



2006 Louisiana Health and Population Survey



Migration Patterns

Estimates of Parish Level Migrations due to Hurricanes Katrina and Rita

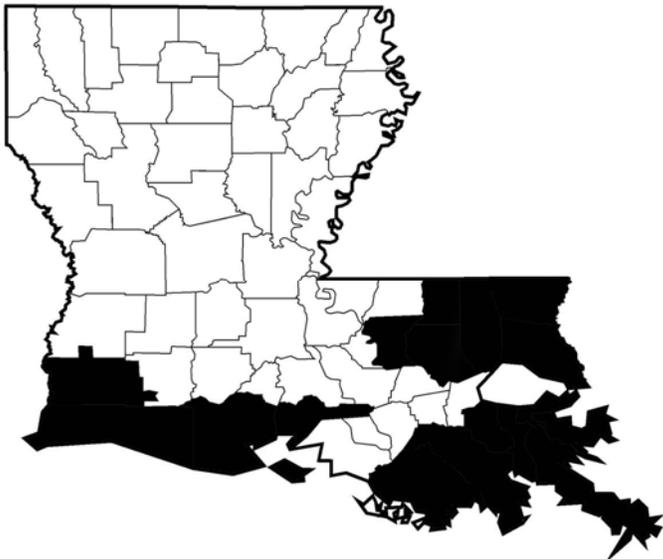


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Introduction

Hurricanes Katrina (August 29, 2005) and Rita (September 23, 2005) caused extensive damage and population displacement across southern Louisiana. This displacement has created great uncertainty about the overall size and distribution of population within Louisiana. While some parishes have lost significant portions of their population, others have gained population either temporarily or even permanently as evacuees have had to resettle and consider their options. Both the losses and the gains have a significant impact on parish planning and resources. The purpose of this report is to provide a first detailed look at migration patterns post Katrina and Rita to provide a context for decision makers in understanding the scope of these relocations.

The estimates described in this report are based on the 2006 Census Bureau annual population estimates combined with door-to-door surveys in 18 parishes across Southern Louisiana. These surveys were conducted approximately 15 months after the hurricanes in the following parishes: Ascension, Calcasieu, Cameron, East Baton Rouge, Iberia, Jefferson, Lafourche, Livingston, Orleans, Plaquemines, St Bernard, St Charles, St Helena, St Tammany, Tangipahoa, Terrebonne, Vermilion and Washington. Because only 18 parishes were surveyed, we cannot estimate displacements outside of those 18 parishes or outside the State. However, we can compare the number of people who left the parish to the number estimated in the other 17 parishes and provide some rough estimate of those who relocated outside of those 18 parishes. Due to the small sample size when analyzing these smaller groups of migrants, we generally had to combine parishes in order to report with any degree of certainty.

This report is divided into two Sections; Section 1 details parishes that experienced population losses and indicates where individuals have migrated *to* and section 2 highlights regions that experienced a population gain and indicates where individuals migrated *from*. The appendices contain population change in each parish along with an estimation of change due to the storm. They also contain migration summaries for each of the surveyed parishes that include number of non-migrants, those who moved within the parish, and those who moved in from outside the parish. Finally, there is an appendix detailing the out-migration estimates for each of the surveyed parishes.

Important Notes Regarding this Report

- This report represents a snapshot in time of migrations that are very fluid. This report corresponds to locations of impacted Louisiana residents approximately one year after the hurricanes. Its value is in identifying the tremendous impacts of the hurricanes on Louisiana's population in terms of displacements and the redistribution of our citizens. These impacts will continue to affect movements in and out of Louisiana for several years until conditions stabilize in terms of housing, jobs, and reconstruction of infrastructure.
- The numbers presented in this report are point estimates based on census data and survey data. This implies a precision that does not exist. Any use of these figures should be appropriately rounded and it should be emphasized that these are estimates and not counts. Within the tables the point values were left in place so that the reader could more clearly see the methodology and understand where the numbers came from. In the body of the report we generally round to the nearest 1,000 or 10,000 depending on the scale of the number.

Summary of Findings

In the Southeast, Orleans and St Bernard parishes each experienced massive overall losses in population due to the effects of Hurricanes Katrina. Combined, these two parishes lost an estimated 278,000 residents and both lost over half of their population according to annual estimates of the U.S. Census Bureau as of July 2006. Displaced residents from these parishes reported the greatest migration to Jefferson, East Baton Rouge and St Tammany Parishes. In the Southwest, Census data indicates that Cameron parish experienced a population loss of approximately 18% or 1800 residents as of July 2006. In addition, survey data indicates that more than one in five Cameron parish residents relocated elsewhere within the parish.

Census data and LRA analysis indicates that the single largest gain in population as of July 2006 due to the hurricanes came to East Baton Rouge parish (about 19,000) followed by Tangipahoa (~6,000), Lafayette (~5,000) and St Tammany (~5,000). These figures can be a little misleading as they only indicate estimates of net storm-related change. St Tammany, for instance, actually had about 15,000 hurricane related in-migrants, but they also had significant housing damage and associated out-migration. The bulk of the storm-related in-migrants obviously came from the most heavily impacted parishes of Orleans and Saint Bernard. Interestingly, more in-migrants found in St Tammany parish came from St Bernard than the much larger Orleans parish, whereas out-migration from Orleans was predominantly along the I-10 corridor and beyond.

