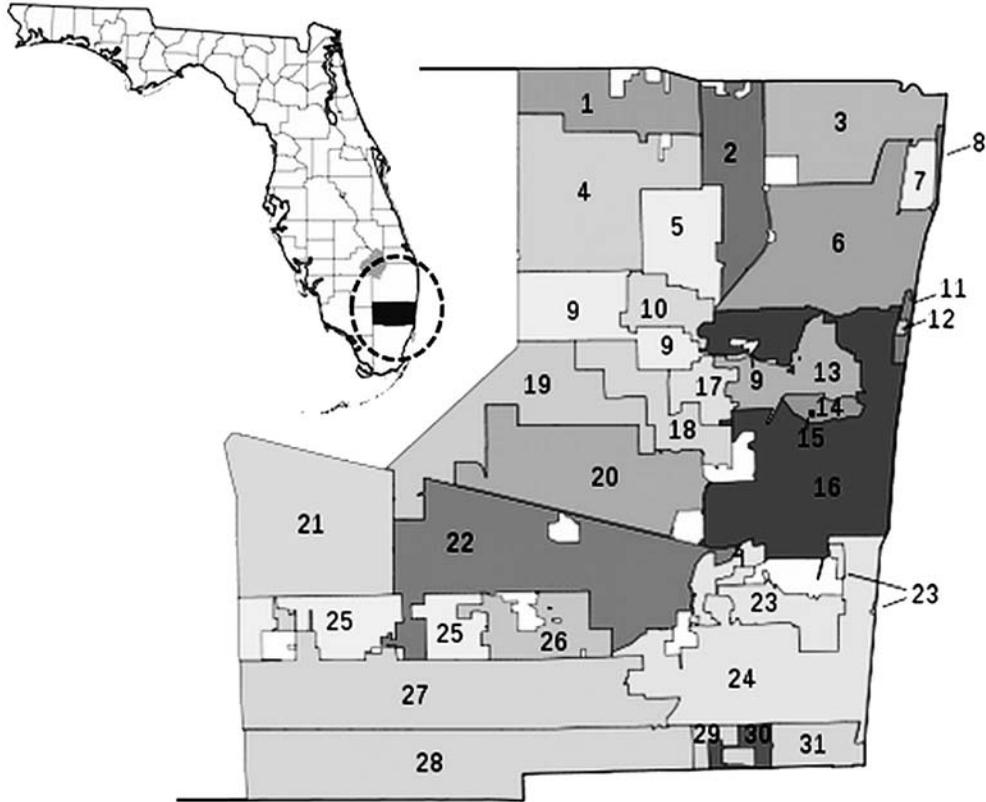
The southeast coast of Florida has one of the highest probabilities (~1 in 4 probability) of experiencing at least a Category 1 hurricane strike in any given year (Jagger, Elsner, and Niu, 2001). According to the National Oceanic and Atmospheric Administration "Hurricane Strikes" website,¹ the Southeast Florida region was impacted by 26 of the 158 total hurricanes that made landfall along the U.S. Atlantic and Gulf coasts from 1900 through 1996. Of these storms, 11 were Category 3 or greater strength on the Saffir-Simpson Hurricane Scale. Since 2004, 5 additional significant storms have hit Southeast Florida: Charley, Frances, Jeanne, Katrina (before the Gulf Coast hit), and Wilma.

Broward County is located on the southeast coast of Florida approximately 30 miles north of Miami. The county includes 31 separate incorporated municipalities located primarily in the eastern section adjacent to the coast (exhibit 1). According to 2006 Census Bureau estimates, the total population and number of households are 1.77 million people and 706,000 households, respectively.

¹ See <http://www.publicaffairs.noaa.gov/strikesstates.html>.

Exhibit 1

Broward County and Its Municipalities, Located in Southeast Florida



- | | | |
|------------------------------|-----------------------------------|-------------------------------|
| 1. City of Parkland | 11. Town of Lauderdale-by-the-Sea | 21. City of Weston |
| 2. City of Coconut Creek | 12. Village of Sea Ranch Lakes | 22. Town of Davie |
| 3. City of Deerfield Beach | 13. City of Oakland Park | 23. City of Dania Beach |
| 4. City of Coral Springs | 14. City of Wilton Manors | 24. City of Hollywood |
| 5. City of Margate | 15. Village of Lazy Lake | 25. Town of Southwest Ranches |
| 6. City of Pompano Beach | 16. City of Fort Lauderdale | 26. City of Cooper City |
| 7. City of Lighthouse Point | 17. City of Lauderdale Lakes | 27. City of Pembroke Pines |
| 8. Town of Hillsboro Beach | 18. City of Lauderhill | 28. City of Miramar |
| 9. City of Tamarac | 19. City of Sunrise | 29. City of West Park |
| 10. City of North Lauderdale | 20. City of Plantation | 30. Town of Pembroke Park |
| | | 31. City of Hallandale Beach |

In addition to the hurricanes that have directly affected Broward County, some nearby severe hurricane strikes have indirectly affected the county. In 1992, Hurricane Andrew struck adjacent southern Miami-Dade County, destroying more than 40,000 homes (Peacock, Morrow, and Gladwin, 1997) and leaving more than 80,000 people unemployed (Hartwig, 2002). The devastation from the 145-mile-per-hour storm instigated an unanticipated housing rush as displaced

households migrated north to reestablish their lives. Just as southern Miami-Dade communities were unprepared to assist residents with the significant challenges delivered with the storm and, therefore, lost residents to Broward County (Benedick, 2002), Broward County was similarly unprepared with urban growth plans to receive these displaced households. The 30-percent increase in Broward County's population over the next 10 years, driven in part by the migrations from Miami-Dade County, rapidly transformed sparsely developed, rural western Broward County into a sprawling suburb with little remaining vacant land. Major spikes in home prices, driven by high demand and a shrinking supply of homes, accompanied the migration. A post-Hurricane Andrew study of one Miami-Dade working class community immediately following the 1992 hurricane and then again a decade later (in 2003) highlighted the lingering "deep-seated impacts on many households" that lacked the resources to rebuild locally after the storm (Dash et al., 2007; Peacock, Morrow, and Gladwin, 1997).

