Abstract
Hurricane Katrina, a category 5 storm which hit the Gulf Coast on August 29, 2005, caused “the largest population displacement in the United States since the Dust Bowl” in the 1930s. Consequently, it has been one of the most expensive natural disasters the US has ever faced, affecting millions of people. A lack of proper infrastructure and negligent evacuation protocol further exacerbated the negative effects of the natural disaster. Large proportions of the population were displaced, causing a rapid migration of environmental refugees and creating a burden on receiving communities which came to be known as Katrina Fatigue.

The research questions for this paper are to determine who were displaced, what the role and impact of the forced migrants had upon New Orleans and the receiving communities, and if there were barriers or challenges that the displaced and receiving communities faced. It is important to understand these migration patterns to determine if a better solution could be proposed to avoid the mass forced migration during natural disasters, and if there could be better methods to help those who are displaced.

The approach here was to compile a library of relevant Federal Emergency Management Agency (FEMA) information, peer reviewed articles, and government websites in order to review migration patterns, impacts of migration, and to develop potential solutions to avoid or reduce the burden of migration. The ultimate goal was to determine if there were any lessons that could be applied in other natural disaster prone areas.

Results from the research determined that race, class, and gender demonstrated huge disadvantages before, during, and after the hurricane. Pre-Katrina New Orleans had a population consisting of a majority (61%) Africa American population with 35% of this group falling below the poverty line. The majority of those falling at or below the poverty line were situated in communities in the Lower Ninth Ward; a disaster prone area due to geographical features and poorly designed levees. As this area was naturally more dangerous, it was ultimately cheaper to live there leaving a vast impoverished population. The large proportion of African-Americans were thus more vulnerable than the rest of the population which also meant they had a harder time recovering from the natural disaster.

The city’s population was slowly in decline decades before the storm and unsurprisingly dropped drastically afterwards. This negatively affected the city’s potential for economic growth and the ability to rebuild the city. The population has slowly started to increase but has yet to reach its original size of 455,188 (pre-Katrina in 2005), reaching only 83% of that population almost 10 years later in 2013. The death toll of approximately 1000 in New Orleans was not large enough to impact the regrowth of the city.

To conclude, Hurricane Katrina was a major catalyst for the US population to review infrastructure, natural disaster relief protocol, and the effects of natural disaster caused by the storm.

migation a large amount of destruction and loss of physical property, community, and population. It was ultimately a manmade disaster that ensued in the displacement of hundreds of thousands of people.

Introduction

Hurricane Katrina, a category 5 storm which hit the Gulf Coast on August 29, 2005, caused the “largest population displacement in the United States since the Dust Bowl” in the 1930s\(^4\). It is one of the most expensive natural disasters to take place in the United States and thus has had a significant effect on the history and people of the United States and, more specifically, New Orleans. New Orleans is a unique city in that it has such a high population of African-Americans and the poverty rate, as of 2000, was 28%; higher than the American average of 12%\(^5\). Unfortunately, it is the African-American’s who make up the majority of those in poverty. These low-income families were predominantly situated in the Lower Ninth Ward which has a reputation as an extremely impoverished neighbourhood\(^6\). Not only is it an area that is as low as 17 feet below sea level but it is also situated right by the levees\(^7\). As a result, the Lower Ninth Ward was in a particularly vulnerable location and was hit hard when Hurricane Katrina hit. Whether from the stress of the storm, engineering errors or a combination of both, the levees broke and severe flooding ensued. Since the official evacuation warning was delayed until 19 hours before the storm hit land, there was not enough time to ensure that everyone was removed safely\(^8\). This area sustained extensive damage, with many residents being flooded out and having their homes and property destroyed or badly damaged. There were a lot of issues for these people due to welfare issues, lack of health insurance, lack of transportation, and other issues, which forced them to become environmental refugees.

Even before the storm, the population of New Orleans had been in decline since the 70s; decreasing by 18% between 1970 and 2000 and by a further 6% from 2000 to 2005\(^9\). Once the storm hit and immediately after, the numbers dramatically decreased due to people evacuating to safer areas\(^10\). The severe damage caused by the storm meant that many were not able to return home and had to permanently migrate from their homes in order to make a new life for themselves. Months after the storm, there were still 400,000 displaced Louisiana residents and even ten years after the hurricane, New Orleans was only 83% of the original size\(^11\). At this point, ten years later, one must question where the other 17% have gone and if they plan on returning?