Key findings of this study include the following:

- Orleans parish had the largest out-migration in total numbers. Migrants from Orleans parish tended to be dispersed further away with about 2/3 of the out-migrants moving beyond the surveyed parishes or out of state.
- Percentage-wise, St Bernard had an even greater loss with about ¾ of its pre-Katrina population leaving the parish. About one-third of those displaced out of parish went to the North Shore parishes and approximately another third went outside of the survey area or out of state.
- The more rural parishes of Plaquemines and Cameron also had significant losses. However, in these parishes a higher percentage were able to relocate within the same parish and more were able to relocate elsewhere in Louisiana.
- There were a high number of migrations within each parish; an estimated 46,000 Orleans parish residents moved elsewhere in Orleans due to Katrina; Plaquemines and St Bernard both had about 5,000 residents each move within the parish boundaries. Cameron parish had about 2,000 residents move within the parish; compared to 2,600 who moved outside the parish.
- Jefferson parish ranked second in overall storm-related out-migrations with about 70,000. Like Orleans, Jefferson parish evacuees were generally dispersed further. In addition, they had significant challenges with 35,000 displacements within the parish while picking up approximately 51,000 in-migrants from other devastated parishes such as Orleans, St Bernard and Plaquemines.
- Despite losing an estimated 10,000 residents due to the storms, St Tammany parish actually experienced a population gain with an influx of about 15,000 from the southern impacted parishes. A larger number of these in-migrants came from St Bernard parish than the much larger Orleans parish.

- Simultaneously they had over 15,000 residents move within parish due to the storms and this paper concludes they picked up another 5,000 or so residents based on normal growth patterns not related to the storms.

The following statistics show the overall scope of population shifts within the 18 parishes that were surveyed by the 2006 Louisiana Health and Population Survey:

- In total, an estimated 495,000 individuals moved from one of the 18 parishes to another parish or out of state. About 398,000 (80%) of these were due to the storms.
- These same 18 parishes picked up about 240,000 individuals from other parishes with about 145,000 (60%) of these being storm related.
- Of these 145,000 storm-related in-migrations, about 139,000 came in from other parishes in the survey area and about 6000 came from outside the survey area, which could include out of state.
- In addition to these shifts, about 151,000 individuals relocated, but stayed within their original home parish.

2006 Louisiana Health and Population Survey Project Overview

Following the catastrophic hurricanes of 2005, the State of Louisiana had an immediate need to determine the scope of disaster related displacements of population in order to determine service needs for the devastated areas, particularly in the field of healthcare. The Southeastern parishes of Louisiana were first devastated by massive flooding due to storm surge and levee breaches of Hurricane Katrina on August 29, 2005, followed merely three weeks later by massive damage to the Southwest parishes by Hurricane Rita on September 23, 2005. These storms resulted in massive displacements of historic proportions creating great uncertainty about the population size, demographics and health status within Louisiana.

The Department of Health and Hospitals and the Louisiana Recovery Authority identified the need for timely and accurate population estimates critical to guiding decision-making for effective planning and efficient resource allocation. They requested technical assistance from the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry and the U.S. Census Bureau to help develop and implement a survey to collect demographic and health information in the 18 most impacted parishes. The Louisiana Public Health Institute conducted the survey on behalf of the State with funding provided by the CDC, CDC foundation and a special appropriation of state planning money from the Community Development Block Grant program.

Surveys were conducted from June to December of 2006 resulting in population estimates being developed for 11 parishes and demographic and health needs information being collected on 18 parishes. In late March of 2007, the Census Bureau released the first post-hurricane annual estimates for the parishes, which were as of July 2006. These estimates include total population figures including an estimate of those living in group quarters. The Department of Health and Hospitals, Louisiana Recovery Authority and Louisiana Public Health Institute recognized that State survey data collected in the 18 parishes could enhance these figures by adding additional information based on their survey and improve estimates on demographics and health care needs. In addition, the State developed this migration report based on questions in the survey regarding pre-hurricane location and causes of displacement.

Important note: The total, household and group quarter estimates come directly from the U.S. Census Bureau's 2006 Annual Estimates at the Parish level. However, this report supplements these numbers with State derived survey estimates, and this report is not an official product of the U.S. Census Bureau.

Methodology

The 2006 Louisiana Health and Population Survey asked the respondents three questions related to migration. Q11 asked the respondents “Is this the same house this person lived in before the 2005 hurricanes?” If their answer was “no,” it indicates that the person migrated after the hurricanes. Q12 asked the migrants to provide the former place for residence either by the zip code or the name of place. Q13 asked the migrants to provide the reason(s) for the change in residence. There were four options, and the respondents were asked to check all that applied: (1) Moved because a person in household lost job due to hurricane, (2) Former house was damaged, (3) Moved to Louisiana/this parish for job opportunities, and (4) Other reasons (specify). A check in the box for (1) or (2) designates the person as a “storm-related” migrant.

The statistics presented in this report were drawn from these three questions. First, those who answered ‘no’ to Q11 were counted as migrants. Then Q12 was used to determine the pre-hurricane parish or county of residence. Finally, from Q13, the estimated numbers of displaced people due to the storms were calculated by counting the number of migrants who answered that they moved because they lost their job or their former house was damaged.

Limitations

Since the 2006 Louisiana Health and Population Survey covers only 18 parishes in Louisiana, we can not capture the migrants who moved out of state or to other Louisiana parishes which were not surveyed. This limitation has the largest impact on section 1 in which we are attempting to track migrants from the most affected parishes. Large numbers of displaced individuals moved out of state or further north to parishes not in the survey area.

Small sample sizes constrained the level of detail that can be provided in this report. The original purpose of the surveys was to obtain demographic and health information as well as estimates of total population, not to track migration patterns. When only a handful of responses in a receiving parish indicate they were originally from another parish, one can conclude that some level of migration has occurred, but the samples are too small to provide a conclusive estimate with any degree of confidence. For this reason, we were not able to provide parish-to-parish estimates in most cases, but had to aggregate parishes in order to provide any estimates with a degree of reliability.

Section I Detail

The tables in section 1 include data from the 18 reporting parishes, those areas outside the survey area were combined as ‘non-surveyed parishes and out-of-state’. Individuals migrate into and out of parishes every year, so not all movements can be considered storm related. This section provides two estimates for the most impacted parishes; 1) migration out of the parish and 2) migration out due to the storms (as contrasted with migration that would have normally been expected). Migrations out are estimated using a combination of the 2006 Louisiana Health and Population Survey to estimate the in-migrants and the components of change file of the 2006 Annual Estimates to determine the net migration.

The simple formula of Migration Out is:

$$\text{Out} = \text{In} - \text{NET}.$$

Where ‘Out’ = migration out of the parish, ‘In’ is migration into the parish and ‘NET’ is Net Migration. ‘In’ comes from the 2006 Louisiana Survey and ‘NET’ comes from the Census Annual Estimates Components of Change file.

