



Assessing Socio-economic Vulnerability of African Americans to Hurricanes in the Gulf States Using GIS

PROJECT REPORT

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1. Introduction

The states adjacent to the Gulf of Mexico i.e. Texas, Louisiana, Mississippi, Alabama, and Florida have been historically devastated by hurricanes and tropical storms. The effects of Hurricane Katrina in 2005 were felt from Texas to Alabama and responsible for at least 81 billion dollars of property damage, which made Hurricane Katrina by far the costliest hurricane in U.S. history (Blake et al. 2007). ‘The Great Galveston Storm’ of 1900 in Texas is considered the deadliest storm on record claiming at least 8000 lives (Green 2000).

According to the Intergovernmental Panel on Climate Change (IPCC), there is evidence for an increase in the average intensity of tropical cyclones in most basins of tropical cyclone formation since 1970 as well as in both the number and intensity of storms in the Atlantic and the Gulf basin (Rosenzweig 2007). Study shows that the frequency of Atlantic hurricanes doubled during the last century (Holland and Webster 2007). The study identified three periods since 1900, separated by sharp transitions. The first period, between 1900 and 1930, saw an average of six Atlantic tropical cyclones (or major storms), of which four were hurricanes and two were tropical storms. From 1930 to 1940, the annual average increased to 10, consisting of five hurricanes and five tropical storms. In the final study period, from 1995 to 2005, the average reached 15, of which eight were hurricanes and seven were tropical storms. This latter period has not yet stabilized, which means that the average hurricane season may be more active in the future and may cause more natural disasters such as Hurricane Katrina.

A large number of African Americans live in these southern Gulf States which also have high percentages of minorities in terms of total population. According to the U.S. Census, the total

black population in the United States is about 40.7 million and about one-fourth of them live in these five Gulf States. In Mississippi, 37.2% of the population is black, highest of any state in the country and in Louisiana 31.9%. Florida, Alabama and Texas have 15.9%, 12.9% and 12% of African Americans in the total population, respectively (US Census Bureau 2008). During any natural disaster such as a hurricane, low-income and under-served communities are usually the hardest hit. In 2005, African Americans were highly affected during the event of hurricane Katrina especially in New Orleans, LA (Quinn 2006) and most of the affected African Americans were low-income, less educated, not married, older, and home renters (Elder et al. 2007). This study is an attempt to identify and visualize socio-economic vulnerability of the whole African American population at the county level living in the hurricane risk areas of the Gulf States using Geographic Information Systems (GIS) and further recommends approaches to utilizing these GIS data in asset building and financial education to reduce socio-economic vulnerability.

2. Background and literature review

Although the characteristically warm sea surface temperatures of the Gulf of Mexico have provided the energy source to create intense storms from May-November (Jarvinen et al 1979), the question is often posed of whether this devastation should be attributed to the physical place vulnerability due to hurricane landfall probability or to underlying social vulnerability. ‘Vulnerability’ is defined as those factors that magnify or attenuate the effects of an extreme natural, technological or human induced event and those factors that decrease the ability to rebound after occurrence of the event (Kasperson and Kasperson 2001). Increased physical vulnerability of this area to hurricanes has been supported by the strong association of increased

sea surface temperatures due to climate change and increased intensity and destructiveness of tropical cyclones over the past thirty years (Emmanuel 2005, Webster et al 2005, and Trenberth et al 2007). The most recent synthesis of climate change impacts in the US has identified increased hurricane intensity and associated storm surge as the most costly consequences within the Gulf of Mexico Region (USGCRP, 2009). Notably, this climate change synthesis report has identified the most recent example of costly hurricanes to be primarily attributed to societal vulnerability.

Societal vulnerability to environmental hazards has been previously studied and has included economic characteristics (Cutter, Boruff and Shirley 2003). Recently, a social vulnerability index provided a comparative spatial assessment of human-induced vulnerability to environmental hazards utilizing US Census 2000 datasets (Cutter, Boruff and Shirley 2003). There is an increasing body of literature stating that the risk of death by natural disaster is greater in areas with higher percentages of socially vulnerable populations (Thomas and Mitchell, 2001; Cutter, 1996; Cutter, Boruff and Shirley, 2003). Specifically, communities of color suffer disproportionately in terms of human death and injury (Bates et al., 1962; Wright et al., 1979; Peacock, Dash and Zhang, 2006; Fothergill and Peek, 2004). This social vulnerability has been identified by the Southern Regional Asset-Building Coalition (SRAC), an organization which has chosen to focus on asset building within this Gulf of Mexico Region as a means to build community resiliency against disasters. The Corporation for Enterprise Development has identified all Gulf of Mexico States as having grades of D or worse on their assets and opportunity scorecard which includes information on net worth by race, asset poverty, bankruptcy rate and median credit card debt (CFED 2009). The SRAC specifically targets asset-

building towards communities of color in this Gulf Of Mexico Region in order to grasp an opportunity to contribute to the rebuilding of this area following the impacts of Hurricane Katrina (Tuskegee/SRAC Asset-Building Project 2009).

It has been stated that low income and minority communities are not intrinsically vulnerable, and that it is economic disadvantage which leads to observed differences in disaster vulnerability for these communities (Zahran et al. 2008). This key point justifies the need to identify the economic characteristics of vulnerability with the purpose of building disaster resiliency. Although not intrinsic, this correlation between communities of color and economic disadvantage is exemplified within the GOM states. As of 2007, Alabama, Mississippi, Louisiana and Texas are ranked among the top 10 in terms of percentage of persons living below the poverty level (US Census 2008). Mississippi and Louisiana both have the highest percentage of persons living below the poverty level. Nationwide, twice as many African Americans are unemployed and in poverty in comparison to whites and other minority communities (Weber and Bishaw 2007, U.S Department of Labor 2008). Correlating with this persistent poverty are the percentages of African Americans in these GOM states. These states are among the top 10 states with the highest number of African Americans. It should be noted that although New York has the highest population of African Americans, higher percentages of the Mississippi, Alabama and Louisiana population are African Americans (US Census 2008).

The attribution of social vulnerability to prior economic conditions has been evidenced by the disproportionate impacts of Hurricane Katrina (Bullard and Wright 2009, Hoerner and Robinson 2008). The poor and underserved communities bore the weight of continued detrimental health

impacts. This characterization of disproportionality implies that if due to socio-economic vulnerability; reducing vulnerability will ensure hurricane impacts are proportionately absorbed by the entire society. African American populations experience health disparities due to generational exposure to hazardous waste facilities (UCC 2007). Resulting cumulative factors have extended this distance between distributing proportionality of disaster impacts. Considering that one cannot change their race, reducing economic vulnerabilities to hurricanes within underserved communities should narrow this disproportionate impact gap. This socio-economic vulnerability reduction through asset building should focus on those locales which have borne the brunt of disasters in the past. These locales can be determined based on previous studies which have identified specific socio-economic indicators of disproportionate impacts due to hurricanes, such as income, marital status, educational attainment and being over the age of 65 (Elder et al. 2007). Although the disproportionate impacts of disasters have been evidenced qualitatively and social and economic characteristics therein been identified, a lack of empirically based quantitative studies to characterize this socioeconomic vulnerability of coastal communities still exists (H. John Heinz III Center 2002).

Responses to natural disasters are highly influenced by social vulnerability. The more socially vulnerable a community is, the less coping capacity it will have facing a disaster. Elder et al. (2007) conducted a study in New Orleans after Hurricane Katrina and found that most of the affected African Americans were low-income, less educated, not married, older, and home renters. All these factors have shown to be predictors of socio-economic vulnerability to natural disasters and hurricanes. In this study, four of these variables e.g. age, income, education, and

marital status are chosen to analyze the socio-economic vulnerability of African Americans to hurricanes.

Although there were studies done on social vulnerability on total population or on African Americans after particular events such as Hurricane Katrina, no study has focused on the socio-economic vulnerability of minorities as a whole in terms of hurricanes or natural disasters. We used GIS in this study as it is a useful tool to identify, and visualize vulnerability and can be used to plan relief efforts and community redevelopment. Thus, the research questions or objectives of this project are:

- 1) What is the level of socio-economic vulnerability of African Americans who live in the hurricane risk areas of the Gulf States?
- 2) How can this be visualized in GIS?
- 3) How can this GIS data be used to plan immediate relief efforts and long-term community redevelopment that foster asset building and financial education?

3. Methodology

3.1 Study area and data sources

The hurricane risk area (Fig.1c) defined in the study is based on the combined hazard area obtained from NOAA's Coastal Risk Atlas (Fig.1a) and Hurricane Katrina impacted areas from the U.S. Census (Fig.1b). The combined hazard area is comprised of three factors: hurricane wind, storm surge, and coastal flooding. A total of 163 coastal counties and parishes of the five Gulf States fall within the hurricane risk area, of which 57 of them are in the high to medium high risk area and 106 counties/parishes are in the medium to low risk area. A few coastal counties in northwest Florida are not included as NOAA did not complete their study for these counties.

