Hazus: Hurricane Global Risk Report

Region Name: Katrina_LA

Hurricane Scenario: 2005-KATRINA

Print Date: Sunday, August 11, 2024

Disclaimer:
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

Table of Contents

General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 64 county(ies) from the following state(s):

- Louisiana

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 45,819.65 square miles and contains 1,376 census tracts. There are over 1,831 thousand households in the region and a total population of 4,657,757.00 people. The distribution of population by State and County is provided in Appendix B.

There are an estimated 1,830 thousand buildings in the region with a total building replacement value (excluding contents) of 837,503 million dollars. Approximately 89% of the buildings (and 66% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 1,830,722.00 buildings in the region which have an aggregate total replacement valu million. Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix general distribution of the building value by State and County.

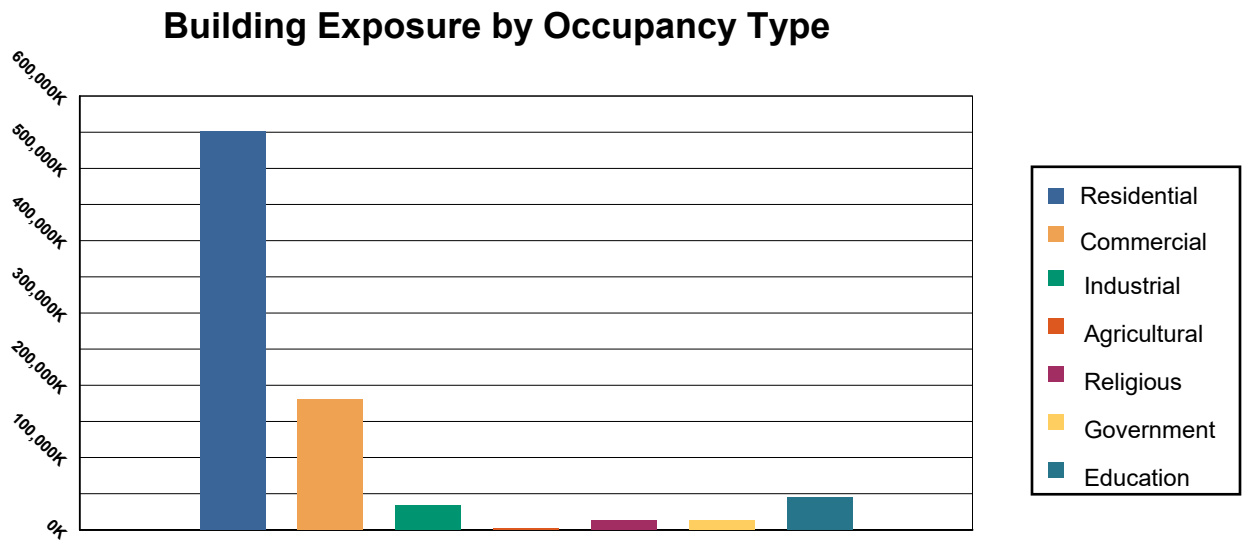


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tot
Residential	551,670,991	65.87%
Commercial	180,470,156	21.55%
Industrial	33,193,020	3.96%
Agricultural	1,641,523	0.20%
Religious	12,907,031	1.54%
Government	12,669,034	1.51%
Education	44,951,605	5.37%
Total	**837,503,360**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 256 hospitals in the region with a total bed capacity of 21,058 beds. There are 1,815 schools, 1,081 fire stations, 444 police stations and 76 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	2005-KATRINA
Type:	Historic
Max Peak Gust in Study Region:	127 mph

Building Damage

General Building Stock Damage

Hazus estimates that about 30,215 buildings will be at least moderately damaged. This is over 2% of the total number of buildings in the region. There are an estimated 2,109 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