Estimating storm related migration uses a similar formula, but the inputs are a little more complex:

$$\text{Out}_{kr} = \text{In}_{kr} - \text{NET}_{kr}$$

The subscript 'kr' means Katrina/Rita Related. 'In_{kr}' comes directly from the Louisiana Survey with non-responses being proportionally distributed among in-parish and out of parish migrants. NET_{kr} is calculated as the difference between the 2005/2006 net migration from the Census Annual Estimates Components of Change file (net migration during the Katrina/Rita time period) and the typical pre-hurricane net migration (an average of the three years preceding the hurricanes)¹. Appendix 3 includes the calculations for each of the 18 surveyed parishes.

Section II Detail

The tables in section 2 include data from the 18 surveyed parishes, indicating where the in-migrants came from and how much they contributed to the increase of population in each area. The 18 surveyed parishes were broken down into 5 areas: Capital Area (East Baton Rouge, Ascension, Livingston, and St. Helena), North Shore and Pinelands (St. Tammany, Tangipahoa, and Washington), Southeast (Orleans, St. Bernard, and Plaquemines), Jefferson and St. Charles, and Southwest (Calcasieu and Cameron). Due to the small number of in-migrants into these parishes, Orleans, Plaquemines, St Bernard, Lafourche, Terrebonne, Vermilion, and Iberia are not included in the tables as destination areas. However, the total parish level in-migrations are included in Appendix 2.

As in section 1, section 2 provides two estimates for each area; the total number of in-migrants and the number of in-migrants due to storm. The estimates come directly from the results of the 2006 Louisiana Health and Population Survey, and the parish estimates are combined to construct the regional estimates. The survey question asks for the pre-hurricane location, so the responses also include those who migrated from beyond the 18 surveyed parishes including out of state.

The tables show the estimated in-migrants from each area within the 18 surveyed parishes and also from the other areas including elsewhere in Louisiana and out of state. The parishes and areas were combined as "Other Parishes in Louisiana" when the sample size is too small (see the footnote of each table for the list of parishes of this category). The parish estimates are shown in some parts (e.g., "Orleans only"), when the parish sample is large enough. The missing cases were imputed in the same manner as section 1 to allocate non-responses.

Additional Sources

FEMA data are referenced anecdotally in the study. This dataset contains the current address and damage address of participants in FEMA's Individual Assistance program. The addresses are generally not updated once someone is no longer receiving services, so it is not particularly useful in determining current migration patterns; however, it does give provide a good indicator of initial locations.

¹ Net migration from 2005 to 2006 was compared to net migration from the previous three years. For a complete description of the census methodology, go to http://www.census.gov/popest/topics/methodology/2006_st_co_meth.html.

Section I: Most Devastated Parishes: Where Did They Go?

Section IA: Severely Impacted with Population Loss – Cameron, Orleans, Plaquemines and St Bernard

The following tables illustrate where inhabitants of Cameron, Orleans, Plaquemines, and St. Bernard relocated after the storms. Each of these parishes had *significant* damage to their housing stock; in all cases more than a third of the homes were completely destroyed, which led to widespread population displacements. All four parishes lost population overall.

The in migration was derived from the 2006 Louisiana Health and Population Survey and the net migration is from the Census Bureau Annual Estimates program. See the methodology section for more detail.

Below is a summary table of migrations and hurricane related migrations:

Parish	All Migration			Katrina/Rita Related Migration			% OUT storm related
	IN	NET	OUT	IN _{kr}	NET _{kr}	OUT _{kr}	
Cameron	1,191	-1,813	3,004	835	-1,752	2,587	86%
Orleans	20,274	-226,115	246,389	***	-218,209	≥218,209	na
Plaquemines	2,536	-6,466	9,002	1,654	-6,834	8,488	94%
St Bernard	***	-48,905	>48,905	***	-48,481	>48,481	na

*** Sample sizes of in-migrants in St Bernard and Orleans parish were too small to be conclusive. Any in-migration at all would cause the out-migration number to increase above the net migration.

The next set of tables provides estimates of destinations for displaced residents by parish. Note that the ‘other’ category includes both the non-surveyed parishes and out-of-state migrations.

Cameron

Within the surveyed parishes, there was no concentration of migrants from Cameron large enough to provide an estimate to any particular parish or region. Overall, an estimated 3,000 individuals left Cameron and 2,600 (86%) of these were due to the hurricanes. An estimated 2,200 individuals moved from elsewhere in Cameron parish, and 2000 of these (93%) were storm related indicated that almost as many people moved within the parish as moved out of the parish. FEMA data indicates that most of these stayed within Louisiana going to places like Calcasieu, Vermilion and Lafayette parishes.

Cameron	Estimated Migration out of Parish	Estimated Migration out due to Storms	% Migration storm related
Total Out-migration	3,004	2,587	86%
Estimated Moved within Parish*	2,166	2017	93%

* includes imputed value for those not indicated

Orleans

Orleans parish had the largest storm-related net-migration of any parish at over 218,000 lost as of July 2006. However, it is important to note that even Orleans parish had a degree of immigration to offset the losses. In addition, a surprising large number of Orleans residents moved, but

stayed within the parish. An estimated 55,000 individuals moved from elsewhere in Orleans parish, and 46,000 of these (85%) were storm related. Along with Jefferson Parish receiving the most Orleans residents, Orleans parish itself accommodated many of its own displaced. In the 'other' category, the majority are likely to be out of state. FEMA data indicates over half of the people displaced from Orleans parish relocated outside of Louisiana. By far the largest concentration out of state, according to both FEMA data and postal service data, is in Houston. However, this only accounts for less than 20% of the out of state displacements. The other 80% are scattered across thousands of cities across the nation with small concentrations in Dallas, San Antonio, Atlanta, Austin and Memphis among others.