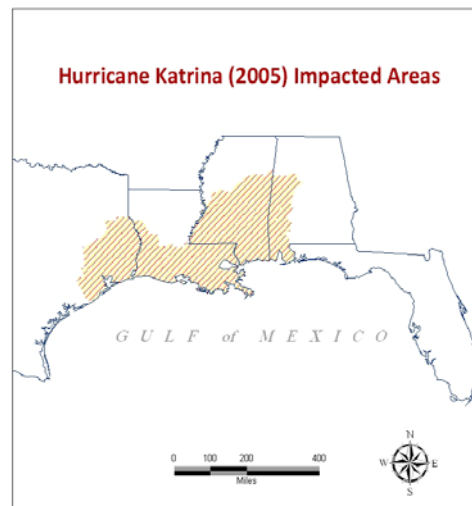
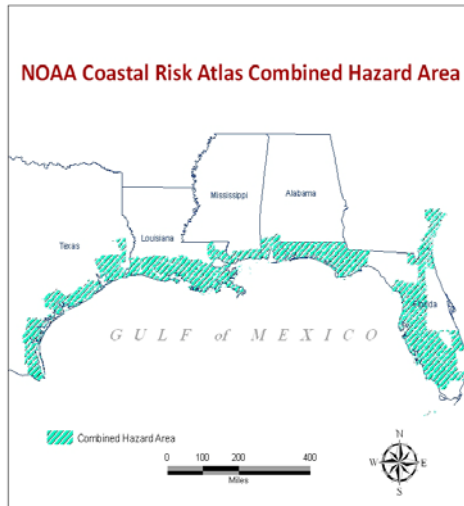


Fig. 1a: NOAA Combined Hazard Area

Fig. 1b: Hurricane Katrina Impacted areas

Sources: <http://www.ncddc.noaa.gov/cra>

http://www.census.gov/geo/www/maps/hurricane_resources/katrina_resource_maps.html

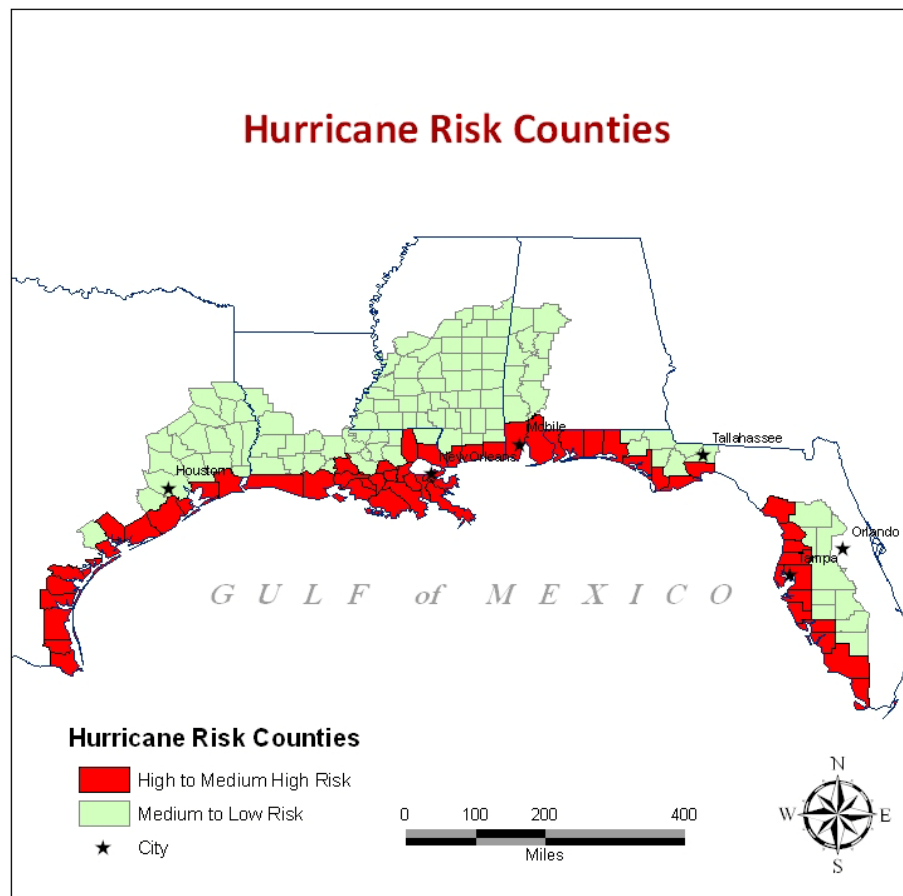


Fig. 1C: Hurricane Risk Areas of the Gulf States

The socio-economic information on African American population is obtained mainly from the American Community Survey (ACS) Data 2007 and 2005-2007, which are the latest available census data. Please note that ACS data are estimated data based on the counties that have more than 65,000 (2007) and 20,000 (2005-2007) people. So, out of 163 counties and parishes within the hurricane risk area, full or partial socio-economic information are available only for 110 counties which have at least 20,000 people (Fig. 2).

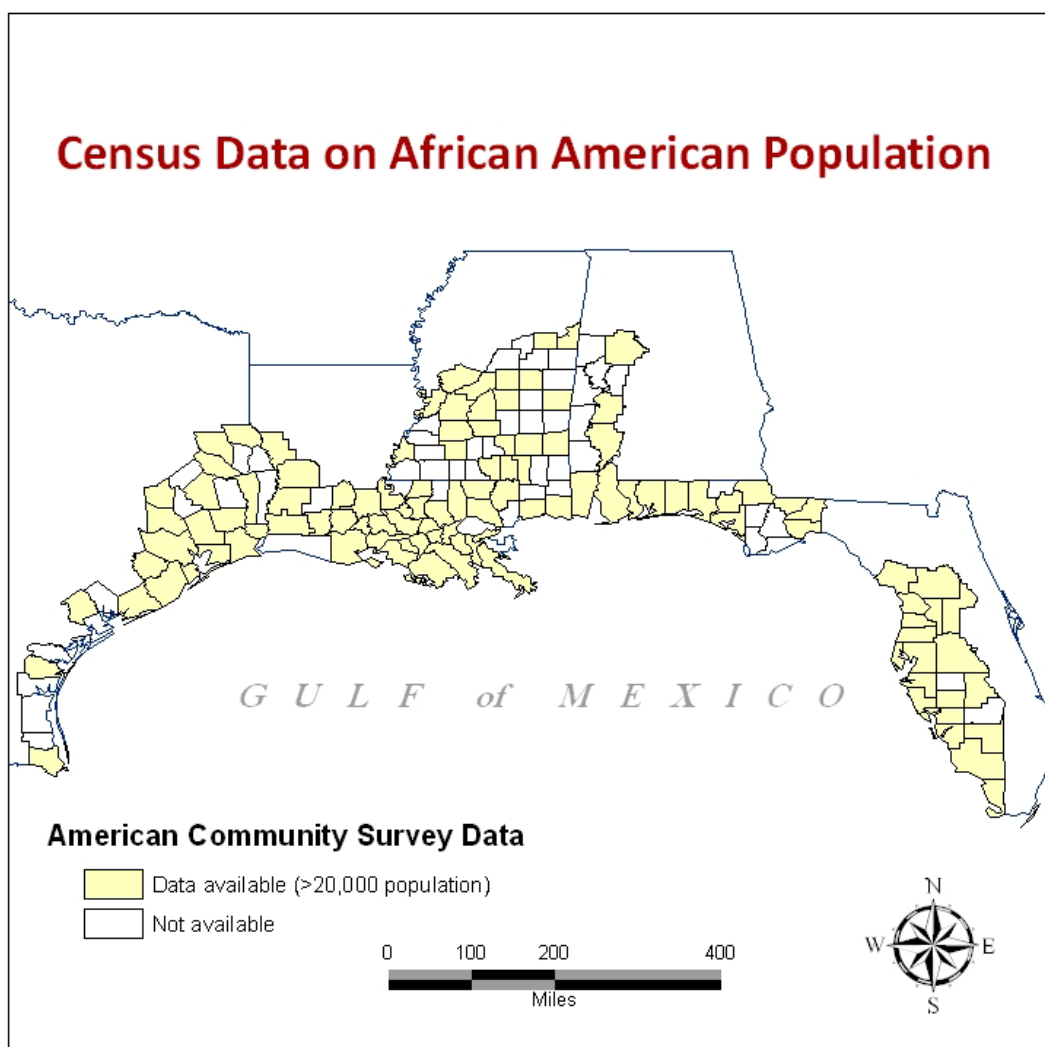


Fig. 2: Counties with latest census data on African American population

3.2 Hypothesis

The hypothesis tested in this study is- **“African Americans who are more socio-economically vulnerable live in the high risk hurricane areas/counties along the Gulf Coast”**. In general, we tend to believe that people who live in high risk areas are usually more vulnerable than others. But it might not be true always especially when a community is socio-economically vulnerable; it will be less resilient even in low risk areas or against any small natural disaster. Thus, an inland community might be more vulnerable against a hurricane than a community located right along coast based on its socio-economic conditions.

3.3 Specific aims

Using GIS primarily, the following specific aims and tasks are set to accomplish this project.