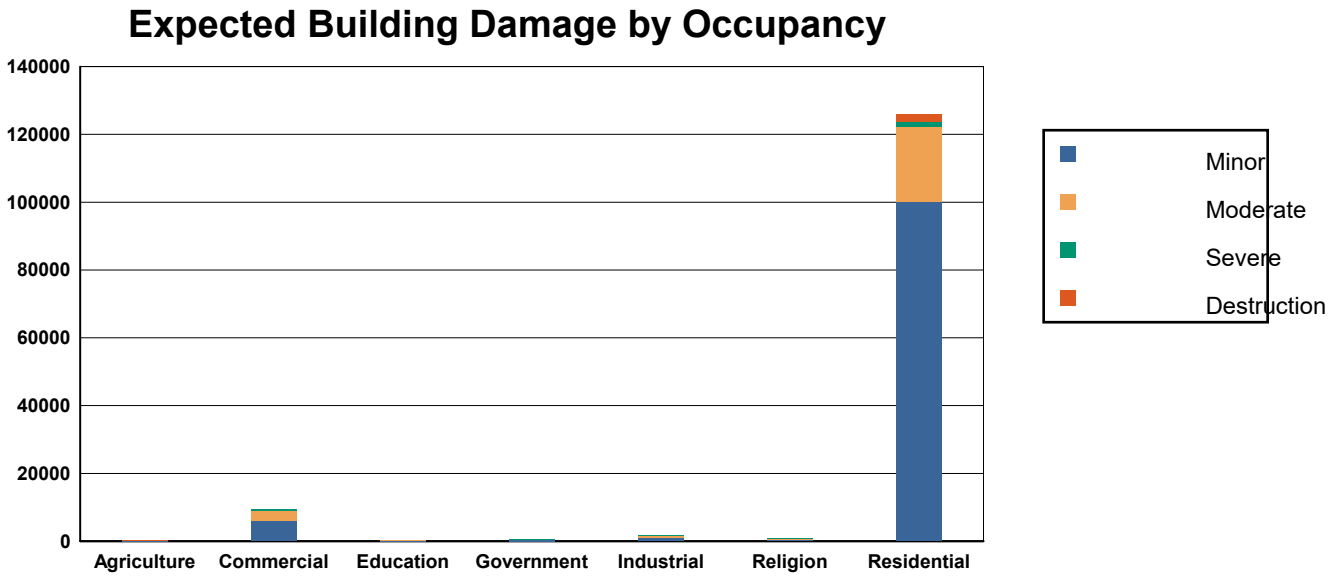


Table 2: Expected Building Damage by Occupancy

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	2,833	93.12	101	3.32	67	2.21	36	1.18	5	0.17
Commercial	142,736	93.77	6,090	4.00	3,027	1.99	364	0.24	5	0.00
Education	2,901	92.41	150	4.77	82	2.60	7	0.22	0	0.00
Government	6,654	92.95	310	4.32	180	2.51	15	0.21	0	0.00
Industrial	23,779	93.13	1,038	4.07	645	2.52	69	0.27	4	0.02
Religion	9,195	92.98	473	4.78	192	1.94	30	0.30	0	0.00
Residential	1,503,997	92.28	100,253	6.15	21,908	1.34	1,485	0.09	2,095	0.13
Total	**1,692,094**		**108,414**		**26,100**		**2,006**		**2,109**	

Table 3: Expected Building Damage by Building Type

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	28,697	94.45	1,108	3.65	476	1.57	102	0.33	0	0.00
Masonry	213,808	92.77	12,713	5.52	3,342	1.45	459	0.20	150	0.06
MH	179,802	99.07	842	0.46	444	0.24	50	0.03	350	0.19
Steel	80,979	88.25	4,834	5.27	5,693	6.20	251	0.27	5	0.01
Wood	1,194,245	92.12	84,985	6.56	14,484	1.12	1,150	0.09	1,552	0.12