Orleans	Estimated Migration out of Parish		Estimated Migration out due to Storms		% Migration storm related
	Estimate	Percent	Estimate	Percent	
Migration To					
Jefferson	45,323	18%	44,512	***	98%
Capital Area (EBR, Ascension, Livingston, St Helena)	23,158	9%	19,631	***	85%
St. Helena only	460	0%	427	***	93%
North Shore (Tangipahoa, St Tammany, Washington)	9,269	4%	9,068	***	98%
Other Surveyed Parishes*	5,275	2%	4,519	***	86%
Other (outside survey and out of state)	163,365	66%	~150,000	***	***
Total	246,390	100%	~230,000	***	***

*includes St Charles, Lafourche, Terrebonne, Iberia, Plaquemines, St Bernard, Calcasieu, Cameron, and Vermilion.

*** Cannot be determined because in-migration samples were too small to calculate the out-migration derived from the net value. However, approximate values were included based on the net change to provide scale for the reader.

Estimated Moved within Parish*	54,680	46,279	85%
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* includes imputed value for those not indicated

Plaquemines

Plaquemines had significant population loss, but as with Cameron, there was not a sufficient concentration found in the surveys to indicate to which parishes or regions they migrated. Overall, the estimated loss was 9,000 as of July 2006 with 8,500 (94%) due to the storms. An estimated 5,300 individuals moved from elsewhere in Plaquemines parish, and 4,700 of these (87%) were storm related.

Plaquemines	Estimated Migration out of Parish	Estimated Migration out due to Storms	% Migration storm related
Total Out-migration	9,002	8,488	94%

Estimated Moved within Parish*	5,346	4,666	87%
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* includes imputed value for those not indicated

In the case of Plaquemines, it appears that the largest destination of displaced residents was within the parish. FEMA data indicates that the majority of those that left the parish went elsewhere in Louisiana with a large number also going out of state. Over half that left the state ended up in Texas.

St. Bernard

Unlike Orleans, St. Bernard had a much larger percentage go to the North Shore parishes (about one-third) rather than East to Orleans or Jefferson parishes or the Capital Area. . The estimates indicate that of those who left St. Bernard parish, most stayed within the state.

St Bernard	Estimated Migration out of Parish		Estimated Migration out due to Storms		% Migration storm related
	Estimate	Percent	Estimate	Percent	
Migration to					
North Shore and Pinelands (St. Tammany, Tangipahoa, Washington)	18,296	***	14,140	***	77%
Southeast (Orleans, Plaquemines)	4,432	***	4,008	***	90%
Other Surveyed Parishes*	13,732	***	13,509	***	98%
Other Parishes and Out of State	~15,000***	***	~15,000***	***	***
Total	~50,000***	***	~50,000***	***	***

* Includes East Baton Rouge, Jefferson, Livingston, Ascension, Lafourche, St Charles and Terrebonne

*** Cannot be determined because in-migration samples were too small to calculate the out-migration derived from the net value. However, approximate values were included based on the net change to provide scale for the reader.

Estimated Moved Within Parish*	5,208	5,018	96%
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* Includes imputed value for those not indicated

In addition, an estimated 5,200 individuals moved within St Bernard parish, and 5,000 of these (96%) were storm related. FEMA data corroborates the largest numbers going to the North Shore with many living in FEMA trailers in St. Tammany parish.

Section IB: Major Impact with In-migration and Out-migration – Jefferson and St Tammany

The parishes of Jefferson and St Tammany present a very unique case in terms of hurricane-related migration patterns. Both were heavily impacted by the hurricanes and lost thousands of housing units, but a relatively small percentage of their overall housing stock was lost when compared to the four parishes above. However, both were also in close proximity to the most devastated parishes, so even as they lost capacity, they picked up a large influx of displaced residents from the southern parishes. Migration patterns are summarized below followed by a table for each parish detailing where migrants went from these two parishes.

Parish	All Migration			Katrina/Rita Related Migration			% OUT storm related
	IN	NET	OUT	IN _{kr}	NET _{kr}	OUT _{kr}	
Jefferson	63,023	-21,674	84,697	50,692	-19,850	70,542	83%
St Tammany	29,041	9,464	19,577	14,852	4,590	10,262	52%

Jefferson

As of July 2006, Jefferson parish had an out-migration of approximately 85,000 with about 83% of these being due to the hurricanes. The table below indicates where Jefferson parish out-migrants relocated. Due to small sample sizes, we could not accurately estimate the numbers that were storm related to a particular area, but based on the larger sample of all out-migrants, one could assume that somewhere between 80% to 85% of the out-migrations were storm-related. Keep in mind that despite these losses, Jefferson Parish also picked up an estimated 63,000 in-migrants with about 51,000 of them likely due to the hurricanes. Although they gained tens of thousands of in-migrants from the most devastated parishes, they also ranked 2nd in storm-related out-migrations at over 70,000 displaced out of Parish. Note that an additional

estimated 35,000 were displaced but relocated elsewhere in Jefferson Parish. Of those in the ‘non-surveyed parishes and out-of-state’ category, FEMA data indicates that a significant number located out of state. Like Orleans Parish, the vast majority of these ended up in Texas with Houston being the largest recipient.

Jefferson Migration To	Estimated Migration out of Parish		Estimated Migration out due to Storms		% Migration storm related
	Estimate	Percent	Estimate	Percent	
Orleans and Plaquemines	6,440	8%	***	***	***
St. Charles	1,843	2%	***	***	***
Other Surveyed Parishes*	15,029	18%	***	***	***
Non-surveyed Parishes and Out-of-State	61,384	72%	51,432	73%	84%
Total	84,697	100%	70,542	100%	83%

* Includes East Baton Rouge, St Tammany, Tangipahoa, Ascension, Lafourche, Terrebonne, Washington and St Helena (no storm-related migrants were in the survey sample in St Helena)

*** Cannot be determined due to small sample sizes

Estimated Moved Within Parish*	47,469	35,202	74%
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* Includes imputed value for those not indicated

St Tammany

In contrast to Jefferson, as of July 2006 St Tammany actually had a net gain in population despite losing a number of residents. St Tammany is also unique in that a much smaller percent of out-migrants actually stated that their move was due to the storms. We found few migrants from St Tammany within our survey sample of the other 17 parishes who stated that their move was ‘storm-related’, therefore we did not have samples large enough to make solid estimates on storm-related migrations. However, on the aggregate about half of the out-migrations from St Tammany were due to the hurricanes.