- a) To display the present distribution of African American population in the Gulf Coast counties and compare it with the census 2000 data.
- b) To display and analyze the socio-economic variables e.g. distribution of older African American population who are more than 65 years old, level of poverty among African Americans, their per capita income, high school educational attainment, and their marital status.
- c) To display the combined socio-economic vulnerability of African Americans to hurricanes by overlaying GIS layers of the individual variables.
- d) Rank the counties based on socio-economic vulnerability of African Americans.
- e) Identify and display all HBCUs' locations in the Gulf States and their proximity to the vulnerable counties.

- f) Finally, to find out the allocation of federal (FEMA) funding in the Gulf States to disaster relief and emergency planning that are used especially in community redevelopment.

4. Discussion and Results

According to American Community Survey, the total population of 110 counties/parishes in the study area is 19,830,517 and the total African American population is 3,691,894 (U.S. Census Bureau, 2005-2007, and 2007 American Community Survey). In Fig. 3a, red color represents areas that have population more than 300,000, which are mainly locations around big cities such as the greater Houston area in Texas, New Orleans-Baton Rouge in Louisiana, Mobile, Alabama, Tampa-Orlando area in Florida, etc. Fig. 3b shows that the African American population is also highly concentrated in these areas. Fig. 3c depicts the counties/parishes (in red), where more than 40% people are black in terms of total population. These include Gadsden County in Florida; Marengo, and Clarke in Alabama; Adams, Covich, Hinds, Lauderdale, Lowndes, Yazoo, and, Warren in Mississippi; and East Baton Rouge, East Feliciana, Iberville, Orleans, St. James, St. John the Baptist, and St. Landry Parishes in Louisiana.

Fig. 3d shows the African American population change since Census 2000. As shown in the map, black population has increased in most of the coastal counties since 2000. On the other hand, population has decreased in several counties including a few parishes in Louisiana which were affected by Hurricane Katrina in 2005. In Florida, although Gadsden County has the highest percentage of African Americans, the black population has decreased here since 2000.

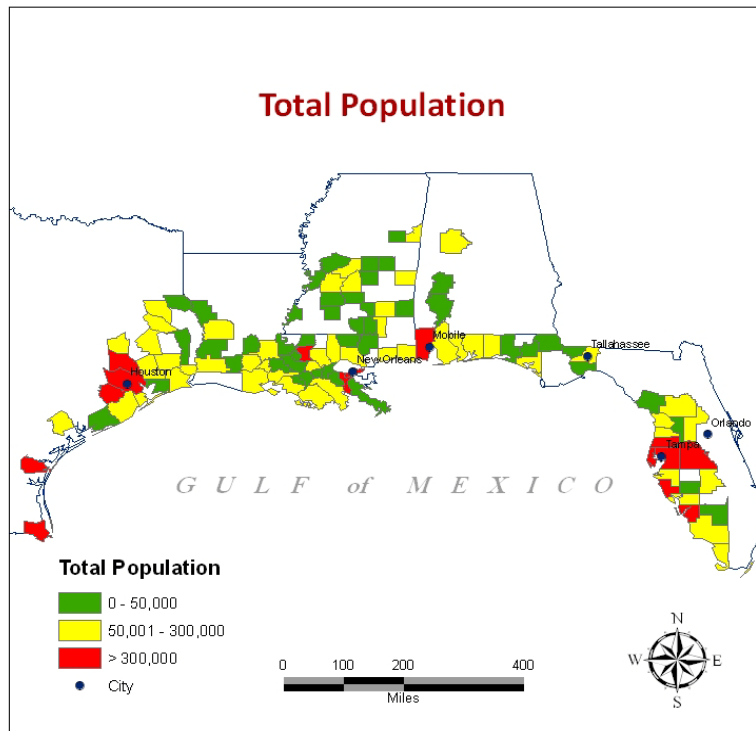


Fig. 3a: Total Population in 2007

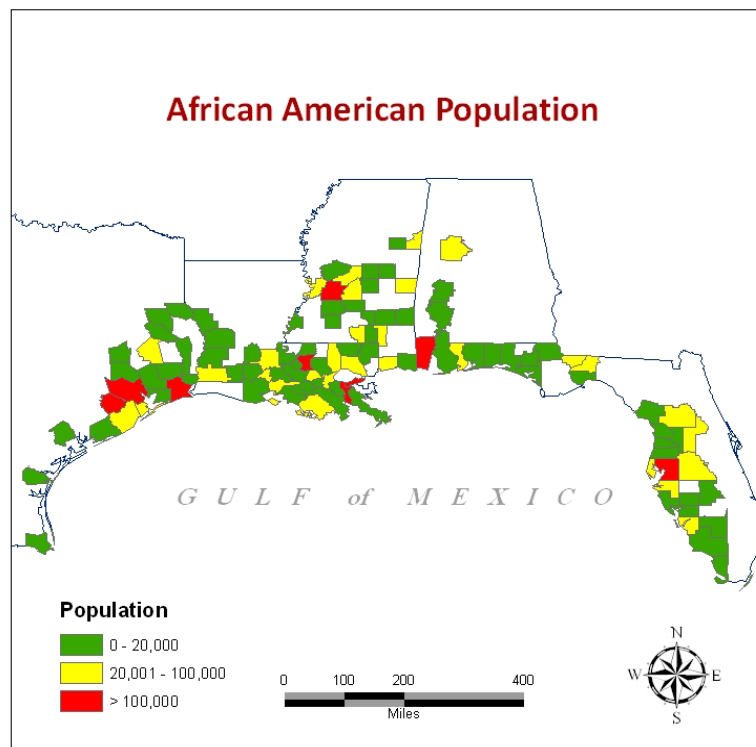


Fig. 1b: Total African American Population in 2007

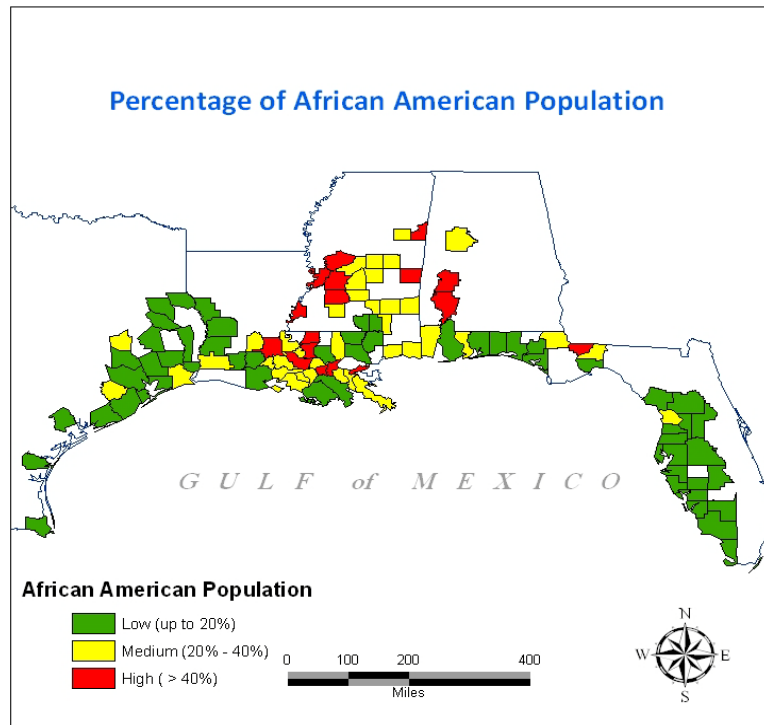


Fig. 3c: Percentage of African American Population

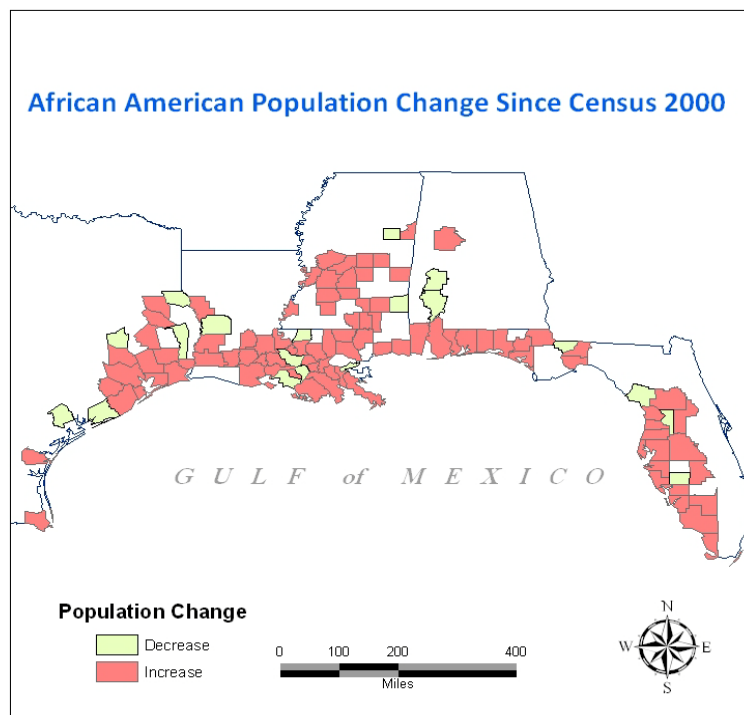


Fig. 3d: African American Population Change

The total number of male African Americans is 1,749,757 and the total number of female is 1,942,137. The male-female distributions in individual counties and parishes are shown in Fig. 4a to Fig. 4e. Overall, the percentage of total female population is slightly higher (53%) than male population, which is 47% (Fig. 4f).