Broward County has had a unique experience with storm-related housing issues: historically, as a receiving area in 1992 with Hurricane Andrew and, more recently, as an area of direct impact from Hurricane Wilma in 2005. The county's experience, therefore, makes it an ideal candidate for evaluating the state of local disaster housing recovery planning. Furthermore, Broward's use of the Long-Term Recovery Committee (LTRC) model, based on FEMA's Long-Term Community Recovery Planning Process (FEMA, 2005) after Hurricane Wilma came ashore, can offer valuable insights into the utility of this model in other communities. Such recovery committees have formed in local communities throughout the country² in the past 4 years in response to hurricanes, floods, and wildfires.

Disadvantaged Displaced Households Defined

The severity of a hurricane is certainly relevant to predicting overall counts of displaced households. Severe physical damage potential, however, does not necessarily translate into a large number of *disadvantaged* displaced households. Beyond the physical damage to a household, vulnerability to displacement risk is largely informed by measures related to "social inequalities" (Cutter and Emrich, 2006: 103). Key variables that appear consistently in the literature include low-income/poverty levels, density of the built environment, age (median age greater than 65 years or any children less than 5 years), number of mobile homes, percentage of immigrant and/or nonnative speakers, race, and single-sector economic dependence (such as farming or tourism) (Chakraborty, Tobin, and Montz, 2005; Cutter, Boruff, and Shirley, 2003).

For the purposes of this article, DDH is the subset of displaced households expected to need additional coordinated assistance to reestablish a permanent household in their community after storm-related public assistance program options (via FEMA housing, FEMA grants, and/or Small Business Administration [SBA] loans) expire or are exhausted. In contrast, most non-DDHs are expected to have sufficient independent means (via insurance, savings, family assistance, etc.) to make this transition.

² Long-term recovery committees (also referred to as long-term recovery organizations and long-term recovery coalitions) are in Pasadena, California; Puerto Rico; Texas; and counties throughout Florida.

Quantifying DDHs—Closing the Local Awareness Gap

The Florida Catastrophic Planning (FLCP) Initiative ([http://www.floridadisaster.org/Catastrophic Planning/](http://www.floridadisaster.org/Catastrophic_Planning/)) uses similar socioeconomic characteristics to define vulnerable population segments for a Category 5 hurricane scenario (“Hurricane Ono”). Included in the project’s “Consequences” document (Florida Division of Emergency Management, 2008) are estimates of expected counts of damaged homes (derived from the FEMA HAZUS model) and statistics on “vulnerable and special needs” households. Although statistics at a county level are discussed, specific municipal locations for these populations have not been explicitly noted in project publications. The worst-case Category 5 Ono storm scenario predicts that, of the 706,000 households in Broward County, more than 90 percent will experience major damage or complete destruction, and the storm will potentially displace more than 1.3 million people. The huge scope of the Hurricane Ono project, although important, does not address less catastrophic storms that still have a severe localized impact.

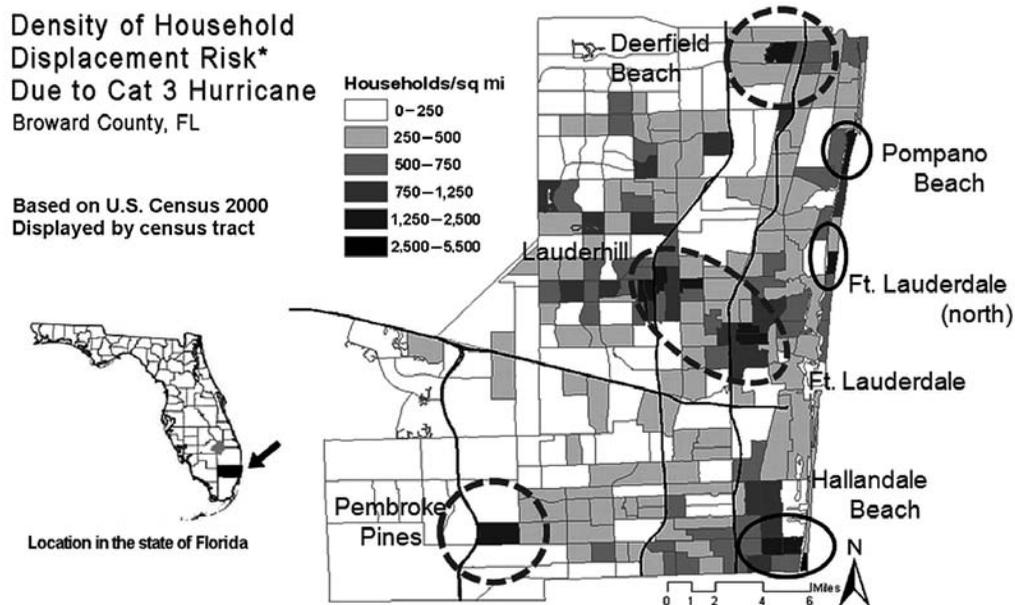
The lack of coordinated municipal planning to address DDHs expected from severe storms may, in part, derive from a lack of awareness (Paterson, 1998) related to the size of the potential problem at the local level (Levine, Esnard, and Sapat, 2007). In an effort to close the local awareness gap, Welsh (2008) developed a simplified model to estimate the density and locations of socially vulnerable households at risk to displacement (that is, DDHs) for the 279 census tracts within Broward County. The model accounted for (1) location, hurricane surge, and wind strength (assuming a uniform Category 3 storm) and (2) a set of socioeconomic census variables similar to those used by the FLCP initiative and in Cutter and Emrich’s (2006) coastal risk analysis. To obtain the disadvantaged subset, the model heavily weighted households with an annual income of less than \$15,000 and then added an adjusted aggregate of households with residents who are younger than 18 years or older than 65 years, racial minorities, renters, and workers in service or agricultural occupations.

