Hazus: Hurricane Global Risk Report

Region Name: Katrina_AL

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.

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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 67 county(ies) from the following state(s):

- Alabama

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

The geographical size of the region is 51,350.53 square miles and contains 1,435 census tracts. There are over 2,011 thousand households in the region and a total population of 5,024,279.00 people. The distribution of population by State and County is provided in Appendix B.

There are an estimated 2,164 thousand buildings in the region with a total building replacement value (excluding contents) of 931,263 million dollars. Approximately 89% of the buildings (and 60% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 2,164,370.00 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.

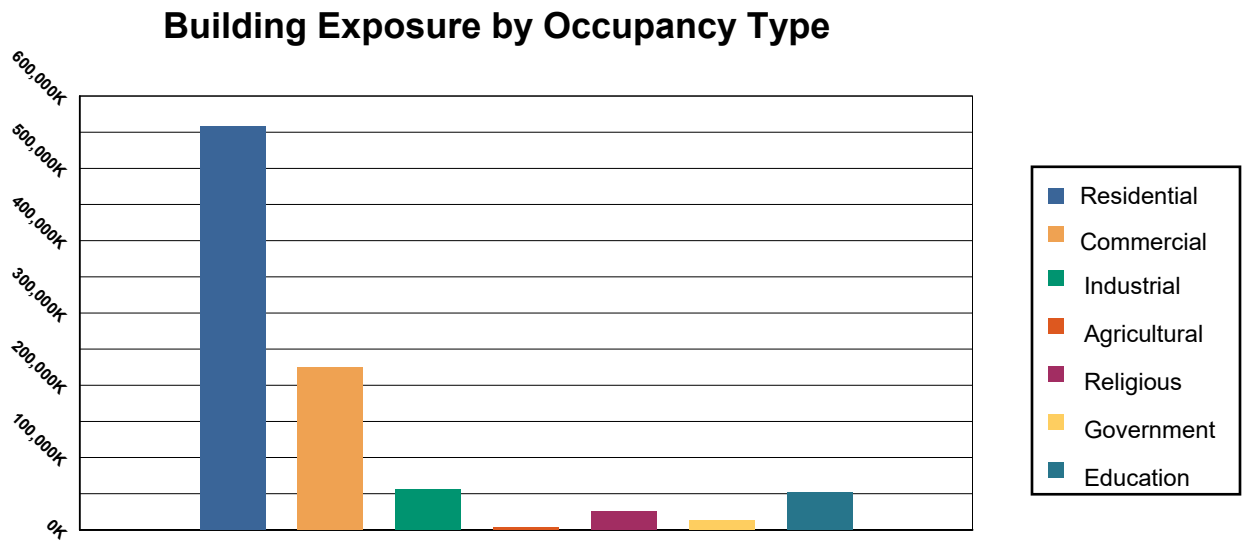


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tot
Residential	557,473,113	59.86%
Commercial	224,477,187	24.10%
Industrial	55,823,244	5.99%
Agricultural	2,791,549	0.30%
Religious	26,046,409	2.80%
Government	12,514,784	1.34%
Education	52,137,073	5.60%
Total	**931,263,359**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 142 hospitals in the region with a total bed capacity of 19,641 beds. There are 1,930 schools, 1,544 fire stations, 578 police stations and 82 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:	94 mph

Building Damage

General Building Stock Damage

Hazus estimates that about 862 buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. There are an estimated 2 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.