During an emergency, personal decision-making is influenced by many factors and gender plays an important role. In a study on African American focus groups in New Orleans, it was found that those who did not evacuate before Hurricane Katrina, 67% of them were male (Elder et al. 2007). Females, especially mothers are more conscious about the safety of their children during an impending disaster, therefore, take necessary precautions on time.

4.1 Socio-economic characteristics

I. Older (65+years) African American population

Fig. 5 shows the distribution of older African Americans, who are more than 65 years old and considered vulnerable population against hurricanes as evidenced from Hurricane Katrina. The red color represents counties/parishes that have more than 5,000 older African Americans. These are Polk, Pinellas, Hillsborough counties in Florida; Mobile county in Alabama; Hind in Mississippi; East Baton Rouge, Jefferson, and Orleans parishes in Louisiana; and Harris, Jefferson, and Polk counties in Texas. Most of the big cities in the region are located in these counties such as Tampa, Mobile, New Orleans, Baton Rouge, Houston, etc. A good number of older African Americans live in the coastal parishes of Louisiana as shown in Fig. 5.

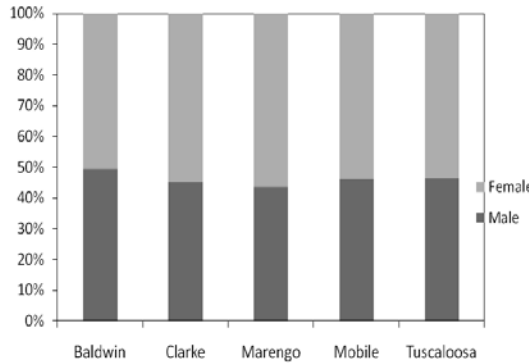


Fig. 4a: Male-Female in Alabama Counties

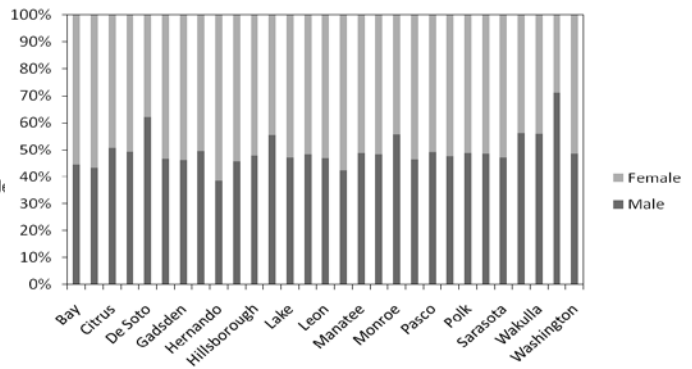


Fig. 4b: Male-Female in Florida Counties

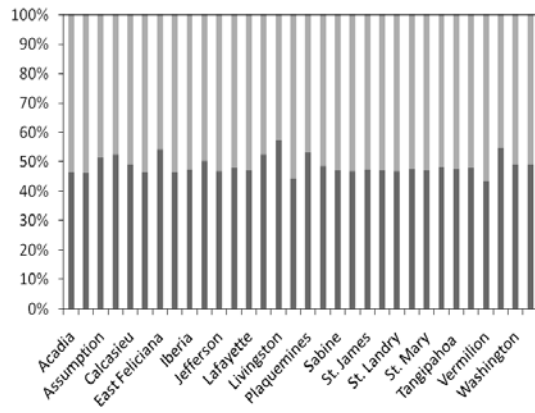


Fig. 4c: Male-Female in Louisiana Parishes

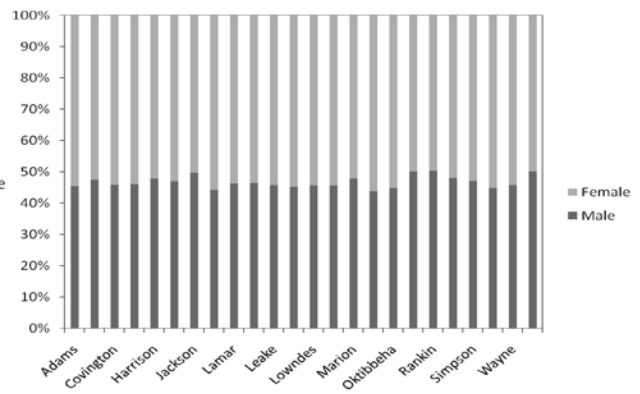


Fig. 4d: Male-Female in Mississippi Counties

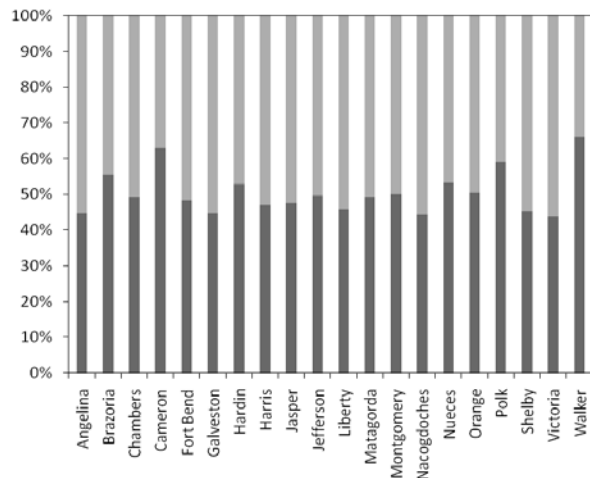


Fig. 4e: Male-Female in Texas Counties

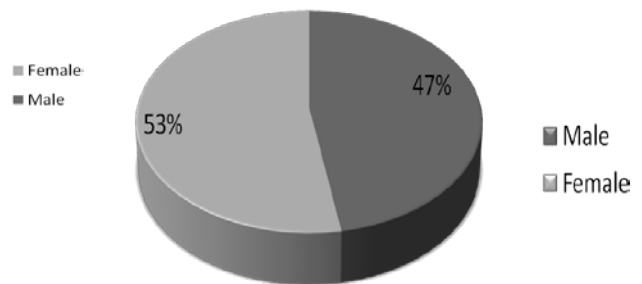


Fig. 4f: Total Male-Female Percentage

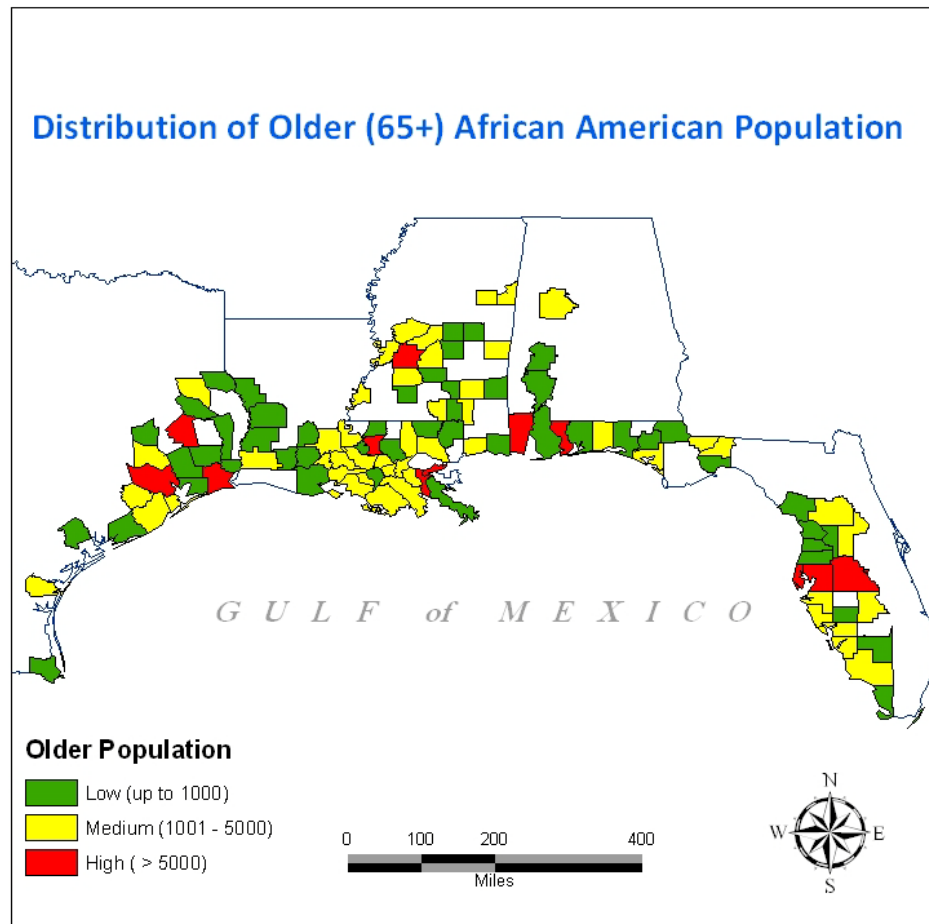


Fig. 5: Older African American Population

II. Level of poverty and per capita income

Fig. 6 depicts the percentage of African Americans in the Gulf coast counties who are below the poverty level. The red areas represent counties where more than 40% of African Americans are below the poverty level, yellow represents 20% to 40% of African Americans below the poverty level and in green colored counties up to 20% African Americans are below the poverty level. A significant percentage of African Americans live below the poverty level in Louisiana and in Mississippi as shown Fig. 6. The counties in Florida are in better condition in terms of poverty except Highlands county where more than 40% African Americans are below the poverty level.