Essential Facility Damage

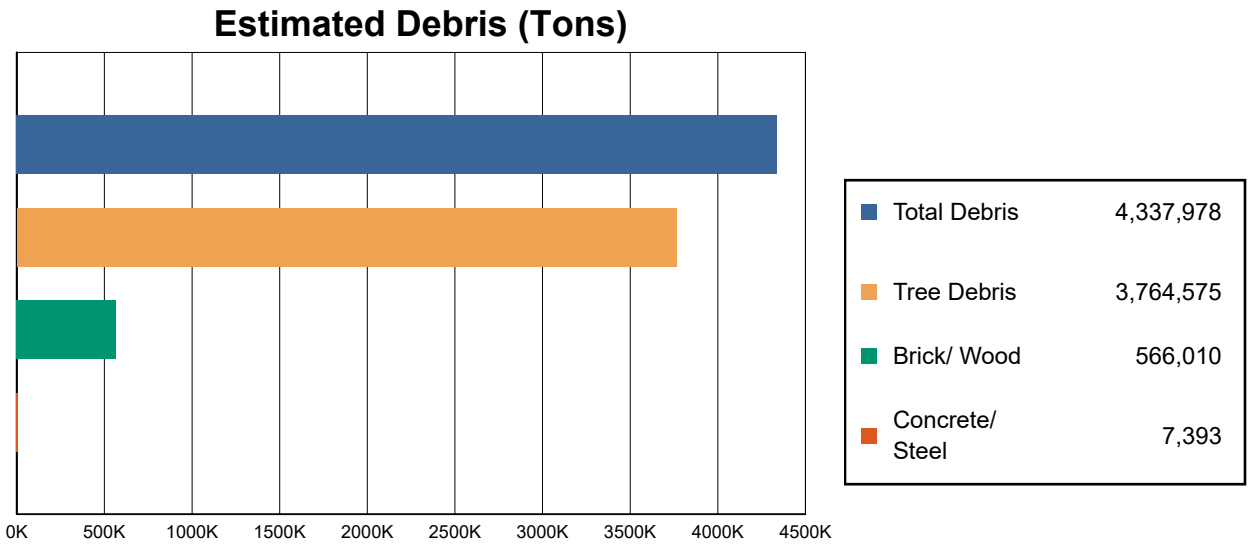
Before the hurricane, the region had 21,058 hospital beds available for use. On the day of the hurricane, the model estimates that 21,058 hospital beds (100%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, 100% of the beds will be in service. By 30 days, 100% will be operational.

Table 4: Expected Damage to Essential Facilities

		# Facilities		
Classification	**Total**	**Probability of at Least Moderate Damage > 50%**	**Probability of Complete Damage > 50%**	**Expected Loss of Use < 1 day**
EOCs	76	0	0	76
Fire Stations	1,081	2	0	1,081
Hospitals	256	0	0	255
Police Stations	444	1	0	444
Schools	1,815	17	0	1,488

