

ASSESSMENT OF HURRICANE-VULNERABLE POPULATIONS IN YBOR CITY, TAMPA, FLORIDA

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1. INTRODUCTION

During the hurricane season of 2005, the United States witnessed unprecedented events. Particularly, the frequency and magnitude of storms like Hurricane Katrina revealed to the nation that cities did not have adequate emergency plans. The country watched in horror as crucial aspects of storm preparation and recovery were fumbled. Now, the message has come down from the highest level that emergency plans regarding natural disasters need to be reevaluated and retooled to ensure that every person is being cared for equally (Townsend, 2006).

Although 2005 was an abnormally active season, research indicates that we are likely to experience another decade or two of above average hurricane activity (Chelliah and Bell, 2004). There is, therefore, the need for sound emergency planning and management. This need has been expressed particularly by the numerous victims of the 2005 hurricane season and the people who fear that they may be affected by future storms (AP, 2006). This cry for better emergency plans came out of the numerous examples of failed plans, like underestimating the desire of critical personnel to evacuate or using army vehicles to bring fuel to civilian vehicles, from hurricanes such as Katrina and Rita in the 2005 season and Hurricane Charley from the 2004 season. The largest example of mismanaged emergency relief and recovery efforts came out of New Orleans in their response and preparation for Hurricane Katrina.

Hurricane Katrina struck the Gulf Coast on August 29, 2005, and caused billions of dollars in damages in New Orleans and other cities along the coast (Litman, 2005). The largest failure found in New Orleans' disaster plans was that they did not address the needs of all of its citizens. The plans essentially divided the population of New Orleans into two groups, those who had the means to transport themselves to safety via a personal vehicle and those who required extra assistance from the city or were dependent on city transit. The plans for the first group worked relatively well, as those people with cars were able to commute out of the city; however, there were residents who had the means to evacuate and either chose to stay or did not take action in time (Harrington *et al.*, 2006). Although commuters ran into some congestion, they were able to travel out of the city using all lanes on the major highways (Litman, 2005). The major problem with New Orleans' emergency plans came from its attempts (or lack thereof) to address the needs of the second group.

Many elements factored into New Orleans' failure to move people who had no access to personal vehicles. First, the city ignored and downplayed the size of the population that would be dependent on city transit in times of a hurricane. Wolshon (2002) estimated that 200,000 to 300,000 people in New Orleans did not have access to reliable personal transportation and would need a means of transportation to be provided to them by the city. Although there was awareness of a large population that would require help to evacuate, the effort to assist this vulnerable population was woefully inadequate. Second, those people who wanted to leave the city by means of public transit were expected to pay for it. This became a major obstacle in areas with low-income residents (Litman, 2005). Third, when the time came for the bus system to spring into action, city officials were surprised to see that city transit bus drivers were not showing up to work. Additionally, the Federal Emergency Management Agency (FEMA) had failed to deliver extra buses because the extra buses were not kept on high ground and were quickly inundated by the flood waters.

These failures could have been avoided and many lives could have been saved through better planning. The city of New Orleans should have taken the estimates of this dependent population more seriously and should have begun to put more detail into plans addressing this vulnerable population. The initial plan for using as many buses as possible to move people out of the city was a good start, but the city failed to anticipate the behavior of critical personnel in times of crisis in their plan. This plan simply assumed that those people who were qualified to drive buses were going to show up regardless of their own personal circumstances. The city could have insured the success of the bus plan by designating the transit staff as essential, meaning that they would be expected to work during an emergency. This designation would give the staff the incentive to work, as they would be allowed to evacuate their own families (Litman, 2005). It is important to remember that the emergency planners should not hold sole responsibility for the failures in New Orleans. Those people in charge of carrying out and implementing the plans share the same amount of accountability for the failures to respond to the storm. Hopefully, these failures have taught emergency planners to be more compassionate with their plans and emergency personnel to be more careful in carrying out smart and compassionate plans.

The city of Tampa and its over 303,000 residents (U.S. Census Bureau, 2000a) have enjoyed good fortune in dodging hurricanes for over eighty years. The last hurricane to directly impact the Tampa Bay area was the unnamed storm of 1921. In October 1921, the estimated category 3 storm made landfall just north of Tampa Bay, battered the city with winds exceeding 100 miles per hour, and created a 10 to 12 foot storm surge in the Bay. The storm caused between one and ten million dollars worth of damage and was responsible for six deaths (Ballingrud, 2002). If the circumstances of this storm or a storm like Katrina were to hit the city today, public and emergency officials would need to act quickly to execute sound detailed emergency plans to help evacuate vulnerable populations. The aims of this study are to identify vulnerable pockets within Tampa's population and consider if the city has adequate plans for this group.