St Tammany Migration To	Estimated Migration out of Parish		Estimated Migration out due to Storms		% Migration storm related
	Estimate	Percent	Estimate	Percent	
All Surveyed Parishes	5426	28%	***	***	***
Other North Shore (Tangipahoa and Washington)	3220	16%	***	***	***
Other Surveyed Parishes*	***	***	***	***	***
Non-surveyed Parishes and Out-of-State	~14,000	~72%	***	***	***
Total	19,577	100%	~10,000	***	~50%

*Includes Terrebonne, Livingston, St Charles, Plaquemines, St Bernard, Ascension, St Helena and Cameron (no storm-related migrants were in the survey sample in Ascension, Plaquemines, St. Bernard, St. Charles or Terrebonne)

*** Cannot be determined due to small sample sizes

Estimated Moved Within Parish*	22,248	15,553	70%
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* Includes imputed value for those not indicated

The data indicated substantial movement within the parish due to the hurricanes. In fact, more people moved elsewhere within the parish than actually left the parish; 22,000 individuals moved from elsewhere in St Tammany parish, and 15,500 of these (70%) were storm related. Compare this with an estimated out-migration of only about 19,600. The FEMA data corroborates this

story. In the other severely impacted parishes, the top destination city was Houston, whereas in St Tammany parish, the top destination was elsewhere in the parish.

Section II: Storm related in-migrations

Whereas the first section estimated numbers of individuals displaced from the most devastated parishes, section II illustrates displaced individuals within each area to provide some approximation of how many storm-related migrants are within each of the surveyed parishes. This includes estimates based on the survey that indicate which parish in-migrants actually came from and whether or not their movements were storm related. The proportions of those storm related to overall number of in-migrants are also provided, showing the impact of storm on migration across areas.

This section is limited to only those parishes that were surveyed and had significant population gains. Due to sample size considerations, the parishes were combined into three areas as follows: Capital Area (East Baton Rouge, Ascension, Livingston, and St. Helena), Jefferson/St Charles, and North Shore and Pinelands (St. Tammany, Tangipahoa, and Washington). See the methodology section for more detail.

An important distinction needs to be made between the tables below and the estimate of Hurricane-related change in appendix one. The number of storm related migrants will be different for two major reasons; 1) the tables below provide estimates of “in-migration” due to the storm whereas the table in appendix 1 represents population change due to the storm, which includes in-migrations, out-migrations and births and deaths, and 2) these are based on two very different methodologies. The tables in this section are based on actual surveys of households that are then extrapolated to the larger population, whereas the table in appendix 1 is based on a modeled estimate from the US Census annual population estimates program

Capital Area Parishes: East Baton Rouge, Ascension, Livingston, St. Helena

Following hurricane Katrina, the capital area had a large immediate influx of evacuees which included the major shelter at the Baton Rouge convention center. In addition numerous smaller shelters organized by various church groups and other social organizations took in evacuees. By the time these surveys were conducted a year following the storms, most shelters had closed as evacuees either made their way back or found alternative housing options.

Capital Area Migration from	Estimated Migrants		Estimated Migrants due to storm		% Storm Related
	Estimate	Percent	Estimate	Percent	
Southeast (Orleans, Plaquemines, & St. Bernard)	32,790	44%	29,264	68%	89%
Orleans only	23,158	31%	19,631	46%	85%
North Shore & Pinelands (Tangipahoa, St. Tammany, & Washington)	2,467	3%	***	***	***
Tangipahoa only	1,416	2%	***	***	***
Other Parishes in Louisiana*	20,827	28%	***	***	***
Out of State	9,983	13%	***	***	***
Not Indicated**	8,189	11%	***	***	***
Total	74,257	100%	42,983	100%	58%

* For estimated migrants, includes Jefferson, St. Charles, Calcasieu, Lafayette, Ouachita, Terrebonne, St. James, East Feliciana, and Pointe Coupee. For estimated migrants due to storm, includes Jefferson, St. Charles, and Terrebonne.

** The values are imputed.

*** Cannot be determined because due to small sample size.

The capital area shows the large storm related gain at almost 43,000, and among those the migrants from Southeast area (Orleans, St Bernard, Plaquemines) account for 68 percent (almost 30,000).

Jefferson, St. Charles

Jefferson and St. Charles show the largest gain due to the storms among any other areas in this report at about 53,000. Although the migrants due to the storms from the southeast area (Orleans, St Bernard and Plaquemines) were seen in most of the surveyed parishes, Jefferson and St. Charles picked up the largest portion compared to the other areas. These two parishes picked up an estimated 46,000 storm-related migrants from Orleans parish alone. As shown below, the vast majority of the in-migration to Jefferson and St. Charles was storm-related.

Jefferson, St. Charles Migration from	Estimated Migrants		Estimated Migrants due to storm		% Storm Related
	Estimate	Percent	Estimate	Percent	
Southeast (Orleans, Plaquemines, & St. Bernard)	51,263	76%	50,071	94%	98%
Orleans only	47,092	70%	46,123	86%	98%
Other Parishes in Louisiana*	***	***	***	***	***
Out of State	9,741	14%	***	***	***
Not Indicated**	***	***	***	***	***
Total	67,182	100%	53,406	100%	79%

* For estimated migrants, includes East Baton Rouge, St. Tammany, Tangipahoa, St. John the Baptist, and West Baton Rouge. For estimated migrants due to storms, includes St. John the Baptist only.

** The values are imputed.

*** Cannot be determined because in-migration samples were too small to generalize.

North Shore and Pinelands: St. Tammany, Tangipahoa, Washington

The table shows that about 58% of in-migrants to the north shore and pinelands moved due to the storms. However, this percentage is considerably higher for those coming from the severely damaged parishes.