Induced Hurricane Damage

Debris Generation

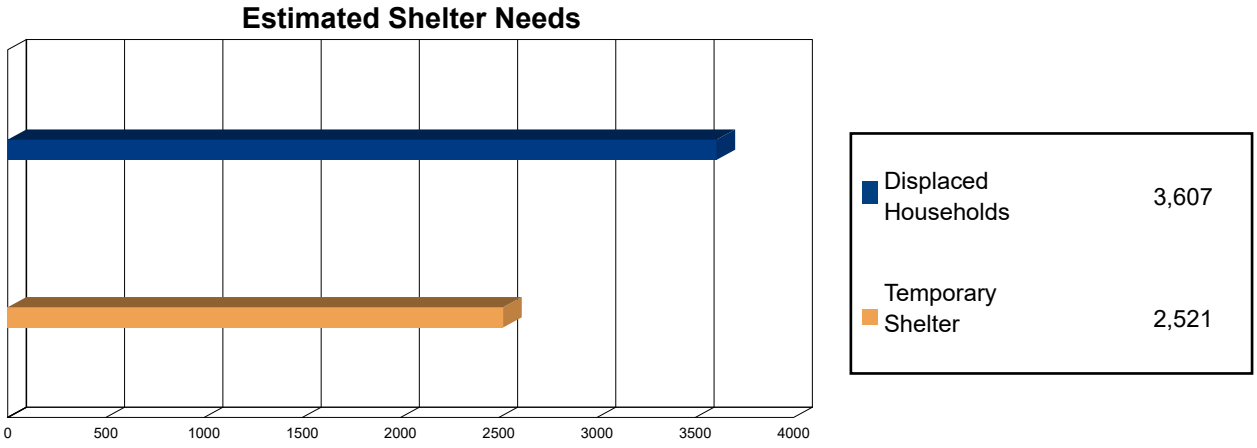


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 4,337,978 tons of debris will be generated. Of the total amount, 3,338,407 tons (77%) is Other Tree Debris. Of the remaining 999,571 tons, Brick/Wood comprises 57% of the total, Reinforced Concrete/Steel comprises of 1% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 22936 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 426,168 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 3,607 households to be displaced due to the hurricane. Of these, 2,521 people (out of a total population of 4,657,757) will seek temporary shelter in public shelters.

Economic Loss

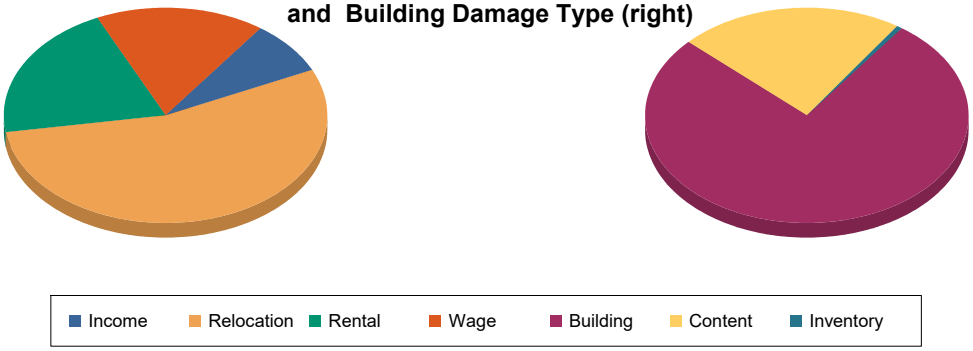
The total economic loss estimated for the hurricane is 7136.4 million dollars, which represents 0.85 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 7,136 million dollars. 14% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 77% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left) and Building Damage Type (right)