The model results highlighted that many of the areas with high densities of potential DDHs are well inland from the coast (exhibit 2). Locations have high displacement risk potential for a combination of reasons. Three high-risk areas along the coast—Hallandale, Fort Lauderdale, and Pompano—have risk factors that include densely built areas, high concentrations of low-income households (incomes less than \$15,000 annually), and significant numbers of households with service industry occupations. By contrast, the Pembroke Pines region also has a high-density factor, but with a high concentration of households with residents older than 65 years of age.

Exhibit 3 provides a summary of actual DDH count estimates for a subset of Broward municipalities (defined by groups of census tracts) and emphasizes the potentially large scale of the DDH problem that can occur from a storm the size of a Category 3 hurricane. Using only the inland Pembroke Pines municipality as an example, the model estimates 7,341 (13.3 percent) DDHs from a Category 3 storm (exhibit 3). When comparing the displacements from a Category 3 storm with the more-than-200 displacements across the entire county from Category 1 Hurricane Wilma, the authors could easily surmise that the local impact from a Category 3 storm will require *dramatically* more resources, planning, and coordination to facilitate the transition of such a large number of households to permanent homes. To address the planning framework expected to support these high numbers and percentages, this article examines lessons learned in New Orleans from Hurricane Katrina.

Exhibit 2

Distribution and Density of Disadvantaged Displaced Households in Broward County, Florida



* Based on a combination of physical and social vulnerability factors.

Sources: Welsh (2008); www.2.census.gov/census_2000/datasets/Summary_File_3/Florida

Exhibit 3

Ratio of Potential Displaced Households to Total Households for Sample Municipalities in Broward County, Florida

Broward County Municipality	Census Tracts in City	Area (sq mi)	Total Households	Density of Displaced Households per sq mi (mapped)	Number of Households With High Displacement Potential	Ratio of Displaced Households per Total Households (%)
Fort Lauderdale	32	28.3	69,412	533	15,063	21.7
Pembroke Pines	18	47.3	55,199	155	7,341	13.3
Pompano Beach	14	20.5	36,953	350	7,165	19.4
Deerfield Beach	12	15.1	32,844	457	6,914	21.1
Hallandale Beach	7	5.0	19,180	1,212	6,101	31.8
Davie	12	36.8	28,657	126	4,655	16.2
Lauderhill	10	6.9	22,951	651	4,513	19.7
North Lauderdale	4	3.7	11,527	556	2,075	18.0

Source: Modified from Welsh (2008)

Lessons From Hurricane Katrina: Closing the Predisaster Planning Gap

In the months—and then years—following the landfall of Hurricane Katrina in 2005, New Orleans officials found themselves working through recovery delays driven in large part by three separate time-consuming, politically charged, postdisaster planning iterations. According to Olshansky et al. (2008: 275), the first “politically poisonous” recovery plan, created by the Urban Land Institute, failed to incorporate community input from many socially vulnerable areas of the city. The second, more community-driven plans, orchestrated by the Lambert Advisory LLC, eluded success by not coordinating with the City Planning Commission and the Board of Directors of the Governor’s Louisiana Recovery Authority (LRA), which managed recovery funding (Olshansky, 2006). The final “Unified New Orleans Plan” added substantial input from widely dispersed community residents, included recovery scenario preferences, and offered a prioritized list of recovery projects specific to city districts. In late May/early June 2007, almost 2 years following the storm, that final plan obtained approval from the local planning commission and LRA, which began the flow of recovery funds.

Research by Olshansky et al. (2008) underscores a key ingredient that New Orleans was missing: an agreed-upon planning recovery framework established *before* the storm that would enable the city to quickly procure federal funds for reconstruction. More specifically, the lack of a plan focused on vulnerable household recovery left thousands of New Orleans DDHs in long-term limbo. In essence, the community was missing a “plan to plan” (Nelson, Ehrenfeucht, and Laska, 2007) that could offset the intense time pressure to rebuild something *now*, regardless of its future resiliency or community support. The New Orleans experience highlighted a need for a planning framework that included preferred recovery scenarios and project prioritizations derived with coordinated community consensus (Olshansky, 2006; Olshansky et al., 2008). The results also demonstrated that such planning frameworks require the kind of time and coordination available only before any disaster, when controversial decisions, especially those related to socially vulnerable populations, can be made without postdisaster pressure to act (Nelson, Ehrenfeucht, and Laska, 2007; Olshansky et al., 2008).