2. METHODS

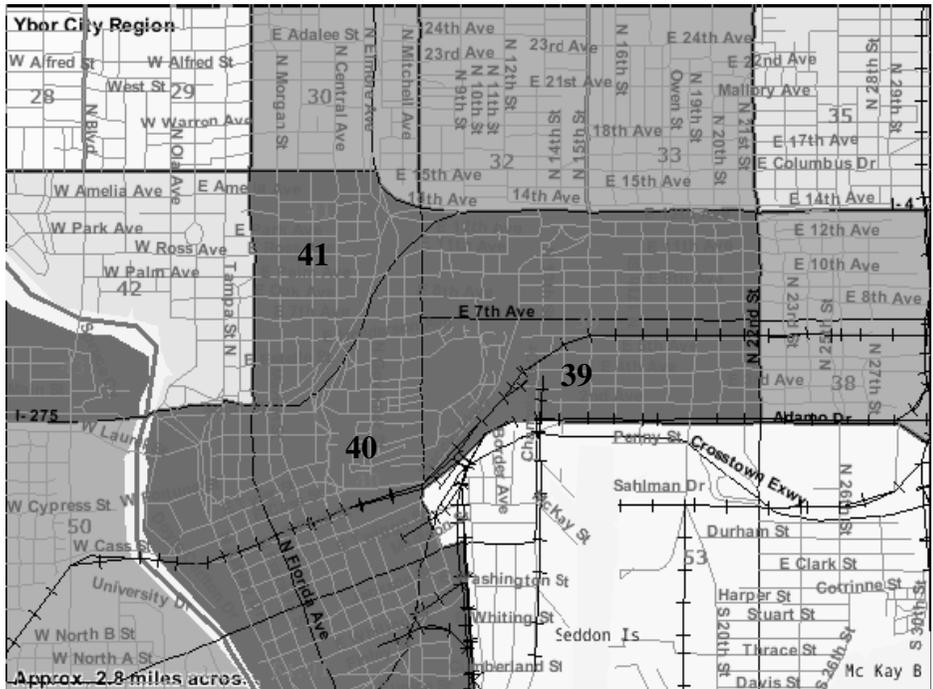
The area chosen for this case study is within the boundaries containing census tracts 39, 40, and 41, including the heart of Ybor City. These three census tracts were chosen because, among Tampa area census tracts, they have the highest proportions of residents without access to any vehicle (Table 1). This vulnerable population can be found just to the northeast of the Tampa city center and only 192 meters to the north of Ybor Channel (see Figure 1). The area spans nearly four square kilometers and has an elevation range of about three meters at its southernmost point to thirteen meters at its northernmost point. It is bordered on the west by North Florida Avenue and bordered to the north by East Columbus Drive and the Interstate 4 corridor. On the east the area is cut off by North 22nd Street; the southern border runs along Adamo Drive. There are three major highways: Interstate 275 transects the area and serves as

a divider for census tracts 40 and 41, Interstate 4 forms the northern boundary of tract 39, and the Crosstown Expressway runs along the southern boundary of tract 39. Rail lines run through the heart and along the southern border of tract 39 (U.S. Census Bureau, 2000b).

TABLE 1
KEY VULNERABILITY DEMOGRAPHICS, 2000
Source: U.S. Census Bureau (2000)

| | City of Tampa | Census Tract 39 | Census Tract 40 | Census Tract 41 |
|---|---------------|-----------------|-----------------|-----------------|
| Total population | 303,447 | 1,660 | 1,449 | 1,176 |
| Percent African American | 26.1 | 69.8 | 88.7 | 62 |
| Percent population out of workforce above the age of 16 | 36 | 56.5 | 59.5 | 58.1 |
| Median household income (\$) | 34,415 | 11,217 | 10,026 | 10,152 |
| Percent of population above the age of 25 with a high school degree or equivalent | 77.1 | 40.6 | 47 | 49.4 |
| Percent of housing units built before 1980 | 71.7 | 92.4 | 90.6 | 81.1 |
| Number of owner-occupied housing units | 68,589 | 76 | 30 | 129 |
| Number of renter-occupied housing units | 56,169 | 700 | 451 | 418 |
| Percent of housing units with no access to vehicles | 12.9 | 46.2 | 55.2 | 50.1 |