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\(^4\) Landry et al., *Going Home*, 326.


\(^10\) Ibid.

Research Questions/Problem Statement

The existing data will help answer this question and determine who the displaced were, what the role and impact of the forced migrants had upon New Orleans and the receiving communities and if there were barriers or challenges that the displaced and receiving communities faced. An effort will be made to establishing there is a proposed solution to avoiding the forced migration of so many people during a natural disaster or if there is a better method of helping the displaced through the transitional period of migrating to somewhere with so little.

Research Methods

I gathered secondary research materials for this paper. The majority of these sources are academic and peer reviewed. Many use statistics collected from census data as well as their own questionnaires and studies. Some sources however are newspapers or statistical websites that give indication to the changes (social, economic, and political) in the city since Katrina or how the city’s population and demographics have altered. I analyzed data provided by FEMA and the US government to determine the number of displaced from New Orleans and the surrounding Gulf Coast.

Data Analysis/Lit Review

There is a large body of research on the effects of Hurricane Katrina. Arguably the largest effect Hurricane Katrina had was on the population of the city of New Orleans. Before the storm, the population was comprised of a majority of African-American, at 69% with the Caucasian population accounting for 28% and Asians making up 2%\(^\text{12}\). The city of New Orleans was disproportionately below the poverty line, in comparison with the rest of the United States, with an average twice that of the national rate\(^\text{13}\). The poverty rate amongst African-Americans in New Orleans “was 35% which was the highest amongst all the large cities in the United States”\(^\text{14}\). The group at the largest disadvantage were women as a whole. Women in the United States make up 60% of “America’s minimum-wage workers” with an even higher prevalence in New Orleans and the surrounding Gulf area\(^\text{15}\). This gendered disadvantage was not something the media exposed to the public though women in the affected states were the poorest in the nation and even worse, as mentioned, were the women of colour\(^\text{16}\).

Asians, the smallest minority in New Orleans making up just 2% of the population, were also affected by Hurricane Katrina. One study done on 9,911 minorities in New Orleans, discovered that Vietnamese-Americans made up 41.7% of the study population and African-Americans made up 51.7%\(^\text{17}\). However, 95.2% of the Vietnamese-Americans evacuated before the flooding as compared with only 88.3% of African-Americans which adds to the confirmation that the African-Americans suffered disproportionately\(^\text{18}\). The outcome of the majority of studies done, found that race and class issued a clear disadvantage to those in the mentioned

\(^{12}\) Sastry, “Tracing the Effects”.
\(^{13}\) Hartman and Squires, “Pre-Katrina, Post-Katrina”.
\(^{14}\) U.S. Census Bureau 2000.
\(^{16}\) Ibid., 87.
\(^{18}\) Ibid.
categories, which is something that the general population did not notice or choose to notice until the media made it very clear to the entire world.19

Those near, at, or below the poverty line were, essentially, forced into living in the most dangerous areas of town as they were the most affordable. More affluent people were able to afford housing in safer neighbourhoods. The Lower Ninth Ward, home to most of the poor population was one of the more dangerous areas in regard to flooding. Manmade protection systems were in place, surrounding the Lower Ninth Ward from prevailing storm surges and flooding but the damage was more catastrophic due to developmental areas that were placed in these supposedly flood-safe zones. This led to a disaster known as the levee effect.20 This form of disaster has been known to increase flood losses because [dams, levees, etc.] spur new development in the floodplain, which incurs catastrophic losses when [these] man-made flood protections fail.21 The infrastructure in the developed area relied on the assumed stability of the levees which, unfortunately, did not withstand the storm.