Furthermore, a predisaster planning framework offers opportunities to develop mitigation strategies that can leverage community assets in ways that counterbalance social inequities and accelerate a local area’s disaster recovery time (Berke et al., 1993; Burby, 1998; Schwab et al., 1998; Simpson, 2006). In general, the same variables that contribute to the day-to-day sustainable nature of a community also contribute to its disaster resiliency (Heinz Center, 2002). Simpson (2006) and the Heinz Center (2002) suggest that risk factors (including displacement risk factors) can be affected by such things as community disaster-awareness training programs, economic incentives for private and business mitigation (for example, hurricane shutters, business continuity plans), and funded community disaster simulation exercises. And, finally, predisaster plans can focus public attention and debate on the mitigation and recovery issues related to existing housing developments in high-risk areas. Predisaster planning gives communities the chance, before a storm occurs, to participate in decisions that prioritize the reconfiguration of these existing high-risk developments (Schwab et al., 1998) while simultaneously identifying potential “sending zone” options that would be used to permanently relocate these homes (Berke and Campanella, 2006).

The Hurricane Katrina experience demonstrated that the National Response Plan (NRP) in place at the time missed this important “sending zone” concept specifically related to household displacement. The NRP lacked any methodology, preparation, or baseline metrics for managing displaced populations and also lacked a relocation plan for the displacement of a large urban population center. No scenario played out within the NRP that considered the possibility of an entire region losing its infrastructure and grid connectivity. As Mohr et al. (2008) pointed out, the NRP assumed that another city or large population center nearby could temporarily absorb a displaced population. Hurricane Katrina exposed the flaws within this assumption. Ongoing research points to the example of the large number of socially disadvantaged households that still have not returned home following Hurricane Katrina as the basis for the need to identify and prepare for similar long-term displacements in other hurricane-prone regions (Levine, Esnard, and Sapat, 2007).

Fortunately, Hurricane Katrina’s lessons may be providing a new model, albeit imperfect, for postdisaster planning solutions. Olshansky et al. (2008), in their analysis of post-Hurricane Katrina recovery planning, identified how federal-level funding hurdles had to be (and are still being) locally overcome and highlighted the important role that the LRA is now playing. The governor-mandated LRA board derives its success from (1) serving as a central conduit for the multitude of federal funding sources, (2) including members with diverse expertise from areas throughout the geographic region, and (3) acting as a policy body to form procedural frameworks for disaster recovery (Olshansky et al., 2008).

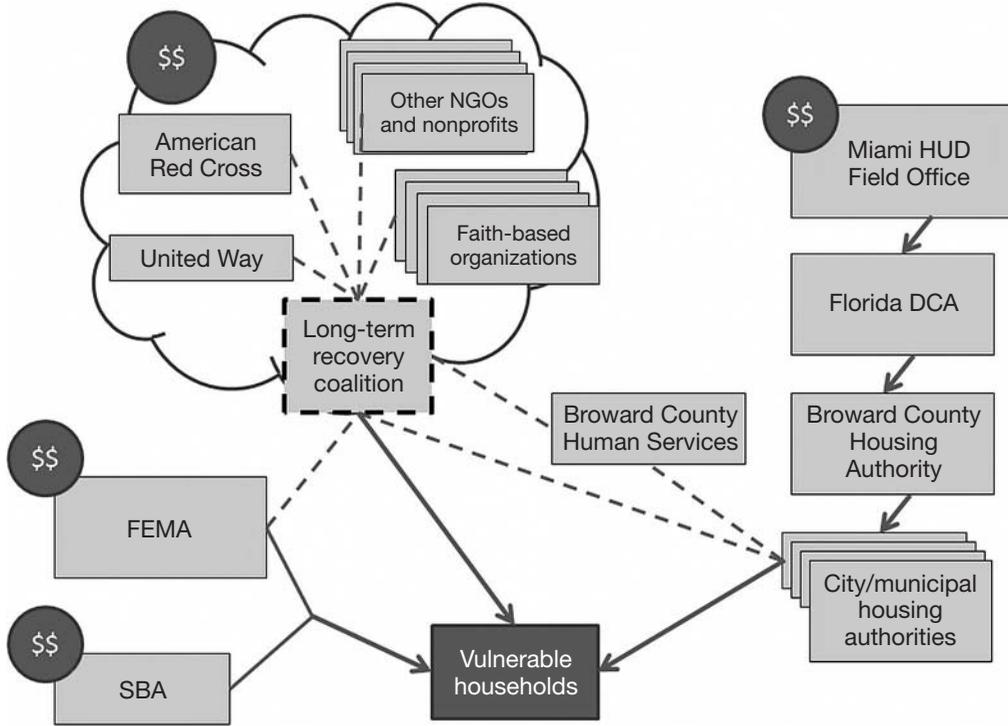
Lessons From Hurricane Wilma: Closing the Planning Agency Gap

Two successful elements from the Louisiana postdisaster planning experiences, and from the LRA model in particular, are reflected in the recovery approaches that Broward County used to reestablish its more-than-200 DDHs after Hurricane Wilma’s destruction. The Broward County LTRC, like the LRA, brought diverse members from the public and private NGO community together, and the committee acted as a coordinator for funds associated with helping DDHs make the transition to permanent homes. The LTRC, operating with private grant funds under the umbrella of the United Way 501(c)(3), coordinated with FEMA, multiple private and faith-based NGOs, the Broward County Human Services office, and a municipal housing agency to complete the transitions. It is important to note that FEMA has begun to promote similar LTRCs for any community at risk from a significant disaster event through its Long-Term Community Recovery Program.