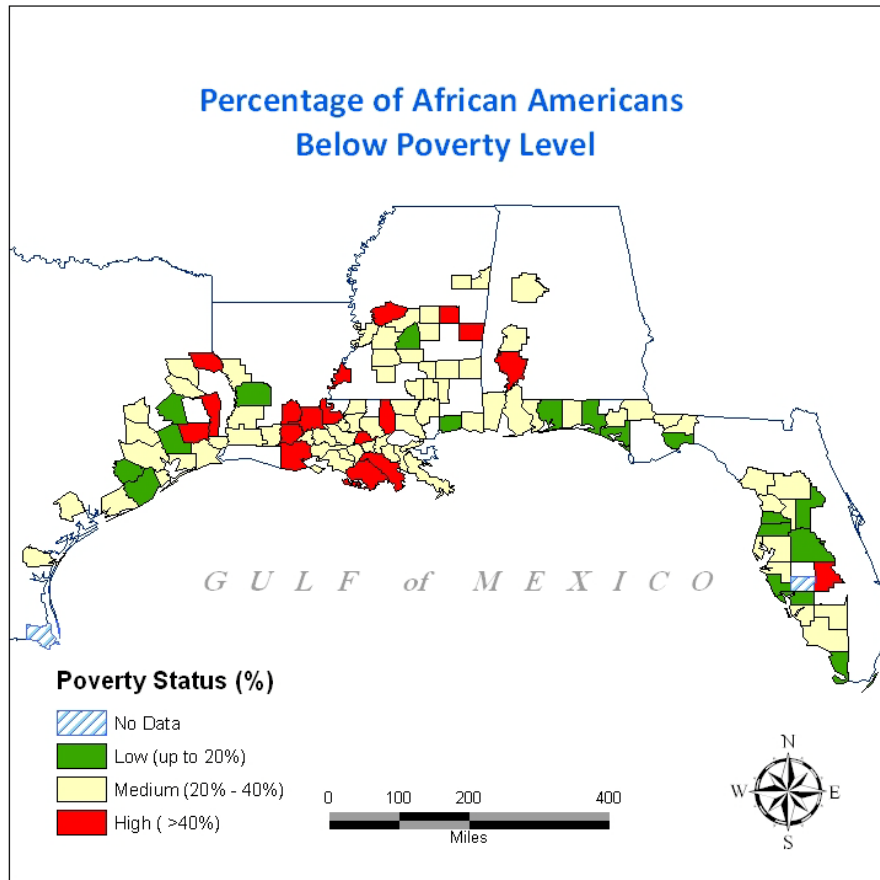


Fig. 6: Level of Poverty

In terms of per capita income, the U.S. national per capita income is \$26,178 and the black national per capita income is \$17,123 (U.S. Census Bureau, 2005-2007, American Community Survey). The per capita income of African American community in this region is far behind in both categories. The per capita income of African Americans in all counties and parishes is lower than the U.S. national per capita income (Fig. 7a). In terms of black national per capita income, only a few counties mostly in Florida and Texas are in higher positions than the black national income (Fig. 7b). These include Citrus, Hernando, Hillsborough, Leon, Monroe, Okaloosa, and Pasco in Florida; Brazoria, Cameron, Chambers, Fort Bend, Galveston, Harris, Victoria in Texas; and St. Tammany in Louisiana.

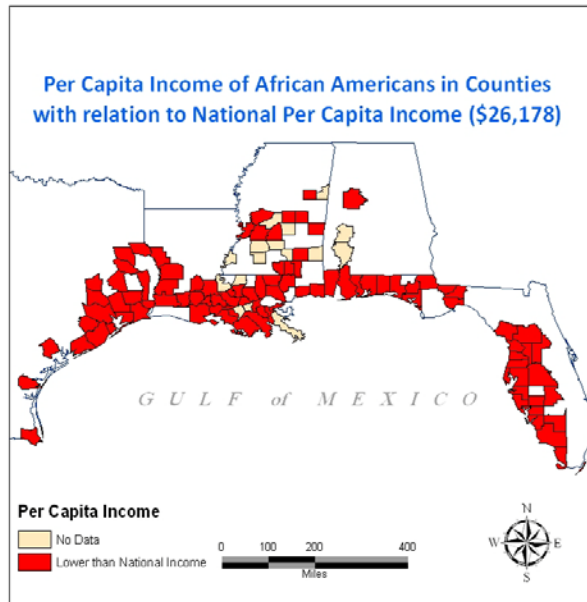


Fig. 7a: Relation with National Per Capita Income

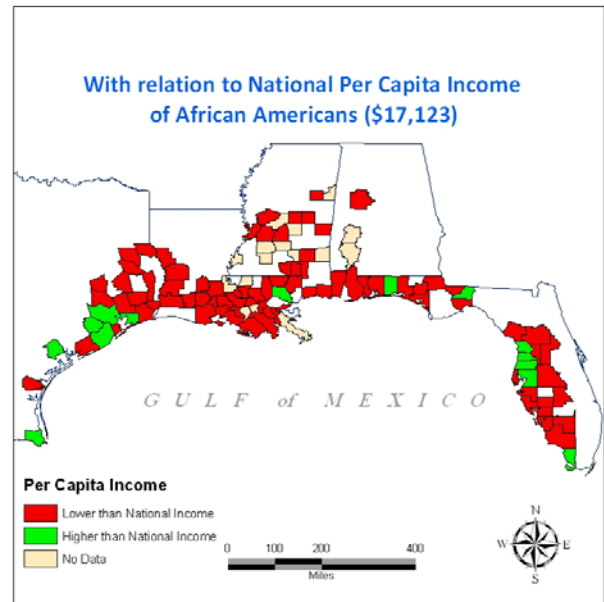


Fig. 7b: Relation with Black National Per Capita Income

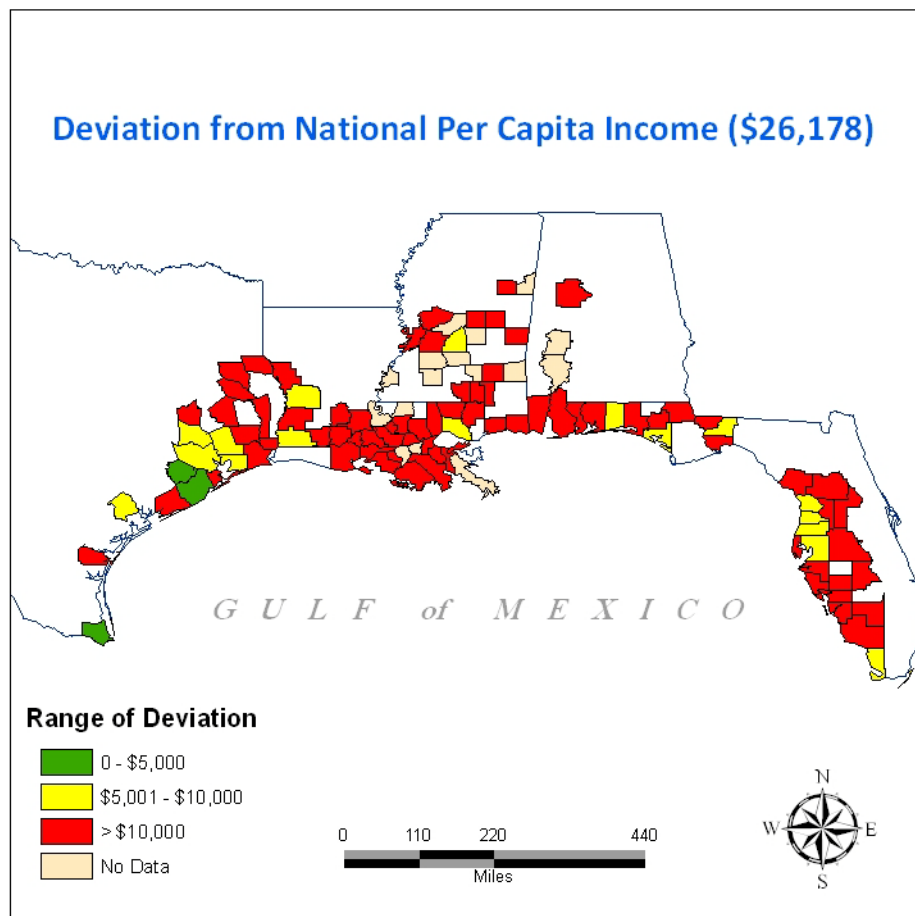


Fig. 7c: Deviation from National Per Capita Income

The economic capability of African Americans in this region is in very bad shape as is reflected in Fig. 7c, which shows the deviation of African American's income at the county level from the national per capita income. Only three counties (Brazoria, Cameron, and Fort Bend) in Texas are within the range of \$5000 deviation from the national per capita income and a few are within the \$5001-\$10,000 range; but most of the counties have more than \$10,000 deviation with respect to the national income i.e. \$26, 178.