North Shore and Pinelands Migration from	Estimated Migrants		Estimated Migrants due to storm		% Storm Related
	Estimate	Percent	Estimate	Percent	
Southeast (Orleans, Plaquemines, & St. Bernard)*	27,566	61%	23,207	89%	84%
Orleans only	9,270	20%	9,068	35%	98%
St. Bernard only	18,296	40%	14,140	54%	77%
Other Parishes in Louisiana**	9,088	20%	***	***	***
Out of State	5,491	12%	***	***	***
Not Indicated****	***	***	***	***	***
Total	45,455	100%	26,177	100%	58%

* No in-migrants from Plaquemines Parish were found in the survey sample.

** For estimated migrants, includes Ascension, East Baton Rouge, Livingston, Jefferson, Caldwell, Lafayette, Lafourche, Ouachita, and Terrebonne. For estimated migrants due to storms, includes East Baton Rouge, Livingston, and Jefferson.

*** Cannot be determined due to small sample sizes

****The values are imputed.

The largest number of storm-related in-migrants to this area came from St. Bernard at about 14,000. This is surprising considering the large number of out-migrants from neighboring Orleans parish.

Southwest Parishes:

The Southwest parishes did not have near the level of population displacements due to Rita as occurred due to Katrina in the Southeast. As a result, there were not large numbers of survey respondents found from any particular parish. In addition, Rita may have further displaced Katrina evacuees who had initially settled in Southwest Louisiana. Surprisingly, Cameron parish actually had some storm-related in-migration despite the level of devastation there. Some of this was actually due to Rita displacements from neighboring Calcasieu.

Conclusion

Although limited by small sample sizes, the 2006 Health and Population Survey provides information on pre-Katrina locations and describes to what extent these relocations post-storm were storm-related or the result of normal migration patterns. It also shows where the storm related migrations were the greatest and how storm related migration patterns differed among the 18 surveyed parishes. The survey data, combined with census figures, showed a number of relevant trends in storm-related movements. This information can be used by parish leaders in understanding the scope of the migrations and it can be used in outreach efforts to those that are displaced.

Any evaluation of storm impacts on population shifts needs to consider the mobility of our citizenry in the event of a natural or man-made disaster. One conclusion from this study may be that “*Evacuation routes matter*”. Orleans parish clearly has the biggest challenge in that they had the most citizens displaced the furthest. This is reflected in the difference between the relocation outcomes of residents who had the time and resources to get into a privately owned vehicle and drive to safety versus being transported miles from their home after the storm without the means to return.

Louisiana’s leadership at all levels seeks the safe return of our citizens. This initial study is only a beginning look at the effects of Katrina and Rita on the relocation of Louisiana families. Supplemental surveys of the displaced, such as those conducted by the Louisiana Family Recovery Corps and Louisiana State University are critical to helping us understand additional barriers to the return home. Clearly the lack of affordable housing is a major barrier to the return of our citizens, but other factors such as security, healthcare availability and educational and job opportunities also need to be assessed and prioritized.

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Appendix 1 – Summary of Parish Population Change due to Katrina and Rita

Note: Surveyed parishes are highlighted. Population Estimates are the Annual Estimates from the Population Division of the US Census Bureau. Growth/Loss due to Katrina and Rita are calculated as the current (05-06) change minus the typical change as measured by the 3-year average of the three most recent pre-Katrina estimates. The percent due to storms is the Katrina/Rita related growth (or loss) divided by the 2005 population estimate. For example, the -5% indicates that Louisiana lost 5% of its 2005 population due to the hurricanes of that year.

Geographic Area	Population Estimates						02-05 3-yr ave growth	Katrina / Rita Abnormal Growth	% due to storms
	July 1, 2002	July 1, 2003	July 1, 2004	July 1, 2005	July 1, 2006	Change 05-06			
Louisiana	4,470,543	4,480,925	4,495,706	4,507,331	4,287,768	-219,563	12,263	-231,826	-5%
Acadia	59,078	59,103	59,047	59,247	60,457	1,210	56	1,154	2%
Allen	25,137	25,251	25,273	25,241	25,447	206	35	171	1%
Ascension	81,693	84,296	86,926	90,447	97,335	6,888	2,918	3,970	4%
Assumption	23,192	23,190	23,141	23,108	23,472	364	-28	392	2%
Avoyelles	41,482	41,803	41,830	41,789	42,663	874	102	772	2%
Beauregard	33,185	33,507	33,988	34,542	35,130	588	452	136	0%
Bienville	15,392	15,288	15,294	15,183	15,168	-15	-70	55	0%
Bossier	100,615	102,019	103,677	105,309	107,270	1,961	1,565	396	0%
Caddo	250,079	249,506	250,158	250,438	253,118	2,680	120	2,560	1%
Calcasieu	183,009	183,733	184,187	184,708	184,524	-184	566	-750	0%
Caldwell	10,607	10,611	10,714	10,618	10,615	-3	4	-7	0%
Cameron	9,760	9,685	9,645	9,611	7,792	-1,819	-50	-1,769	-18%
Catahoula	10,742	10,637	10,587	10,472	10,567	95	-90	185	2%
Claiborne	16,596	16,557	16,290	16,184	16,210	26	-137	163	1%
Concordia	19,913	19,667	19,488	19,298	19,460	162	-205	367	2%
De Soto	25,738	25,853	26,115	26,301	26,390	89	188	-99	0%
East Baton Rouge	409,704	409,995	410,410	409,809	429,073	19,264	35	19,229	5%
East Carroll	9,075	8,973	8,839	8,786	8,699	-87	-96	9	0%
East Feliciana	21,083	20,978	20,834	20,703	20,922	219	-127	346	2%
Evangeline	35,321	35,079	35,189	35,462	35,911	449	47	402	1%
Franklin	20,870	20,822	20,643	20,390	20,455	65	-160	225	1%
Grant	18,727	18,840	19,110	19,438	19,879	441	237	204	1%
Iberia	73,614	73,849	73,967	74,212	75,509	1,297	199	1,098	1%
Iberville	33,007	32,703	32,317	32,160	32,974	814	-282	1,096	3%
Jackson	15,247	15,258	15,211	15,084	15,202	118	-54	172	1%
Jefferson Davis	31,100	31,047	31,117	31,194	31,418	224	31	193	1%
Jefferson	451,431	451,255	452,083	451,049	431,361	-19,688	-127	-19,561	-4%
La Salle	14,234	14,105	14,072	14,010	14,093	83	-75	158	1%
Lafayette	192,464	193,437	194,943	196,627	203,091	6,464	1,388	5,076	3%
Lafourche	90,736	91,319	91,801	91,910	93,554	1,644	391	1,253	1%
Lincoln	41,806	42,006	42,114	41,907	41,857	-50	34	-84	0%
Livingston	98,928	102,027	105,707	108,958	114,805	5,847	3,343	2,504	2%
Madison	13,165	12,860	12,627	12,471	12,328	-143	-231	88	1%
Morehouse	30,464	30,505	30,297	29,919	29,761	-158	-182	24	0%
Natchitoches	38,876	38,541	38,287	38,320	38,719	399	-185	584	2%
Orleans	471,440	465,884	459,048	452,170	223,388	-228,782	-6,423	-222,359	-49%
Ouachita	146,890	147,323	147,879	147,721	149,259	1,538	277	1,261	1%