Exhibit 4 offers a conceptual framework for the complex array of agencies that were actually involved with the LTRC efforts to help the more-than-200 DDHs make the transition to permanent homes. Note that vulnerable households have direct access to at least three sources for disaster-related assistance: FEMA grants or SBA loans (depending on household income qualifications), disaster-related U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) funds available through municipal housing authorities, and private grant funding from private NGOs.

Exhibit 4

The Complex Web of Postdisaster Housing Funds



DCA = Department of Community Affairs. FEMA = Federal Emergency Management Agency. HUD = U.S. Department of Housing and Urban Development. NGOs = nongovernmental organizations. SBA = Small Business Administration.

The interviews conducted during the research highlighted that one of the most significant challenges for DDHs was obtaining the funds to reestablish their homes. Without coordinated assistance from the LTRC, a DDH would have needed to independently navigate the FEMA/SBA decision tree and/or apply for CDBG assistance through its local municipality. FEMA grant requests may result in a potentially confusing denial response that redirects applicants to a separate SBA application process based on their household income. In addition, CDBG applications to the city can require procurement approval from three additional layers of government: county, state, and local HUD offices. Although additional services and NGO funds were available through case management with the American Red Cross, it is not difficult to understand how the independent case management system organized by FEMA³ resulted in more than 200 households still looking for a permanent housing solution 15 months after the storm.

The LTRC solution, encouraged by FEMA, solved two problems. As an umbrella organization under the private 501(c)(3) of the United Way, the LTRC brought together diverse case manage-

³ FEMA is restricted by national Stafford Act privacy issues from sharing some pertinent personal DDH information with county Human Services case managers.

ment information from the multiple NGOs, the county, and especially FEMA, which is permitted to share private “routine use” information with NGOs. As an agency that coordinated with federal, county, municipal, NGO, and faith-based organizations, the LTRC was empowered with information to act as a fair coordinator for the diverse sources of public and private funds available to help the remaining DDHs make the transition into permanent, affordable homes.

Like the LRA, the Broward LTRC acted as both a coordinating entity that brings together diverse players and a coordinator for the diverse funding options available after a storm. None of the LTRC participant organizations, however, is directly associated with private, municipal, or county planning offices. By design, the LTRC maintains only loose coordination among the participants, who meet voluntarily and infrequently in the nonhurricane season, primarily for the purpose of maintaining open channels of communication. Unlike the LRA, however, the crucial third role of a coordinated planning and policy body dedicated to preparing for disaster housing recovery remains elusive.

Without such a body, Broward County’s next severe storm could easily lead to year-long planning delays similar to those seen in New Orleans following Hurricane Katrina. The authors believe that the relatively small scope of the Category 1 Hurricane Wilma in Broward County unfortunately allowed most municipalities to completely rely on the coordinated services of the LTRC, the county Human Services department, and isolated local housing authorities to deal with their small number of DDHs. This result almost certainly masked any need to establish municipal growth plans that continuously integrate coordinated preferred poststorm recovery scenarios and housing recovery priorities. Thus, the complex coordinated municipal growth plans that will be needed to accommodate the many thousands of DDHs expected from a severe storm still appear undefined. This planning shortfall, which even an effective LTRC is not designed to resolve, cannot be understated. As Hurricane Katrina demonstrated, politicians and sympathetic news reports can generate huge sums of generically pledged funds. But allocation of those funds to actual recovery projects can occur only when the agreed-upon planning is firmly in place.

If this issue exists in a Florida county such as Broward, where severe storms are routinely expected, the same planning shortfall almost certainly exists in many less-experienced regions along the entire U.S. Atlantic and Gulf coasts. To address this issue, the authors developed a set of recommendations for closing the local recovery planning gap.

Recommendations for Closing Local Recovery Planning Gaps

The recommendations in this article focus on one overriding need for an independent planning agency that would continuously coordinate with municipal planners to integrate preferred recovery scenarios and recovery priorities into county and municipal comprehensive plans as they evolve year after year. This agency would fill the need for developing the “plan to plan.” To ensure a more permanent network structure, the agency should operate as a standalone 501(c)(3) organization with a dedicated source of public (federal or state) grant funding. In this way, ongoing coordination among FEMA, HUD, diverse NGOs, county agencies (disaster planning, growth management, Human Services), municipal agencies, and private business can be maintained even if private funding interest dissipates as several years pass without a severe storm. Grant funding could be

potentially obtained through FEMA's Hazard Mitigation Assistance programs, including the Hazard Mitigation Grant Program, Pre-Disaster Mitigation program, or Severe Repetitive Loss program (FEMA, 2009).