III. Educational attainment

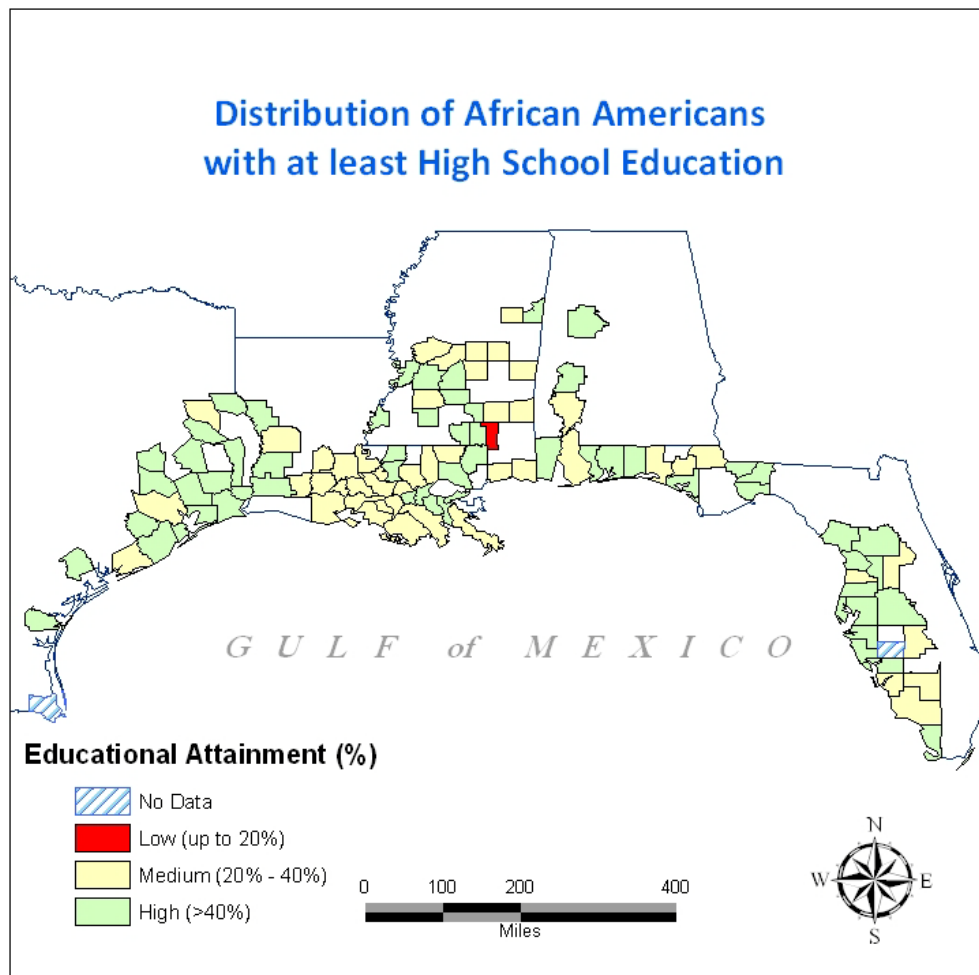


Fig. 8: African American level of education at high school level (Age 25+)

Fig. 8 shows the percentage of African Americans with at least a high school education. African American data are only available for age 25+ group which may not reflect the true picture of overall educational attainment. Although most of the counties have more than 40% high school educated African Americans, the U.S. average is 84% in that category for the total population (U.S. Census Bureau, 2008, Community Population Survey). Covington, MS has the highest 91% African Americans with high school education and Forrest, MS is the lowest with only 16.54%.

IV. Marital status

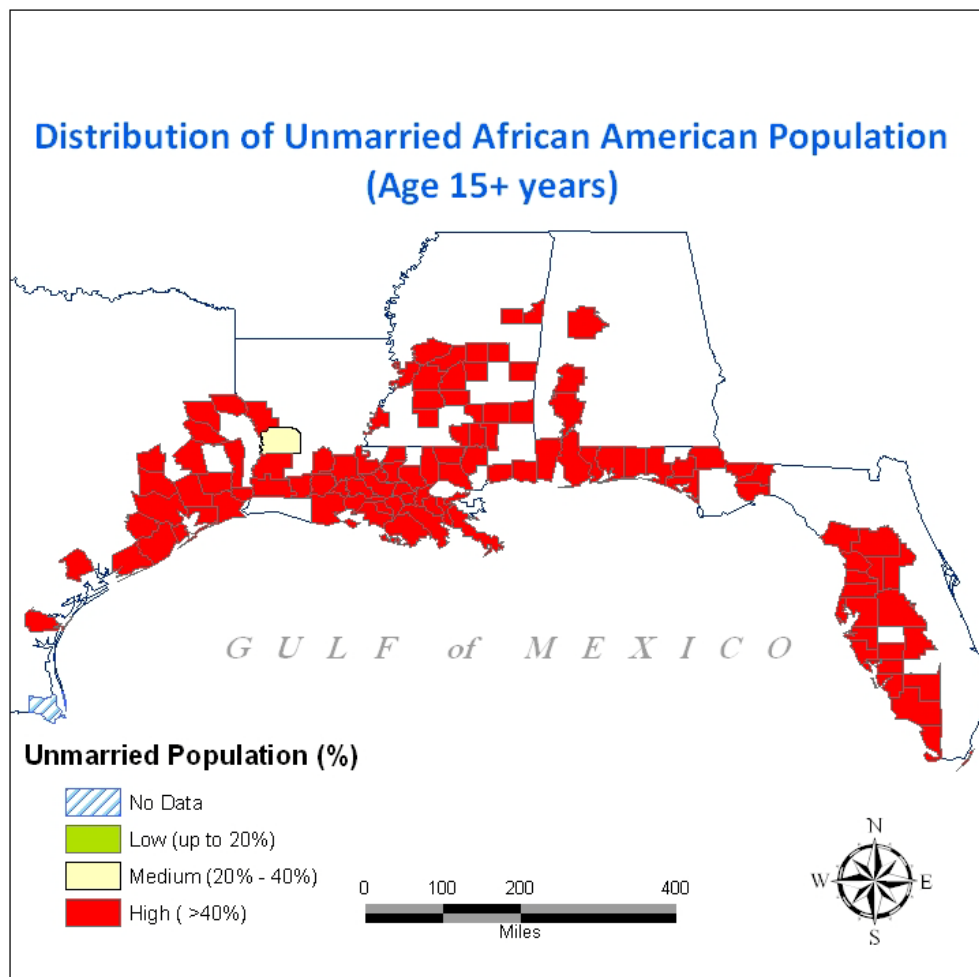


Fig. 9: Unmarried African Americans

Family condition is an important factor of social vulnerability. Single or unmarried people are usually more vulnerable than people who live in a family. In any disaster, family members are the first ones who come forward to help. Also, families with children are more conscious about safety during a disaster. Study revealed that during Hurricane Katrina most of the affected African Americans were not married (Elder et al. 2007). In this study, unmarried population is used as an indicator of social vulnerability in general. Fig. 9 shows that in all counties (except Vernon, LA) more than 40% of African Americans are not married, which make the community more vulnerable in terms of natural disaster.

4.2 Socio-economic vulnerability index

In the combined socio-economic vulnerability assessment, we have chosen seven variables from the discussion above to overlay in GIS. These variables are - hurricane risk counties, percentage of African American population, older African American population, percentage of African Americans below poverty level, deviation of per capita income from the national income, high school educational attainment, and distribution of unmarried population. These data are available only for 89 counties. These variables are further categorized into 1 to 10 scale with counties in the highest category receive 10, medium category receive 5, and lowest category receive only 1 and we term it as ‘Socio-economic Vulnerability Index (SVI)’. Based on this SVI, a county would receive maximum 70 points. Fig. 10 shows the socio-economic vulnerability of African Americans to hurricanes in the Gulf coast based on the SVI. The red areas represent high vulnerability counties which receive more than 40 points, yellow represents medium vulnerability between 30 and 39 points, and low vulnerability is depicted in green which receive

less than 30 points. A total of 43 counties and parishes fall in the high vulnerability region including most of the parishes in Louisiana, eight of which are ranked in the top ten (Table 1). The full list of ranking is provided in Annex-1. Fig. 10 also points out to several counties in the high vulnerable region which are located inland in low risk hurricane areas. This proves our hypothesis not absolutely correct that **“African Americans who are more socio-economically vulnerable live in the high risk hurricane areas/counties along the Gulf Coast”**. If a community has less coping or socio-economic ability, it is more likely to be vulnerable regardless of location to any size of disaster impact.