Loss Type by General Occupancy

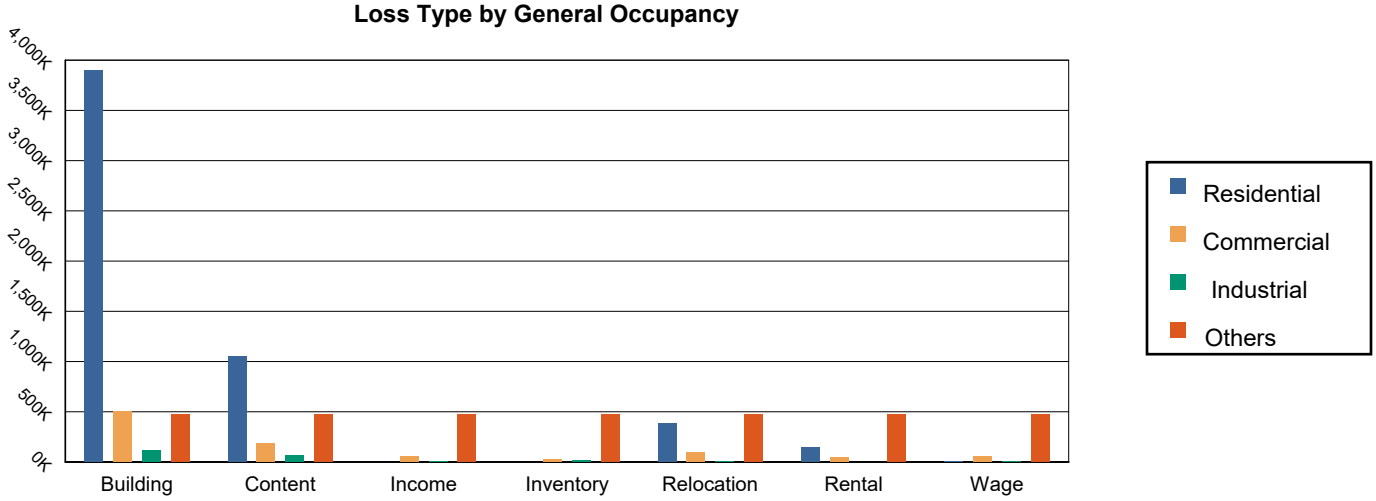


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	3,899,914.82	502,886.58	111,565.02	210,470.51	4,724,836.92
	Content	1,046,930.00	186,418.21	67,265.76	85,857.48	1,386,471.45
	Inventory	0.00	23,217.54	11,355.55	3,912.74	38,485.83
	Subtotal	**4,946,844.82**	**712,522.32**	**190,186.33**	**300,240.73**	**6,149,794.20**
Business Interruption Loss						
	Income	608.80	59,577.70	1,610.07	17,358.24	79,154.81
	Relocation	383,470.32	94,282.73	8,653.35	49,874.32	536,280.72
	Rental	149,854.16	48,844.71	1,129.52	5,180.96	205,009.36
	Wage	1,434.02	59,660.91	2,415.54	102,642.62	166,153.08
	Subtotal	**535,367.31**	**262,366.05**	**13,808.48**	**175,056.13**	**986,597.97**

Total

Total	**5,482,212.13**	**974,888.37**	**203,994.80**	**475,296.87**	**7,136,392.17**

Appendix A: County Listing for the Region

Louisiana

- Acadia
- Allen
- Ascension
- Assumption
- Avoyelles
- Beauregard
- Bienville
- Bossier
- Caddo
- Calcasieu
- Caldwell
- Cameron
- Catahoula
- Claiborne
- Concordia
- De Soto
- East Baton Rouge
- East Carroll
- East Feliciana
- Evangeline
- Franklin
- Grant
- Iberia
- Iberville
- Jackson
- Jefferson
- Jefferson Davis
- Lafayette
- Lafourche
- LaSalle
- Lincoln
- Livingston
- Madison
- Morehouse
- Natchitoches
- Orleans
- Ouachita
- Plaquemines
- Pointe Coupee
- Rapides
- Red River
- Richland
- Sabine
- St. Bernard
- St. Charles
- St. Helena

- St. James
- St. John the Baptist
- St. Landry
- St. Martin
- St. Mary
- St. Tammany
- Tangipahoa
- Tensas
- Terrebonne
- Union
- Vermilion
- Vernon
- Washington
- Webster
- West Baton Rouge
- West Carroll
- West Feliciana
- Winn