Specific planning agency tasks would include the following:

1. Ensure all municipal postdisaster plans reflect best practices of the county and other municipalities.

The review of several county municipal comprehensive plans indicates that planning for postdisaster housing recovery has either only just begun or remains completely outside the perceived scope of municipal responsibility. A few municipalities have begun to develop detailed postdisaster policy that specifically addresses how to prioritize funds and streamline code approvals to repair homes and businesses. Most, however, have no dedicated planning staff to address recovery. The Broward County disaster housing plan, for example, addresses short-term accommodations after a storm (hotels, rentals, cruise ships, etc.), but specific planning to address helping DDHs make the transition from temporary to permanent housing after a disaster remains essentially unaddressed at all levels. The new, dedicated 501(c)(3), acting as an independent planning agency, would have an opportunity to accomplish the following:

- a. Ensure that best practices are distributed to all municipalities.
- b. Begin establishing a housing recovery framework within all comprehensive plans.
- c. Potentially foster grant-funding-related collaborations between NGOs and/or between smaller adjacent municipalities that share similar growth visions and recovery hurdles.
- d. Act as a member of a broader coordinating body, possibly grouped within the local HUD office regions, to establish cross-regional recovery frameworks for a wide range of storms—that is, from storms that are only locally severe to storms that affect multiple counties or even the entire state.
- e. Establish memorandums of understanding between county and municipal planning agencies that acknowledge support for established recovery priorities.

2. Encourage comprehensive plan integration that reflects DDH profiles for a range of storm scenarios.

To prevent postdisaster temporary housing from becoming de facto permanent housing solutions, the agency should work across municipalities to encourage comprehensive planning that leverages existing growth management objectives to identify where DDHs could possibly relocate within the county (or adjacent counties). The planning options would also depend on the severity of the storm. Plans should reflect information on the locations and characteristics for a wide range of potential DDH counts to determine how to intelligently relocate certain household profiles. For example, single mothers near schools and elderly households near public transportation and appropriate social/medical support services. Most importantly, priorities for redevelopment and relocation should include ongoing public input from members of the communities affected by the plans.

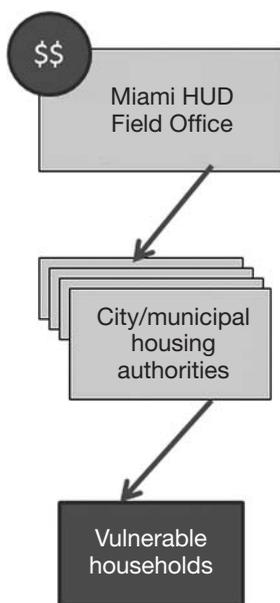
3. Establish clear, streamlined, flexible procurement procedures for disaster-related HUD, private, and NGO grant funds.

Beyond establishing the vision for recovery, plans should serve as the required framework for the spending of recovery funds. In terms of recovery housing for DDHs, gaining access to the largest funding source, HUD disaster-related grants, depends heavily on the ability to meet procurement guidelines. Standard HUD funding procedures **not** related to disasters allow local “HUD-entitled” municipalities (that is, those with identified areas in need of development/redevelopment assistance) to apply directly to the regional HUD office to obtain CDBG funds (exhibit 5). Postdisaster-related CDBG funds from HUD, however, currently require a much more complex fund procurement process that must pass through separate requirements from both the county housing office and the Florida Department of Community Affairs (DCA) (right path on exhibit 4). The interviews revealed that even the 15 HUD-entitled municipalities in Broward County familiar with the application process experienced frustrating delays with the additional bureaucracy imposed by the added county and state procurement layers following Hurricane Wilma. Without some shared education, the other county municipalities lacking any HUD procurement experience will almost certainly experience longer funding delays as they attempt to navigate the procurement learning curve.

By working with municipalities, the county, the DCA, and HUD to streamline procurement processes before the next storm occurs, a dedicated 501(c)(3) planning agency has the opportunity to accelerate disaster fund distribution while simultaneously educating municipal stakeholders to ensure funds can be acquired as quickly as possible. Finally, as part of the streamlining process,

Exhibit 5

HUD’s Standard CDBG Procurement Process



CDBG = Community Development Block Grant (program). HUD = U.S. Department of Housing and Urban Development.

the dedicated planning agency should work with HUD to ensure that procured funds are applied as effectively as possible. This effort means ensuring municipal agencies can have flexibility using these funds to respond to specific local circumstances (Olshansky, 2006). Following the devastation brought by Hurricane Wilma, for example, disaster grant funds dedicated exclusively to “hardening of existing structures” restricted the ability of a municipality with a high concentration of mobile homes to fund programs related to moving residents into more resilient, affordable homes.

As an independent 501(c)(3), the dedicated agency would retain the added advantages currently demonstrated by the LTRC: the ability to coordinate funds from a multitude of public, private, and NGO sources and the ability to coordinate loosely with a diverse cross-section of experts from throughout the region to develop innovative solutions to unexpected housing challenges after a severe storm.

Conclusion

Households displaced by Hurricane Andrew contributed to the transformation of rural Broward County into a sprawling suburb after 1992. Yet 16 years later, coordinated housing recovery plans that address the household displacement consequences from severe storms remain elusive. The extensive procurement delays associated with the lack of a preestablished recovery-planning framework in New Orleans after Hurricane Katrina have offered a strong incentive for planners in other high-risk regions to avoid the same mistake. Post-Hurricane Katrina research also suggests that organizations of diverse skilled professionals, which can both “plan to plan” before a storm and then act to coordinate funds after a storm, offer an excellent opportunity to streamline housing recovery.

Interested parties need to look back no further than the Category 3 Hurricane Ike strike on the Texas coast in September 2008 to reiterate the importance of planning before the storm. More than 2 months after the strike, the governor appointed a Commission for Disaster Recovery and Renewal to “create a plan to speed recovery and accelerate economic development.” Their initial task: mitigate the housing shortages for the thousands still having difficulty finding alternatives (*Government Technology Magazine*, 2008). The commission’s report to the governor was scheduled for June 2009, 9 months after the storm.