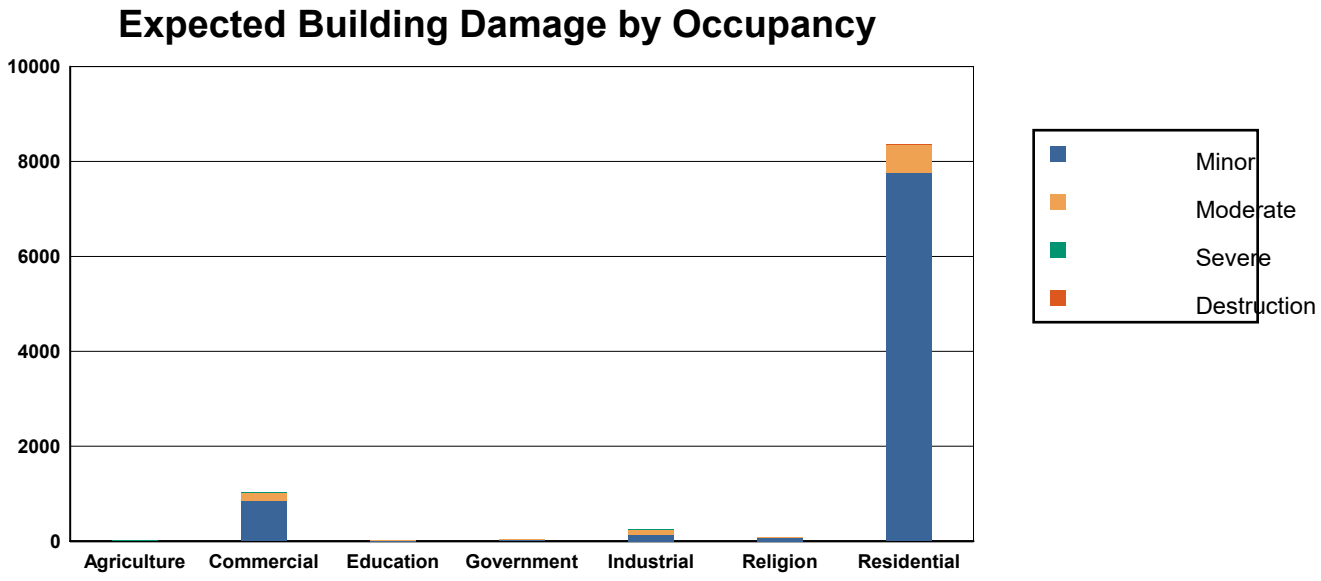


Table 2: Expected Building Damage by Occupancy

	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	4,706	99.53	17	0.36	4	0.09	1	0.02	0	0.00
Commercial	175,575	99.42	863	0.49	150	0.08	12	0.01	0	0.00
Education	2,914	99.04	24	0.82	4	0.14	0	0.00	0	0.00
Government	7,473	99.49	35	0.47	3	0.04	0	0.00	0	0.00
Industrial	28,898	99.14	148	0.51	91	0.31	11	0.04	0	0.00
Religion	19,627	99.62	71	0.36	4	0.02	0	0.00	0	0.00
Residential	1,915,385	99.57	7,772	0.40	574	0.03	6	0.00	2	0.00
Total	**2,154,578**		**8,930**		**830**		**30**		**2**	

Table 3: Expected Building Damage by Building Type

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	9,338	99.61	36	0.39	0	0.00	0	0.00	0	0.00
Masonry	865,312	99.50	4,151	0.48	210	0.02	5	0.00	1	0.00
MH	197,886	99.98	26	0.01	6	0.00	0	0.00	1	0.00
Steel	133,013	98.90	1,068	0.79	379	0.28	26	0.02	0	0.00
Wood	949,263	99.66	3,092	0.32	158	0.02	11	0.00	1	0.00

Essential Facility Damage

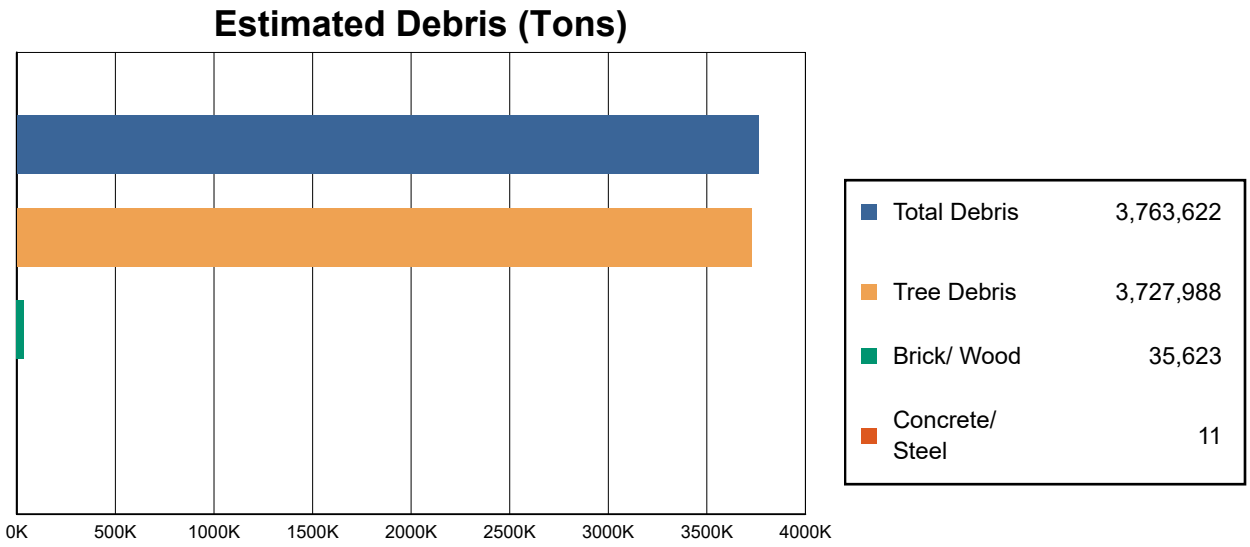
Before the hurricane, the region had 19,641 hospital beds available for use. On the day of the hurricane, the model estimates that 19,641 hospital beds (100%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, 100% of the beds will be in service. 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	82	0	0	82
Fire Stations	1,544	0	0	1,544
Hospitals	142	0	0	142
Police Stations	578	0	0	578
Schools	1,930	0	0	1,930