The impact which the environmental refugees had on both New Orleans and the receiving communities has been huge. In terms of the effect on New Orleans, the population dropped a considerable amount immediately before and after the storm as a result of evacuation. The population had already been in decline, decreasing by an approximate 139,000 residents between 1970 and 2005.22 In January 2006, a few months after the storm, the city’s population had dropped to 158,000, which was about one-third of the pre-Katrina population. By mid-2006, the population of New Orleans was estimated to have reached only 223,000 which was about half of its original size.23 There are many reasons for why the people who had been displaced did not return home, the most common being the fact that the rebuilding process took and continues to take a very long time. In terms of who was returning home to New Orleans after the hurricane, there was a much higher rate of middle-income households returning than lower income.24 Those less likely to return were those whose houses were not repairable (or those in the poorer wards of New Orleans) as well as senior citizens25 and those with a college education. These groups add up in numbers and are likely to alter the future of New Orleans if they do not return. If there ends up being issues in terms of rebuilding or permanent hazards as a result of the storm and people are unable to ever return, “…New Orleans will lose 80% of the Black population compared with just 50% of the White population.”26

Receiving communities felt the stress of Hurricane Katrina as well. Evacuees could be found in each of the 50 states (see Appendix A). The large influx of numbers of evacuees caused some neighbouring Gulf Coast States to declare a state of emergency. The demand for property in the housing market nationwide increased as communities tried to make room for the displaced27 and resources, both human and material, waned.

A case study was done, specifically in Denver Colorado; a place with a population comprised of 67% Caucasians, 22% Latinos, 5% African-Americans and 3% Asians.28 Approximately 6,500 Katrina evacuees relocated to Denver, which would have been a culture shock for both evacuees and the recipients. The city was quite welcoming when the Katrina

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21 Bourne Jr. “New Orleans”.
23 Ibid., 174.
24 Landry et al. Going Home, 326.
25 Ibid., 338.
26 Hartman and Squires, “Pre-Katrina, Post-Katrina”, 6.
27 Ibid., 122.
28 Weber and Peek, Displaced, 32.
survivors first arrived; thousands of volunteers worked in shelters, offering donations, jobs, general assistance, fast school enrollment for youth, mental health support and more. Unfortunately, after just three to four months, "reception changed from welcoming to hostile"\textsuperscript{29}. This fast onset resistance became known as ‘Katrina Fatigue’ by the media to “describe the waning political attention to the disaster, burnt out volunteers, etc.”\textsuperscript{30} which set in around the beginning of 2006. Social workers analyzed this new phase of exhaustion and concluded that it was attributed to the "fact that people in Colorado had not lived through the hurricane and thus could not possibly maintain the same level of empathy as could fellow survivors"\textsuperscript{31}. This exhaustion started taking its toll on people’s mental health and portrayed racism and classism in a whole different light for the environmental refugees\textsuperscript{32}. A stigma gradually developed against the evacuees that was related to their “place of origin, evacuee status and race”\textsuperscript{33} and was truly brought to light once “Katrina Fatigue” set in, as will be mentioned further on.

There were a number of barriers and challenges faced by the environmental refugees as well as the communities that received them. Evacuation in and of itself was both a challenge and barrier for many. Highways were backed up before the storm as cars were leaving at a rate of approximately 18,000 per hour yet there were still about 112,000 who were left in New Orleans, as they did not have any method of leaving the city\textsuperscript{34}. Part of the reason for this is that the government did not institute a mandatory evacuation at an earlier time as well as there being no way to evacuate those without their own transportation.

As previously mentioned, once the refugees had been relocated, a stigma had become attached with being a Katrina survivor. One Caucasian evacuee, who was relocated to Denver, said that while she was looking for jobs, “employers treated her like she was stupid and uneducated because of her southern accent”\textsuperscript{35}. If a Caucasian person experienced this stigma and discrimination, it is not difficult to imagine how much worse this would have been for African-American evacuees, who had to also deal with the "added layer of racial discrimination"\textsuperscript{36}. 18 months after the disaster of Hurricane Katrina, many of the displaced victims were still struggling\textsuperscript{37}. The struggles ranged from social, psychological, and economic problems\textsuperscript{38}.

One study conducted over the years since Hurricane Katrina, determined that African-American women took the heaviest toll from the storm because “they had lost the support they had had from their local network of families and friends”\textsuperscript{39}. They were least likely to return to New Orleans along with the rest of the African-American population and those with poor or lower income as a result being less able to as well as less willing. Not returning would hurt their mental health as they would be lacking the support systems they had prior to the storm. Not all results were as tragic though.