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Louisiana				
Acadia	57,576	7,521,183	3,299,328	10,820,511
Allen	22,750	2,954,195	946,700	3,900,895
Ascension	126,500	21,573,340	8,618,012	30,191,352
Assumption	21,039	2,384,765	906,347	3,291,112
Avoyelles	39,693	4,395,067	2,074,923	6,469,990
Beauregard	36,549	5,052,394	1,429,782	6,482,176
Bienville	12,981	1,378,446	986,812	2,365,258
Bossier	128,746	12,063,798	6,560,533	18,624,331
Caddo	237,848	23,786,154	19,054,458	42,840,612
Calcasieu	216,785	28,016,279	14,262,307	42,278,586
Caldwell	9,645	1,260,154	330,666	1,590,820
Cameron	5,617	653,223	455,646	1,108,869
Catahoula	8,906	1,035,432	476,553	1,511,985
Claiborne	14,170	1,650,403	890,395	2,540,798
Concordia	18,687	2,156,607	1,175,174	3,331,781
De Soto	26,812	2,796,094	1,356,543	4,152,637
East Baton Rouge	456,781	78,599,213	33,465,283	112,064,496
East Carroll	7,459	522,538	671,898	1,194,436
East Feliciana	19,539	2,663,492	1,941,067	4,604,559
Evangeline	32,350	3,650,337	1,304,920	4,955,257
Franklin	19,774	2,039,674	1,122,942	3,162,616
Grant	22,169	2,314,905	775,186	3,090,091
Iberia	69,929	6,739,435	4,016,355	10,755,790
Iberville	30,241	4,246,949	1,516,097	5,763,046

Jackson	15,031	1,892,544	1,057,038	2,949,582
Jefferson	440,781	43,120,393	22,174,923	65,295,316
Jefferson Davis	32,250	4,304,986	1,393,214	5,698,200
Lafayette	241,753	25,925,408	19,186,430	45,111,838
Lafourche	97,557	7,872,929	4,965,957	12,838,886
LaSalle	14,791	1,380,625	786,681	2,167,306
Lincoln	48,396	4,187,271	3,819,428	8,006,699
Livingston	142,282	21,424,838	4,754,354	26,179,192
Madison	10,017	1,103,949	522,648	1,626,597
Morehouse	25,629	2,832,547	2,111,126	4,943,673
Natchitoches	37,515	4,667,284	2,948,648	7,615,932
Orleans	383,997	33,883,818	24,263,526	58,147,344
Ouachita	160,368	15,791,427	12,669,936	28,461,363
Plaquemines	23,515	2,637,276	2,232,872	4,870,148
Pointe Coupee	20,758	3,339,263	1,335,845	4,675,108
Rapides	130,023	14,489,790	8,815,428	23,305,218
Red River	7,620	927,998	534,920	1,462,918
Richland	20,043	2,315,651	1,256,945	3,572,596
Sabine	22,155	3,528,947	1,392,082	4,921,029
St. Bernard	43,764	4,934,136	1,615,648	6,549,784
St. Charles	52,549	5,800,732	2,427,331	8,228,063
St. Helena	10,920	1,528,076	287,930	1,816,006
St. James	20,192	2,785,378	1,415,823	4,201,201
St. John the Baptist	42,477	6,169,982	2,005,411	8,175,393
St. Landry	82,540	10,542,145	4,681,643	15,223,788
St. Martin	51,767	4,804,636	3,623,858	8,428,494
St. Mary	49,406	6,567,128	5,156,188	11,723,316

St. Tammany	264,570	34,127,228	9,556,888	43,684,116
Tangipahoa	133,157	12,886,780	7,841,451	20,728,231
Tensas	4,147	862,026	435,993	1,298,019
Terrebonne	109,580	12,946,506	9,009,798	21,956,304
Union	21,107	3,702,879	834,002	4,536,881
Vermilion	57,359	5,769,269	1,467,751	7,237,020
Vernon	48,750	5,354,438	1,958,144	7,312,582
Washington	45,463	5,006,095	2,547,764	7,553,859
Webster	36,967	5,620,574	2,920,430	8,541,004
West Baton Rouge	27,199	2,587,193	2,351,801	4,938,994
West Carroll	9,751	1,004,516	524,938	1,529,454
West Feliciana	15,310	1,842,828	721,882	2,564,710
Winn	13,755	1,747,425	587,767	2,335,192
Total	**4,657,757**	**551,670,991**	**285,832,369**	**837,503,360**
Study Region Total	**4,657,757**	**551,670,991**	**285,832,369**	**837,503,360**