Induced Hurricane Damage

Debris Generation

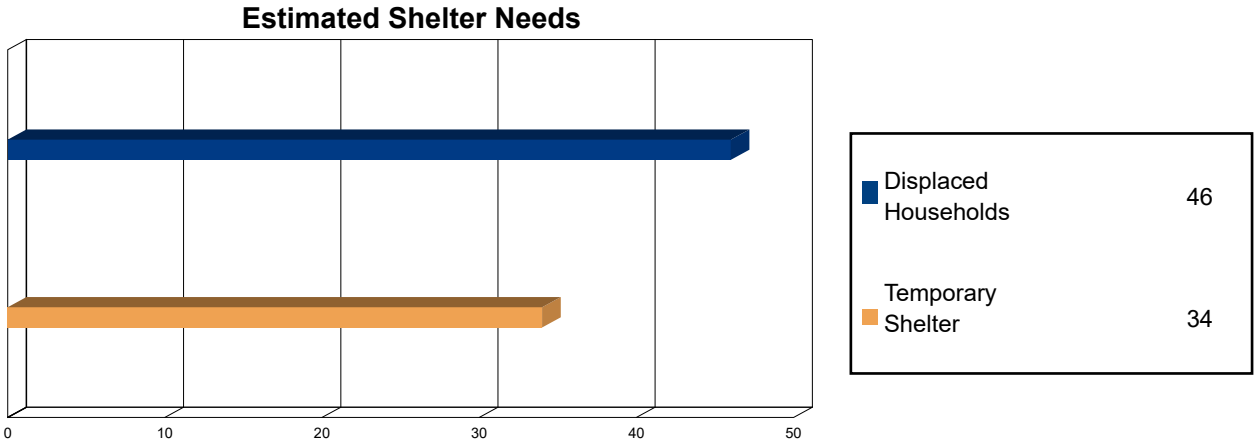


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling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

The model estimates that a total of 3,763,622 tons of debris will be generated. Of the total amount, 3,428,856 tons (91%) is Other Tree Debris. Of the remaining 334,766 tons, Brick/Wood comprises 11% of the total, Reinforced Concrete/Steel comprises of 0% 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 1425 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 299,132 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 46 households to be displaced due to the hurricane. Of these, 34 people (out of a total population of 5,024,279) will seek temporary shelter in public shelters.

Economic Loss

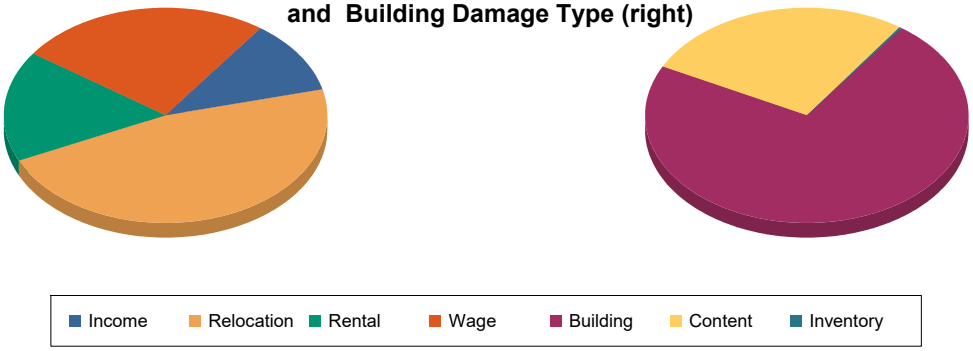
The total economic loss estimated for the hurricane is 810.5 million dollars, which represents 0.09 % of the total replacement value of the region's buildings.