New Orleans was home to the oldest Filipino American community in the United States with approximately 28,000 making up said community. For the most part, according to a study,

\textsuperscript{29} Weber and Peek, \textit{Displaced}, 32.
\textsuperscript{30} Ibid., 33.
\textsuperscript{31} Ibid., 34.
\textsuperscript{32} Ibid., 35.
\textsuperscript{33} Ibid., 39.
\textsuperscript{35} Weber and Peek, \textit{Displaced}, 40.
\textsuperscript{36} Ibid.
\textsuperscript{38} Landry et al., \textit{Going Home}, 337.
\textsuperscript{39} Weber and Peek, \textit{Displaced}. 
they had an easier time with their evacuation and transition to a new community than many others. When they were sent by bus to the makeshift shelter at the Astrodome in Houston, Texas, they were met by a number of Filipino associations who had contacts with support networks who were able to help them directly. This gave them instant connecting and a feeling of belonging without any racial stigma towards each other.

It is now ten years after the storm and questions that still linger are ‘will New Orleans ever be the same?’ and ‘will the population ever be restored to its original, unique mix?’ New Orleans is still recovering from Hurricane Katrina and likely will be for a long time. It is almost impossible to determine if everyone will return home but considering the redevelopment is still in progress, it is unrealistic to believe that the refugees who still have not returned would put their lives on hold for such a long period of time.

Results have shown that a month after Hurricane Katrina only 5% of in-city residents were reported as being back in their homes, compared with two-thirds of those outside of the city. This study indicated that the “less affluent homeowners” would be a part of the second wave of “return migration” due to the fact that they have “mortgage obligations as well as a lower household income” which do not allow for as many options in different opportunities, as those with higher incomes. Those who did return were more likely Caucasian and homeowners or had higher incomes and were less likely parents with kids under 18.

The diversity of New Orleans’ population changed after the storm. Statistics from 2009 indicate that Central Americans made up 30.9% of all immigrants to New Orleans. The United States Census Bureau estimated that approximately 100,000 Hispanics arrived to New Orleans and other affected communities in the immediate four months after the hurricane. More specifically, the New Orleans metro area is more diverse than in 2000 with a gain of 40,577 Hispanics and 5,582 additional Asian residents. The Latino population in the metro areas increased dramatically by 69% between 2000 and 2012, which was a greater rate than the entire nation’s growth of 50%. They came for the temporary work with no doubt they would be able to find labour jobs to help clean up and rebuild New Orleans and the surrounding areas. New Orleans and Louisiana as a whole had not experience an increase in the Latino population until after the storm, which proves that the destruction was beneficial for their livelihoods.

The most recent statistics from July 2012 estimated that New Orleans had repopulated to 369,250 or 76% of its population of 484,674 from 2000. Even though African-Americans still represent the majority of the city’s population at 59%, the number is down from 67% in 2000. Overall, it was determined that the city has lost 103,881 African-Americans, 14,984 Caucasians

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41 Ibid.
43 Ibid.
44 Landry et al., Going Home.
48 Ibid.
50 Waller, "Hurricane Katrina Eight Years Later"
and permanently gained 4,830 more Hispanics. These numbers are proof that there were disparities between race and socio-economic standing in regard to Caucasian and African-American people with the Caucasian, higher economic status more likely to return to New Orleans. It is doubted that the city will ever be back to being what used to be and it is more likely than not the city will become more Caucasian and wealthy with return migration as they are the most likely and able to return.

Discussion/Conclusion:

In conclusion, Hurricane Katrina was the catalyst for the large amount of destruction and loss that occurred in New Orleans. What ensued was ultimately a manmade disaster as a result of poor government planning before, during and after the storm. The levees that broke as a result of both poor engineering and the storm caused damage to so many people's livelihoods. It instigated the evacuation of an entire city and thus the displacement of hundreds of thousands of people. These people, who were, at first, welcomed into communities throughout all 50 states, soon after the storm, had to deal with ‘Katrina Fatigue’; as well as racism and stigmas from being a Katrina survivor. The readings that were focused around the issue of ‘Katrina Fatigue’ indicated that the survivors were frequently called refugees by the receiving population which upset them. This is probably due to negative connotations that can go along with refugee status. Their preferred label was survivor or evacuees. Commonalities within the research indicate that a natural disaster can only be a disaster if there are populations of people to be affected. As mentioned, New Orleans had many low-income families and their housing was located in the lowest, least-safe (in regard to flooding and storms) part of the city. The low-income housing that was destroyed influence many low-income families to change their evacuation status to a more permanent migration from New Orleans, impacting not only the people migrating from the city but those communities that became host to the displaced.