FIGURE 1
YBOR CITY AND ITS CENSUS TRACTS (39, 40, 41)



Data from the 2000 United States Census was used to identify the research area and its demographic and mitigating characteristics, and explanatory characteristics like income, education, and lack of access to vehicles. A social impact assessment of Ybor City was conducted using the principles outlined by the U.S. Department of Transportation (1996). These principles include defining a study area, developing a community profile, analyzing impacts, identifying solutions, and documenting findings.

3. RESULTS

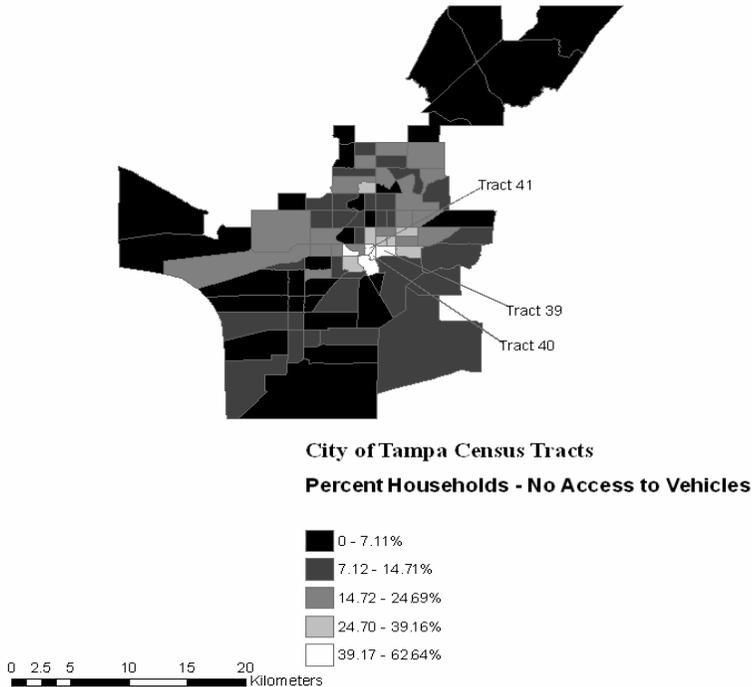
Ybor City is an area in Tampa notorious for its wild nightlife, low income residents, historic buildings, and its residents' inability to access personal vehicles. The total population of this area is about 4,300 residents, according to the 2000 Census. This population is predominantly African American with tracts 39, 40, and 41 showing 69.8 percent, 88.7 percent, and 62 percent of their population as African American, respectively (Table 1). Over half of the population over 16 years of age are not in the labor force, with tract 40 leading the area with 59.5 percent, followed by tract 41 at 58.1 percent and tract 39 with 56.5 percent (Table 1). The dominant employing industries in the area are in service and sales, as Ybor city serves as a thriving area for bars, clubs, and shops. The median household income of tracts 39, 40, and 41 is quite low, at \$11,217, \$10,026, and \$10,152, respectively. Less than half of the area's population over the age of 25 has a high school diploma or equivalent. Tract 39 has the lowest proportion of high school graduates with 40.6 percent, followed by tract 40 with 47 percent and tract 41 at 49.4 percent (Table 1). To summarize, it is evident from the data that this region has some major factors contributing to vulnerability, both economically and socially.

Unfortunately, the housing situation in the region is not much of an improvement over the social and economic situation. In the aftermath of Hurricane Andrew, Miami-Dade County revamped and strengthened its South Florida Building Code to protect homes from the type of wind damage experienced in the storm. The stricter building code served as a model for programs administered in 1999, 2000 and 2001 by the Florida Department of Community Affairs to strengthen building codes and mitigation education in communities across the state (Peacock, 2003). Housing units built before the implementation of these programs may be at higher risk, especially in poor communities where residents may not be able to afford upgrading their homes. In census tract 39, 92.4 percent of the housing units were built before 1980, showing an extended lack of interest to construct newer, safer housing units in the area, 700 are renter-occupied, and 76 are owner-occupied out of 776 total occupied housing units. Tract 40 has 451 renter-occupied units, 30 owner-occupied units, and 90.6 percent of its housing units were built before the year 1980. Of the structures in tract 41, 81.1 percent were built before the year 1980; of 547 occupied housing units, 418 were renter-occupied and 129 were owner-occupied (Table 1). The variable of most concern for this area is the available vehicles for occupied housing units. Most of the occupied housing units have no access to a vehicle. The percentage of occupied housing units with no access to a vehicle in tracts 39, 40, and 41 are 46.2, 55.2, and 50.1 respectively (Table 1). Figure 2 displays the proportion of households that lack access to vehicles within the city of Tampa. This figure shows the extreme concentration of this vulnerable population within the three census tracts containing Ybor City. The area's lack of access to vehicles is of most concern, since more than half of the families in this region will require transportation to be provided to them so that they can evacuate the area. According to these figures, about half of the households have no means of evacuating via a personal vehicle.