In Broward County, the more-than-200 DDHs following Category 1 Hurricane Wilma in 2005 successfully made the transition to permanent homes by 2007 despite the lack of a clear predisaster planning framework. The analysis and research presented in this article indicate *much* larger DDH counts will likely occur throughout the county from a more severe storm. The county, however, suffers from gaps in local recovery planning similar to the problems experienced in New Orleans after Hurricane Katrina washed away entire neighborhoods—and similar to what has recently occurred in Texas. Currently, local planners have essentially abdicated responsibility for facilitating the transition of DDHs from evacuation shelters or interim accommodations to permanent homes. Innovative, ad hoc solutions developed by a coalition composed of FEMA, county human service agencies, and private nonprofit agencies managed to fill this gap for hundreds of DDHs following Hurricane Wilma. But the inherent informal and reactive nature of this ad hoc network highlights missing planning elements that will be necessary to scale this solution to accommodate the thousands of DDHs expected with a more severe storm.

Planners, with core competencies in areas such as land use, housing, transportation, and economic development, have the skills to prepare for the complex recovery challenges posed by these large counts of DDHs. By extending the success of the LTRC network model into a dedicated, formal 501(c)(3) planning agency, planners can begin the ongoing process of defining and integrating best practices, preferred recovery scenarios, and recovery priorities into municipal comprehensive plans. This process should recognize their community's potential to either suddenly lose or receive large numbers of DDHs after a severe hurricane. With a charter to convene with FEMA, HUD, and a complete set of community stakeholders on a regular basis, such an agency can begin building community consensus for a recovery planning framework that addresses the challenges of effectively and efficiently navigating the grant-funding procurement processes needed to reestablish DDHs before the chaos of the next storm.

Acknowledgments

The authors received research support from a National Science Foundation (NSF) grant, #CMMI 0726808. The views, findings, and opinions in the article, however, are those of the authors and are not necessarily endorsed by NSF. Many of the research conclusions presented in the article derive from an agglomeration of information obtained during interviews with professionals who work directly, and often passionately, on issues of disaster recovery in Southeast Florida. They include representatives from Broward County government agencies involved with emergency preparedness, growth management, and human services; the planning and housing offices in several Broward County municipalities; the Federal Emergency Management Agency; and several nonprofit organizations, including the American Red Cross, The United Way, and a small nonprofit agency directly involved with posthurricane housing solutions following Hurricane Wilma. The willingness of these professionals to share their personal experiences, frustrations, and recommendations added significantly to insights and cannot be understated. We thank them for their generosity. We also acknowledge the invaluable feedback, suggestions, and constructive criticism offered by Mark D. Shroder, managing editor, *Cityscape*, and the anonymous reviewers.

Authors

Mark Welsh is a 2008 alumnus of the School of Urban and Regional Planning, Florida Atlantic University.

Ann-Margaret Esnard is a professor and Director of the Visual Planning Technology Lab in the School of Urban and Regional Planning, Florida Atlantic University.

References

Benedick, Robin. 2002. "Hurricane Andrew Left Legacy of Higher Housing Costs," *The Sun Sentinel*, August 20. Available at <http://www.sun-sentinel.com/news/weather/hurricane/sfl-sbuildaug20,0,5553762.story?page=2>.

- Berke, Philip R., and Thomas J. Campanella. 2006. "Planning for Postdisaster Resiliency," *The Annals of the American Academy of Political and Social Science* 604 (1): 192–207.
- Berke, Philip R., Jack D. Kartez, and Dennis E. Wenger. 1993. "Recovery After Disaster: Achieving Sustainable Development, Migration and Equity," *Disasters* 17 (2): 93–109.
- Brown, Lester R. 2006. "Global Warming Forcing U.S. Coastal Population Move Inland." Earth Policy Institute website: <http://www.earth-policy.org/Updates/2006/Update57.htm> (accessed November 11, 2008).
- Burby, Raymond J., ed. 1998. *Cooperating with Nature: Confronting Natural Hazards with Land Use Planning for Sustainable Communities*. Washington, DC: Joseph Henry Press.
- Chakraborty, Jayajit, Graham A. Tobin, and Burrell E. Montz. 2005. "Population Evacuation: Assessing Spatial Variability in Geophysical Risk and Social Vulnerability to Natural Hazards," *Natural Hazards Review* 6 (1): 1–23.
- Cutter, Susan L., Bryan J. Boruff, and W. Lynn Shirley. 2003. "Social Vulnerability to Environmental Hazards," *Social Science Quarterly* 84 (1): 242–261.
- Cutter, Susan L., and Christopher T. Emrich. 2006. "Moral Hazard, Social Catastrophe: The Changing Face of Vulnerability along the Hurricane Coasts," *The Annals of the American Academy of Political and Social Science* 604 (1): 102–112.
- Dash, Nicole, Betty H. Morrow, Juanita Mainster, and Lilia Cunningham. 2007. "Lasting Effects of Hurricane Andrew on a Working Class Community," *Natural Hazards Review* 8 (1): 13–21.
- Federal Emergency Management Agency (FEMA). 2009 (June 1). "FY 2010 Hazard Mitigation Assistance Unified Guidance: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Flood Mitigation Assistance Program, Repetitive Flood Claims Program, Severe Repetitive Loss Program." FEMA website: <http://www.fema.gov/library/viewRecord.do?id=3649> (accessed June 10, 2009).
- . 2008 (September 19). "Hurricane Katrina/Rita Recovery Operations Resume." FEMA website: <http://www.fema.gov/news/newsrelease.fema?id=45988> (accessed November 16, 2008).
- . 2006 (July 7). "Hurricane Katrina Recovery Update: Week 44." FEMA website: www.fema.gov/news/newsrelease.fema?id=27504 (accessed November 16, 2008).
- . 2005. "Long-Term Community Recovery Planning Process: A Self-Help Guide." FEMA website: <http://www.fema.gov/pdf/rebuild/trc/selfhelp.pdf> (accessed December 1, 2008).
- Government Technology Magazine*. 2008 (November 21). "Gov. Rick Perry Announces Texas Disaster Recovery and Renewal Commission." Available at http://www.govtech.com/gt/articles/563671?utm_source=newsletter&utm_medium=email&utm_campaign=Emergency%20Management_2008_11_21.
- H. John Heinz III Center for Science, Economics and the Environment (Heinz Center). 2002. *Human Links to Coastal Disasters*. Washington, DC: H. John Heinz III Center for Science, Economics and the Environment.