Unlike a planned migration, people left their homes with very few belongings if any at all, believing they would be able to go back immediately after the storm and resort to their usual day-to-day lives. What made this different from when other disasters have occurred in the United States is the fact that so many people ended up migrating permanently from their homes. The in-country migrations that took place saw people from New Orleans and the entire Gulf Coast dispersed to all 50 states and consequently the entire country felt the impact of the storm. Because of the mass amount of permanent migrations that took place, survivors had a hard time dealing with the ‘Katrina Fatigues’ as they were permanently displaced from their homes and did not have the same connection in their new neighbourhoods as they would have had in New Orleans with other survivors.

Some major gaps identified in the literature include the fact that there was not a lot of information on what is going to be or has been implemented to ensure the same level of destruction does not occur again. There also did not appear to be very much focus on the importance of the wetlands that surround the coastline of New Orleans in the research. The fact that the wetlands are continuously decreasing in size is an issue as they help prevent flooding. The wetlands “protect upland areas, including valuable residential and commercial property, from flooding due to sea level rise and storms.” There is a chance these could be in different readings but they were not mentioned despite some suggestions about what could be done to change the scenario in a couple of the research materials.

51 Fussell, “Post Katrina”, 459.
52 Ibid.
53 Weber and Peek, Displaced, 40.
54 Ibid., 34.
In terms of how people are affected by natural disasters, greater numbers of people are more vulnerable now to both natural and other hazards than before. This is due to increases in population as well as their locations being in more dangerous living areas. Better government programs should be in place to address the issues of dangerous housing and the corresponding danger in which people of low economic standing deal with when they are forced into these housing areas.

Ideas for future research might include looking into better facilities that could hold the majority of evacuees if there was another disaster. Other things to look into could include how to design and construct infrastructure and buildings to withstand a category 5 storm and if the costs of doing that would save money that would have to be used to rebuild the city again if a category 5 came along the Gulf Coast again.

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56 Button and Oliver-Smith, “Disaster, Displacement and Employment”, 125
57 Ibid.
Bibliography


They are scattered through all 50 states, the District of Columbia and Puerto Rico — 623 in Utah, 1,114 in Kansas, 1,081 way out in Alaska. They are clustered by the thousands in large Southern cities like Dallas, Atlanta and Memphis, and huddled in handfuls in unlikely havens like Shell Knob, Mo. (pop. 1,320) and Fountain Run, Ky. (pop. 329).

Evacuees find Hurricane Katrina and the floods that followed in cars, vans, trucks, buses, on helicopters and chartered planes, by boat and, a few, on foot. A month after the storm, a map emerges of where they landed, based on ZIP codes from which applications for aid were submitted to the Federal Emergency Management Agency as of Sept. 23.

Of 1,306,794 applications, 46 percent came from Louisiana, Mississippi, Texas and Alabama. But 10,000 families were more than 1,000 miles from the Gulf — among the farthest: one in Nome, Alaska, 3,351 miles from the French Quarter and another in Lihue, Hawaii, 4,547 miles away. Residents of New Orleans, a city that was two-thirds black, seems to have flocked to the nation's African-American population centers. On average, the applicants came from counties where blacks were 26 percent of the population, more than twice the national average.

Rustin Rouge, La., appears to be a temporary home to 19 percent of evacuees; Houston 6.2 percent. But after the top 10 hub, applicants are spread out like a wind that whipped through their old neighborhoods, none of the other 500 plus metropolitan areas has even 1 percent of the total. Some 6,000 ZIP codes — among them Pocahontas, Miss.; Pomeroy City, Iowa; and Hope, Ark. — had just one applicant.

**Applications by state**

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<td>Louisiana</td>
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<td>Mississippi</td>
<td>363,840</td>
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<td>Texas</td>
<td>155,539</td>
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<td>109,469</td>
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**Applications by distance from New Orleans**

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*Owens 11
Appendix A
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58