The city of Tampa does have procedures in place to move this vulnerable population out of danger. The city has worked with the regional bus service, HARTline, to create a bus system that will transport people out of the area. The buses will run on normal schedule until the Hillsborough County Emergency Operations Center gives HARTline the message to begin evacuation services. The buses will then run along specified routes taking people to one of four

Red Cross shelters. The bus route that will serve the Ybor area will be evacuation route “B”. It will begin at the southern point of N. 22nd street and run through the heart of the area before leaving for Pizzo Elementary School. People wishing to use the free service need to simply go to the nearest street corner on the route and flag down a bus, according to the plans posted by HARTline on their website (HARTline, 2006). The area also has many churches and schools. These buildings could be used as staging areas for evacuations and might be able to contribute resources. These places could also be used as meeting places for the population to meet with public officials and learn about evacuation plans and procedures. These local structures could turn out to be assets for the city in its preparation to evacuate this vulnerable population.

FIGURE 2
 PERCENT OF HOUSEHOLDS IN TAMPA
 WITH NO ACCESS TO PERSONAL VEHICLES
 Source: U.S. Census Bureau (2000)



4. CONCLUSIONS

It is the task of the city of Tampa to plan for ways to get Ybor City’s vulnerable populations out of harm’s way. With no means of personal travel many families will feel the need to stay in their homes and try to wait out the storm. This strategy should be of concern to city officials because a vast majority of the housing units were built in or before the 1980s and long before stricter building codes and effective mitigation programs were put into effect after Hurricane Andrew. The area is also highly urbanized, with many roads and little vegetation to capture rain water. Rain produced by a major storm will accumulate and flow through the streets instead of soaking through into the ground, making travel more difficult. The low income of the residents will pose another problem that was brought to light during New Orleans’ evacuation plans: the city of Tampa will also have to provide a means for these people to travel free of charge.

The busing evacuation plan for Tampa appears to have all of the right elements to address the needs of vulnerable populations. In its Comprehensive Emergency Management Plan (CEMP), the Hillsborough County Government outlines the use of transportation in response to hurricanes. In the plans, the Emergency Transportation Coordinator must oversee the HARTline bus evacuation and the use of other means of transportation, like school buses, taxis, and rental car companies. Like New Orleans, the city of Tampa and Hillsborough County plan to use school buses and vans to supplement the evacuation. The Emergency Operations Center (EOC) maintains a list of all transportation providers willing to assist in the evacuation. To remain on the list each provider must supply the EOC with procedures to maximize the number of available drivers and plan for those drivers to sustain operations for 24 hours in advance of hurricanes, as well as during response and recovery operations (HCEPO, 2006). A suggestion to improve the service would be to get the word out about this service to vulnerable populations early and often. The city should use all forms of media and community outreach to inform this population early so that in the time of crisis everyone will know exactly what to do. From the CEMP of Hillsborough County it appears that the city of Tampa and the county have learned from the painful mistakes made obvious by Hurricane Katrina. They have a free bus and emergency transportation system in place and procedures to maximize the number of qualified and willing bus drivers to serve the people in most need. Tampa's plans must be sound and address the needs of all vulnerable populations. With sound and smart planning Tampa will be ready for the worst because the next major storm maybe on its way this year.

5. ACKNOWLEDGMENTS

We would like to thank the Honor's College and Office of Undergraduate Research at the University of South Florida for supporting the Hurricane Research Experience for Undergraduates (REU), the impetus for this study. Thanks also must go to Beverly Ward and Robin Ersing for their demonstration of the tools used in this study.

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