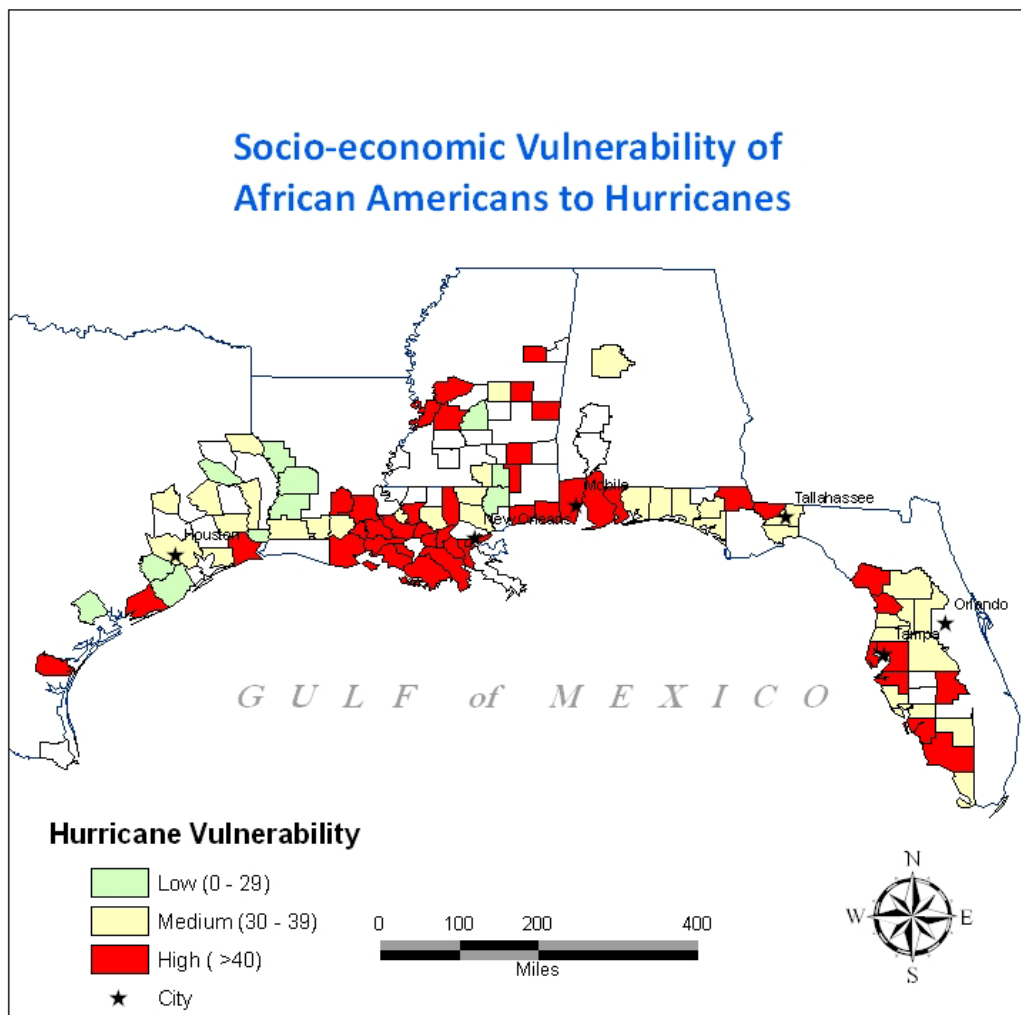


Fig. 10: Socio-economic vulnerability of African Americans to hurricanes

Rank	County/Parish	State	Point
1	Orleans	Louisiana	56
2	Ascension	Louisiana	55
3	Tangipahoa	Louisiana	55
4	Mobile	Alabama	51
5	Escambia	Florida	51
6	Jefferson	Louisiana	51
7	Lafourche	Louisiana	51
8	St. John the Baptist	Louisiana	51
9	St. Landry	Louisiana	51
10	Terrebonne	Louisiana	51

Table 1: Top ten vulnerable counties

4.3 HBCUs and federal aid

Historically Black Colleges and Universities (HBCUs) can play a vital role to reduce socio-economic vulnerability in this region through asset building, financial education, and many other ways. They can financially prepare their students of this and future generations, focus on research related to asset-building, disaster relief, resiliency techniques, etc. specifically geared towards minority and low income communities, and focus extension to minority and low income communities in close proximity. Fig. 11 depicts the locations of HBCUs in the five Gulf States and it shows that only a few HBCUs are located in the hurricane risk and high vulnerability areas. For instance, Florida A&M University is the only HBCU in the entire Gulf Coast of Florida. So, they should focus beyond their vicinity to help the low income and minority communities in this region.

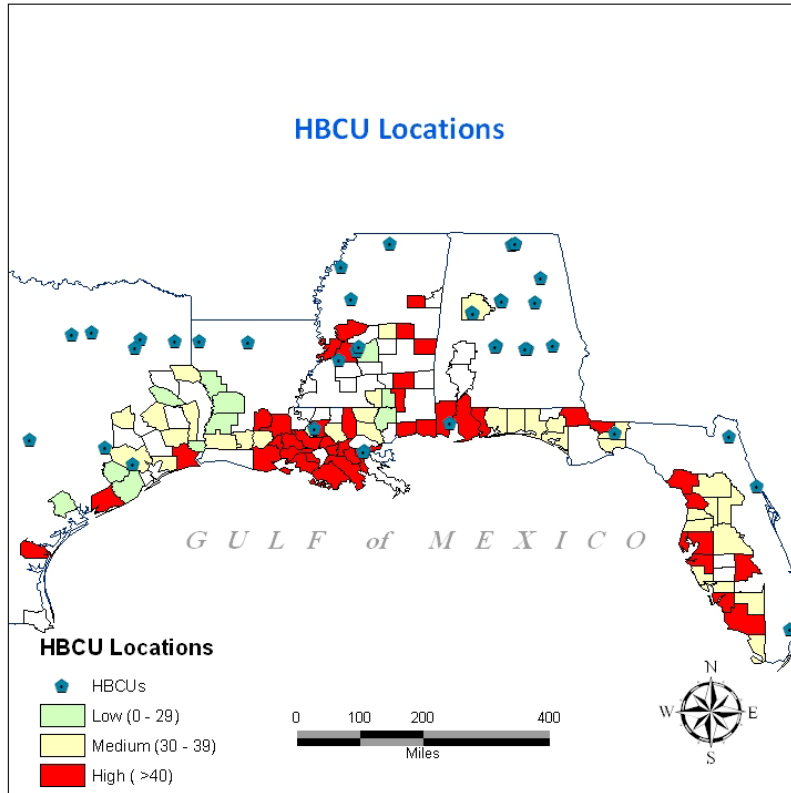


Fig. 11: HBCU Locations

Rank	County	State	HBCU
1	Orleans	Louisiana	Southern Univ. NO/Dillard Univ. of Louisiana
2	Ascension	Louisiana	Southern Univ. A&M
3	Tangipahoa	Louisiana	Above all
4	Mobile	Alabama	Bishop State Comm.
5	Escambia	Florida	Bishop State/FAMU
6	Jefferson	Louisiana	Southern NO/Dillard
7	Lafourche	Louisiana	Southern NO/Dillard
8	St. John the Baptist	Louisiana	Southern NO/Dillard
9	St. Landry	Louisiana	Southern Univ. A&M
10	Terrebonne	Louisiana	Southern NO/Dillard

Table 2: Top ten vulnerable counties with nearest HBCUs

Table 2 shows the nearest HBCUs of the top ten high vulnerable counties in the region. A full list of HBCUs in the five Gulf States is provided in Annex-2.

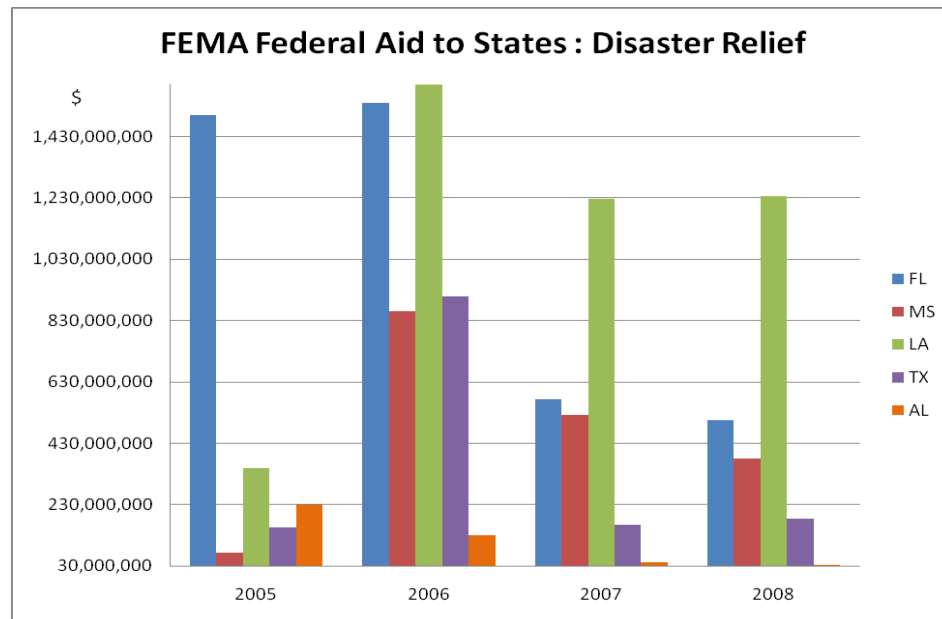


Fig. 12: FEMA funding for disaster relief

Fig. 12 shows federal (FEMA) funding to the five Gulf States from 2005 to 2008 for disaster relief efforts (U.S. Census Bureau 2005-2008). All the states received most funding in 2006 because of record number of Atlantic hurricane events in 2005 including Hurricane Katrina. Louisiana received most funding since 2006, which was understandable. But in terms of emergency planning and assistance, which is mainly used for community redevelopment, Louisiana receives the lowest funding and it has been decreasing every year (Fig. 13). This money should be allocated based on community vulnerability for their rebuilding efforts which is now spent elsewhere based on other criteria not clearly justified.