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 810 million dollars. 5% 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 88% 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

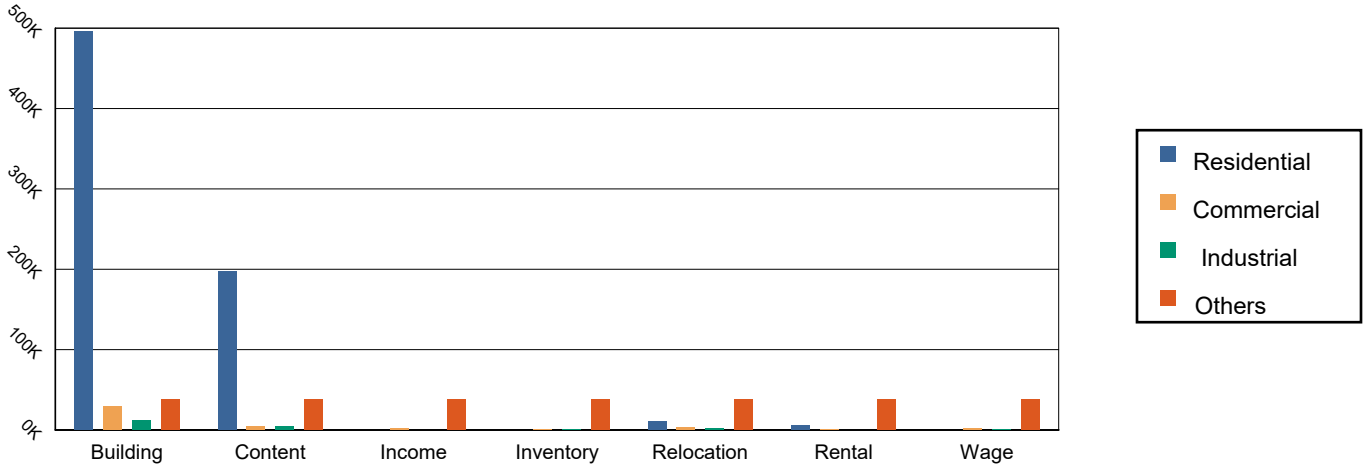


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	496,209.39	29,258.91	12,418.44	20,497.99	558,384.73
	Content	197,710.49	4,211.85	4,991.52	3,970.16	210,884.02
	Inventory	0.00	606.07	724.95	62.74	1,393.75
	Subtotal	**693,919.88**	**34,076.83**	**18,134.91**	**24,530.89**	**770,662.50**
Business Interruption Loss						
	Income	0.00	1,612.73	158.13	2,674.43	4,445.30
	Relocation	10,817.94	2,933.40	1,758.46	3,135.02	18,644.82
	Rental	5,552.92	723.57	99.46	247.28	6,623.23
	Wage	0.00	2,164.08	218.58	7,705.35	10,088.01
	Subtotal	**16,370.86**	**7,433.78**	**2,234.63**	**13,762.08**	**39,801.35**

Total

Total	**710,290.74**	**41,510.60**	**20,369.54**	**38,292.97**	**810,463.85**

Appendix A: County Listing for the Region

Alabama
- Autauga
- Baldwin
- Barbour
- Bibb
- Blount
- Bullock
- Butler
- Calhoun
- Chambers
- Cherokee
- Chilton
- Choctaw
- Clarke
- Clay
- Cleburne
- Coffee
- Colbert
- Conecuh
- Coosa
- Covington
- Crenshaw
- Cullman
- Dale
- Dallas
- DeKalb
- Elmore
- Escambia
- Etowah
- Fayette
- Franklin
- Geneva
- Greene
- Hale
- Henry
- Houston
- Jackson
- Jefferson
- Lamar
- Lauderdale
- Lawrence
- Lee
- Limestone
- Lowndes
- Macon
- Madison
- Marengo

- Marion
- Marshall
- Mobile
- Monroe
- Montgomery
- Morgan
- Perry
- Pickens
- Pike
- Randolph
- Russell
- St. Clair
- Shelby
- Sumter
- Talladega
- Tallapoosa
- Tuscaloosa
- Walker
- Washington
- Wilcox
- Winston