Plaquemines	27,320	27,906	28,933	28,903	22,512	-6,391	528	-6,919	-24%
Pointe Coupee	22,527	22,442	22,378	22,288	22,648	360	-80	440	2%
Rapides	126,565	127,012	127,494	127,887	130,201	2,314	441	1,873	1%
Red River	9,559	9,577	9,553	9,445	9,438	-7	-38	31	0%
Richland	20,686	20,513	20,451	20,391	20,554	163	-98	261	1%
Sabine	23,383	23,472	23,533	23,715	23,934	219	111	108	0%
St. Bernard	66,326	65,774	65,536	65,147	15,514	-49,633	-393	-49,240	-76%
St. Charles	49,060	49,246	49,886	50,554	52,761	2,207	498	1,709	3%
St. Helena	10,408	10,294	10,256	10,138	10,759	621	-90	711	7%
St. James	21,223	21,073	20,988	21,031	21,721	690	-64	754	4%
St. John the Baptist	44,127	44,752	45,394	46,150	48,537	2,387	674	1,713	4%
St. Landry	88,225	88,718	89,106	89,640	91,528	1,888	472	1,416	2%
St. Martin	49,450	49,787	50,200	50,228	51,341	1,113	259	854	2%
St. Mary	52,462	52,215	51,883	51,213	51,867	654	-416	1,070	2%
St. Tammany	201,740	207,252	213,349	219,814	230,605	10,791	6,025	4,766	2%
Tangipahoa	102,257	103,269	104,779	106,152	113,137	6,985	1,298	5,687	5%
Tensas	6,407	6,252	6,147	6,117	6,138	21	-97	118	2%
Terrebonne	105,404	105,925	106,282	107,094	109,348	2,254	563	1,691	2%
Union	22,786	22,856	22,813	22,866	22,964	98	27	71	0%
Vermilion	54,248	54,337	54,608	55,267	56,021	754	340	414	1%
Vernon	51,178	50,450	49,320	48,511	46,748	-1,763	-889	-874	-2%
Washington	43,823	43,841	43,939	44,277	44,750	473	151	322	1%
Webster	41,457	41,199	41,161	41,144	41,301	157	-104	261	1%
West Baton Rouge	21,672	21,639	21,826	21,634	22,463	829	-13	842	4%
West Carroll	12,156	12,139	11,903	11,815	11,732	-83	-114	31	0%
West Feliciana	15,150	15,201	15,071	15,185	15,535	350	12	338	2%
Winn	16,544	16,272	16,062	15,929	15,835	-94	-205	111	1%

Source: US Census Bureau Annual Estimates; the last four columns were added by the Louisiana Recovery Authority to estimate hurricane impacts.

Appendix 2 – Household Population, non-migrants and migrants by parish

The following tables come directly from the 2006 Louisiana Health and Population Survey and tables represent counts of individuals within the surveyed parishes. These include the total household population, the number of non-migrants (those that have not moved at all) and migrants. Migrants are broken down by those that moved within the parish and “in-migrants”, meaning that they came in from another parish or out of state. The estimated displaced due to storm represent those that indicated that they moved either because of damage to their home or loss/change of job because of the hurricanes. The percentages are of the total household population. The tables for each of the 18 parishes are provided below. The asterisks (***) indicate cases where the sample size is too small to provide an estimate. Also note that there were a small number of responses where the survey indicated that they had migrated, but no pre-storm location was given. These were allocated proportionally to ‘moved within parish’ and ‘in-migrants’.

Ascension	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	96,689	100	-	-
Not Indicated	114	0	-	-
Non Migrants	75,700	78	-	-
Moved within Parish	8,137	8	***	***
In-migrants	12,738	13	5,092	5.3

Calcasieu	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	179,814	100	-	-
Not Indicated	8,917	5	-	-
Non Migrants	128,676	72	-	-
Moved within Parish	29,159	16	21,069	11.7
In-migrants	13,061	7	***	***

Cameron	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	7,743	100	-	-
Not Indicated	309	4	-	-
Non Migrants	4,077	53	-	-
Moved within Parish	2,166	28	2,017	26.0
In-migrants	1,191	15	835	10.8

East Baton Rouge	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	414,391	100	-	-
Not Indicated	10,431	3	-	-
Non Migrants	313,523	76	-	-
Moved within Parish	31,541	8	***	***
In-migrants	58,895	14	33,821	8.2

Iberia	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	73,894	100	-	-
Not Indicated	1,234	2	-	-
Non Migrants	64,610	87	-	-
Moved within Parish	4,414	6	***	***
In-migrants	3,636	5	***	***

Jefferson	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	427,776	100	-	-
Not Indicated	8,725	2	-	-
Non Migrants	308,561	72	-	-
Moved within Parish	47,469	11	35,202	8.2
In-migrants	63,020	15	50,692	11.9