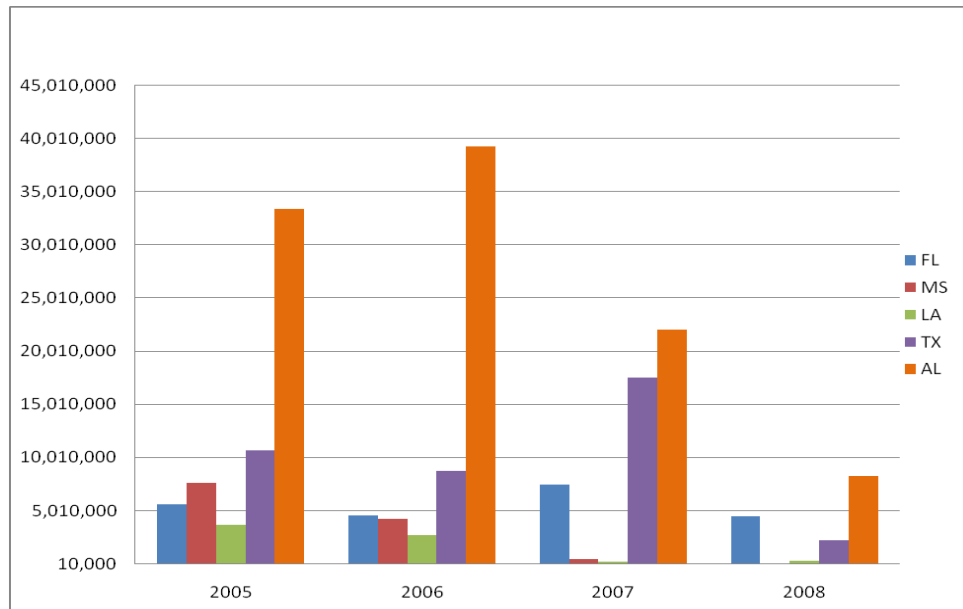


Fig. 13: FEMA funding for emergency management planning and assistance

5. Conclusion

In this study, we assess the socio-economic vulnerability of African Americans to hurricanes at the county level in the Gulf Coast region based on mainly age, income, education and marital status. In most of the counties (43 out of 89), African Americans are in a high vulnerable condition against hurricanes and natural disaster. The study reveals that per capita income of African Americans is very low in this region compare to national or even average black per capita income, a high percentage of African Americans is unmarried and lives below poverty level, and there is a significant number of older citizens living mostly around big cities and coastal parishes of Louisiana. The scenario is comparatively better in terms of high school education but not satisfactory with respect to national average. All these factors make the African American community socially vulnerable and susceptible to natural disasters such as hurricanes. In this study, we suggest that HBCUs can play a vital role to reduce socio-economic

vulnerability in this region through asset building, financial education, research and extension to low income communities. We further recommend that federal aid to the states for community redevelopment should be allocated based on community vulnerability as done in the study. We hope that federal, state agencies, HBCUs, community based organizations, etc. will use this study and GIS data to improve different sectors e.g. education, poverty, asset-building, condition of older population, marriage counseling, etc. in this region, which would help reducing socio-economic vulnerability.

6. Future work

The new U.S. Census data will be released in 2010 which should be more accurate than the American Community Survey data. Based on the funding availability, we would like to update the study when new data will be available. Also, 2010 census data will contain socio-economic information at the block group level, which will help to identify vulnerable communities more precisely than at the county level. In future, we would like incorporate other socio-economic variables e.g. home ownership, flood/wind insurance information, etc. in the study and compare these findings with other ethnic groups.

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Annex

Annex- 1 Rank of the counties based on socio-economic vulnerability to hurricanes

County	State	Point	Rank
Orleans	Louisiana	56	1
Ascension	Louisiana	55	2
Tangipahoa	Louisiana	55	3
Mobile	Alabama	51	4
Escambia	Florida	51	5
Jefferson	Louisiana	51	6
LaFourche	Louisiana	51	7
St. John the Baptist	Louisiana	51	8
St. Landry	Louisiana	51	9
Terrebonne	Louisiana	51	10
Lauderdale	Mississippi	51	11
Yazoo	Mississippi	51	12
Jefferson	Texas	51	13
Iberia	Louisiana	50	14
St. Martin	Louisiana	50	15
St. Mary	Louisiana	50	16
Pinellas	Florida	47	17
East Baton Rouge	Louisiana	47	18
Vermilion	Louisiana	47	19
Hinds	Mississippi	47	20
Collier	Florida	46	21
Lee	Florida	46	22
Iberville	Louisiana	46	23
St. Charles	Louisiana	46	24
Forrest	Mississippi	46	25
Harrison	Mississippi	46	26
Jackson	Mississippi	46	27
Baldwin	Alabama	42	28
Gadsden	Florida	42	29
Highlands	Florida	42	30
Hillsborough	Florida	42	31
Levy	Florida	42	32
Manatee	Florida	42	33
Evangeline	Louisiana	42	34
Neshoba	Mississippi	42	35

Warren	Mississippi	42	36
Matagorda	Texas	42	37
Nueces	Texas	42	38
Citrus	Florida	41	39
Lafayette	Louisiana	41	40
St. James	Louisiana	41	41
Jones	Mississippi	41	42
Oktibbeha	Mississippi	41	43
Charlotte	Florida	38	44
Sarasota	Florida	38	45
Walton	Florida	38	46
Acadia	Louisiana	38	47
Tuscaloosa	Alabama	37	48
Hendry	Florida	37	49
Hernando	Florida	37	50
Jackson	Florida	37	51
Okaloosa	Florida	37	52
St. Tammany	Louisiana	37	53
West Baton Rouge	Louisiana	37	54
Leake	Mississippi	37	55
Harris	Texas	37	56
Polk	Florida	34	57
Santa Rosa	Florida	34	58
Wakulla	Florida	34	59
Hardin	Texas	34	60
Jasper	Texas	34	61
Polk	Texas	34	62
Shelby	Texas	34	63
Bay	Florida	33	64
Lake	Florida	33	65
Marion	Florida	33	66
Monroe	Florida	33	67
Pasco	Florida	33	68
Sumter	Florida	33	69
Washington	Florida	33	70
Jefferson Davis	Louisiana	33	71
Livingston	Louisiana	33	72
Washington	Louisiana	33	73
Marion	Mississippi	33	74
Chambers	Texas	33	75
Walker	Texas	33	76

Leon	Florida	32	77
Calcasieu	Louisiana	32	78
Beauregard	Louisiana	29	79
Sabine	Louisiana	29	80
Lamar	Mississippi	29	81
Pearl River	Mississippi	29	82
Angelina	Texas	29	83
Brazoria	Texas	29	84
Orange	Texas	29	85
Rankin	Mississippi	28	86
Fort Bend	Texas	24	87
Victoria	Texas	24	88
Vernon	Louisiana	19	89

Annex- 2 List of HBCUs in the Gulf States

HBCU	State
Alabama A & M	AL
Alabama State	AL
Concoridia College Selma	AL
Miles College	AL
Oakwood	AL
Selma	AL
Stillman College	AL
Talladega College	AL
Tuskegee university	AL
Bishop State Community	AL
Shelton State Community	AL
Gasden State Community	AL
J.F Drake State Technical	AL
Lawson State Community	AL
Trenholm State Technical	AL
Florida A & M Univ	FL
Bethune Cookman Univ.	FL
Edward Waters College	FL
Florida Memorial Univ	FL
Grambling State Univ	LA
Southern A & M Univ	LA
Southern Univ at NO	LA
Dillard Univ of Louisiana	LA
Xavier university	LA

Southern Univ at Shreveport	LA
Alcorn State Univ.	MS
Jackson State Univ	MS
Mississippi Valley State	MS
Rust College	MS
Tougaloo College	MS
Coahoma Community College	MS
Hinds Community College Utica	MS
Prarie View A & M Univ	TX
Texas Southern University	TX
Huston-Tillotson Univ	TX
Jarvis Christian College	TX
Paul Quinn College	TX
Southwestern Christian College	TX
Texas College	TX
Wiley College	TX
St.Philips College	TX