Hartwig, Robert P. 2002. Florida Case Study: Economic Impacts of Business Closures in Hurricane Prone States. Working paper. New York: Insurance Information Institute.

Jagger, Thomas, James B. Elsner, and Xufeng Niu. 2001. "A Dynamic Probability Model of Hurricane Winds in Coastal Counties of the United States," *Journal of Applied Meteorology* 40: 853–863.

Levine, Joyce, Ann-Margaret Esnard, and Alka Sapat. 2007. "Population Displacement and Housing Dilemmas Due to Catastrophic Hurricanes," *Journal of Planning Literature* 22 (1): 3–15.

Mohr, Johnathon A., Steven J. Parillo, Jean Will, and Gwenn M. Allen. 2008. Population Displacement Incidents: Consideration for the North American Context. Philadelphia University Working Paper. Philadelphia University School of Science and Health.

Nelson, Marla, Renia Ehrenfeucht, and Shirley Laska. 2007. "Planning, Plans, and People: Professional Expertise, Local Knowledge, and Governmental Action in Post-Hurricane Katrina New Orleans," *Cityscape: A Journal of Policy Development and Research* 9 (3): 23–52.

Olshansky, Robert B. 2006. "Planning after Hurricane Katrina," *Journal of the American Planning Association* 72 (2): 147–153.

Olshansky, Robert B., Laurie Johnson, Jedidiah Horne, and Brendan Nee. 2008. "Planning for the Rebuilding of New Orleans," *Journal of the American Planning Association* 74 (3): 273–287.

Paterson, Robert G. 1998. "The Third Sector: Evolving Partnerships in Hazard Mitigation." In *Cooperating with Nature: Confronting Natural Hazards with Land Use Planning for Sustainable Communities*, edited by Raymond J. Burby. Washington, DC: Joseph Henry Press: 203–232.

Peacock, Walter G., Betty H. Morrow, and Hugh Gladwin. 1997. *Hurricane Andrew: Ethnicity, Gender and the Sociology of Disasters*. New York: Routledge.

Schwab, Jim, Kenneth Topping, Charles C. Eadie, Robert E. Deyle, and Richard A. Smith. 1998. *Planning for Post-Disaster Recovery and Reconstruction*. Planning Advisory Service Report Number 483/484. Washington, DC: American Planning Association.

Simpson, David M. 2006. Indicator Issues and Proposed Framework for a Disaster Preparedness Index (DPI)—Draft 1.0. Louisville, KY: University of Louisville, Center for Hazards Research and Policy Development, Fritz Institute Disaster Preparedness Assessment Project. 18 p.

Weeks, Linton. 2006. "New Orleans Locals Think Katrina's Toll Is Still Rising," *The Washington Post*, February 19, A03. http://www.washingtonpost.com/wp-dyn/content/article/2006/02/18/AR2006021801152_pf.html (accessed November 12, 2008).

Welsh, Mark G. 2008. *Planning for Potential Displacement of Disadvantaged Households Due to Hurricane Impact: A Focus on Broward County, Florida*. Planning project. Florida Atlantic University, School of Urban and Regional Planning.

Additional Reading

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.

Comerio, Mary C. 1998. *Disaster Hits Home: New Policy for Urban Housing Recovery*. Los Angeles: University of California Press.

Federal Emergency Management Agency (FEMA). 2004. *Using HAZUS-MH for Risk Assessment How-To Guide*. FEMA 433: HAZUS®-MH Risk Assessment and User Group Series: F-14.

Florida Division of Emergency Management. 2008 (May). "Florida Catastrophic Planning: Hurricane Ono Consequence Projections, Version 7." FloridaDisaster.org website: http://www.floridadisaster.org/eoc/eoc_Activations/CatPlan/Reports/Consequence_Projections_Full.pdf (accessed September 16, 2008).

———. 2007 (November 5–8). "Florida Catastrophic Planning Workshop Report, Palm Harbor, FL." FloridaDisaster.org website. http://www.floridadisaster.org/eoc/eoc_Activations/CatPlan/Reports/FLCP_November_2007_Workshop_Report.pdf (accessed September 20, 2008).