Lafourche	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	91,918	100	-	-
Not Indicated	2,825	3	-	-
Non Migrants	74,930	82	-	-
Moved within Parish	7,922	9	***	***
In-migrants	6,240	7	***	***

Livingston	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	114,221	100	-	-
Not Indicated	1,241	1	-	-
Non Migrants	92,212	81	-	-
Moved within Parish	8,797	8	***	***
In-migrants	11,971	10	5,237	4.6

Orleans	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	215,399	100	-	-
Not Indicated	1,942	1	-	-
Non Migrants	138,505	64	-	-
Moved within Parish	54,677	25	46,279	21.5
In-migrants	20,274	9	***	***

Plaquemines	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	22,006	100	-	-
Not Indicated	803	4	-	-
Non Migrants	13,321	61	-	-
Moved within Parish	5,346	24	4,666	21.2
In-migrants	2,536	12	1,654	7.5

St. Bernard	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	15,344	100	-	-
Not Indicated	462	3	-	-
Non Migrants	8,742	57	-	-
Moved within Parish	5,208	34	5,018	32.7
In-migrants	***	***	***	***

St. Charles	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	52,331	100	-	-
Not Indicated	636	1	-	-
Non Migrants	43,329	83	-	-
Moved within Parish	2,465	5	***	***
In-migrants	5,901	11	3,856	7.4

St. Helena	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	10,687	100	-	-
Not Indicated	157	1	-	-
Non Migrants	8,729	82	-	-
Moved within Parish	487	5	***	***
In-migrants	1,314	12	861	8.1

St. Tammany	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	228,561	100	-	-
Not Indicated	6,422	3	-	-
Non Migrants	170,851	75	-	-
Moved within Parish	22,248	10	15,553	6.8
In-migrants	29,040	13	14,851	6.5

Tangipahoa	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	109,896	100	-	-
Not Indicated	845	1	-	-
Non Migrants	83,987	76	-	-
Moved within Parish	8,970	8	4,786	4.4
In-migrants	16,094	15	11,907	10.8

Terrebonne	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	107,935	100	-	-
Not Indicated	2,671	2	-	-
Non Migrants	86,177	80	-	-
Moved within Parish	12,205	11	***	***
In-migrants	6,882	6	***	***

Vermilion	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	55,254	100	-	-
Not Indicated	938	2	-	-
Non Migrants	44,382	80	-	-
Moved within Parish	6,138	11	3,687	6.7
In-migrants	3,796	7	***	***

Washington	Estimates		Estimated Displaced due to Storm	
	Count	Percent	Count	Percent
Total Household Population	43,093	100	-	-
Not Indicated	442	1	-	-
Non Migrants	32,993	77	-	-
Moved within Parish	5,258	12	2,614	6.1
In-migrants	4,400	10	1,719	4.0

Appendix 3 – Calculations of Out-migration and Katrina/Rita Related Out-migration

The first three columns are from the Estimates of the Components of Population Change for Parishes of Louisiana from the Population Division of the US Census Bureau for the years 2002-03, 2003-04, and 2004-05. The third column is the computed average of these three years to arrive at a pre-hurricane norm. The 2005-06 net migration figure is also from the Components of Population Change file. The storm related net migrations are the difference between the 2005-06 net migrations and the pre-hurricane norm (3-year average). The in-migration estimates come from the 2006 Louisiana Health and Population Survey based on actual survey responses. Finally, the out-migration estimates are calculated from the two sources by subtracting the net migration from the in-migration (IN – OUT = NET; therefore OUT = IN – NET).

Parish	Pre-Hurricane Net Migrations				Net Migration		In-Migration		Out-Migration	
	2002-2003	2003-2004	2004-2005	2002-2005 3-yr ave	2005-2006	05 to 06 Storm Related	2005-2006	05 to 06 Storm Related	2005-2006	05 to 06 Storm Related
Ascension Parish	1,717	1,847	2,608	2,057	6,044	3,987	12,739	5,092	6,695	1,105
Calcasieu Parish	-221	-355	-393	-323	-1,153	-830	13,062	***	14,215	***
Cameron Parish	-55	-57	-70	-61	-1,813	-1,752	1,191	835	3,004	2,588
East Baton Rouge Parish	-1,589	-1,313	-2,911	-1,938	17,210	19,148	58,897	33,821	41,687	14,674
Iberia Parish	-206	-136	-246	-196	813	1,009	3,636	***	2,823	***
Jefferson Parish	-1,759	-865	-2,847	-1,824	-21,674	-19,850	63,023	50,692	84,697	70,542
Lafourche Parish	132	104	-293	-19	1,138	1,157	6,240	***	5,102	***
Livingston Parish	2,312	2,665	2,638	2,538	5,078	2,540	11,972	5,237	6,894	2,697
Orleans Parish	-6,857	-8,122	-8,738	-7,906	-226,115	-218,209	20,274	***	246,389	***
Plaquemines Parish	497	821	-214	368	-6,466	-6,834	2,536	1,654	9,002	8,488
St. Bernard Parish	-430	-387	-455	-424	-48,905	-48,481	***	***	***	***
St. Charles Parish	-129	313	366	183	1,823	1,640	5,901	3,856	4,078	2,216
St. Helena Parish	-153	-50	-73	-92	585	677	1,313	861	728	184
St. Tammany Parish	4,574	4,802	5,247	4,874	9,464	4,590	29,041	14,852	19,577	10,262
Tangipahoa Parish	535	1,027	805	789	6,623	5,834	16,094	11,907	9,471	6,073
Terrebonne Parish	-203	-578	16	-255	1,309	1,564	6,881	***	5,572	***
Vermilion Parish	-158	146	343	110	474	364	3,796	***	3,322	***
Washington Parish	-46	139	440	178	424	246	4,400	1,719	3,976	1,473

*** Indicates where the sample size for the in-migration estimate was too small to be reliable. Without the in-migration figure, out-migration cannot be calculated

Note that because the source for the in-migration data is the Louisiana Survey, out-migration estimates are only available for the survey parishes.