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Alabama				
Autauga	58,805	6,155,479	2,967,609	9,123,088
Baldwin	231,767	30,781,407	15,186,551	45,967,958
Barbour	25,223	2,385,479	2,462,113	4,847,592
Bibb	22,293	1,930,367	1,216,502	3,146,869
Blount	59,134	4,977,175	2,838,279	7,815,454
Bullock	10,357	906,552	671,842	1,578,394
Butler	19,051	1,820,325	1,627,927	3,448,252
Calhoun	116,441	12,945,935	9,745,169	22,691,104
Chambers	34,772	3,115,369	2,878,021	5,993,390
Cherokee	24,971	2,648,772	1,785,125	4,433,897
Chilton	45,014	4,250,676	2,460,552	6,711,228
Choctaw	12,665	4,788,581	1,456,411	6,244,992
Clarke	23,087	2,006,140	2,116,492	4,122,632
Clay	14,236	1,251,633	1,299,075	2,550,708
Cleburne	15,056	1,236,348	917,714	2,154,062
Coffee	53,465	18,467,064	3,842,260	22,309,324
Colbert	57,227	6,799,303	5,195,494	11,994,797
Conecuh	11,597	1,030,010	1,135,482	2,165,492
Coosa	10,387	1,243,761	711,209	1,954,970
Covington	37,570	4,004,330	2,763,057	6,767,387
Crenshaw	13,194	1,406,819	1,156,674	2,563,493
Cullman	87,866	7,967,997	6,645,293	14,613,290
Dale	49,326	5,514,507	3,334,354	8,848,861
Dallas	38,462	3,692,942	3,262,520	6,955,462

DeKalb	71,608	6,078,685	6,263,411	12,342,096
Elmore	87,977	8,573,059	3,937,672	12,510,731
Escambia	36,757	3,413,355	3,453,938	6,867,293
Etowah	103,436	10,998,867	8,001,237	19,000,104
Fayette	16,321	1,692,255	1,366,614	3,058,869
Franklin	32,113	2,893,944	2,726,767	5,620,711
Geneva	26,659	2,568,271	2,044,761	4,613,032
Greene	7,730	820,048	519,813	1,339,861
Hale	14,785	1,381,937	1,045,849	2,427,786
Henry	17,146	1,860,136	1,367,006	3,227,142
Houston	107,202	12,818,571	10,942,535	23,761,106
Jackson	52,579	5,506,336	5,043,560	10,549,896
Jefferson	674,721	73,394,162	54,584,033	127,978,195
Lamar	13,972	1,212,547	1,200,566	2,413,113
Lauderdale	93,564	10,535,734	6,502,762	17,038,496
Lawrence	33,073	3,477,739	1,813,146	5,290,885
Lee	174,241	17,560,202	11,960,477	29,520,679
Limestone	103,570	11,801,052	5,683,490	17,484,542
Lowndes	10,311	899,227	832,427	1,731,654
Macon	19,532	1,868,122	1,317,294	3,185,416
Madison	388,153	49,914,258	24,678,589	74,592,847
Marengo	19,323	1,734,960	1,535,314	3,270,274
Marion	29,341	2,732,545	2,733,952	5,466,497
Marshall	97,612	9,413,000	7,949,301	17,362,301
Mobile	414,809	42,952,381	33,069,286	76,021,667
Monroe	19,772	1,945,178	1,764,544	3,709,722
Montgomery	228,954	25,296,544	20,926,190	46,222,734

Morgan	123,421	12,322,972	9,338,107	21,661,079
Perry	8,511	879,508	575,640	1,455,148
Pickens	19,123	1,528,632	1,487,184	3,015,816
Pike	33,009	2,945,997	3,566,581	6,512,578
Randolph	21,967	2,182,560	1,716,465	3,899,025
Russell	59,183	4,915,688	3,048,804	7,964,492
Shelby	223,024	29,677,525	12,533,702	42,211,227
St. Clair	91,103	8,485,114	4,627,958	13,113,072
Sumter	12,345	1,689,865	1,546,540	3,236,405
Talladega	82,149	8,601,696	6,411,229	15,012,925
Tallapoosa	41,311	5,373,949	3,171,739	8,545,688
Tuscaloosa	227,036	21,228,097	16,364,890	37,592,987
Walker	65,342	7,310,428	4,577,747	11,888,175
Washington	15,388	1,581,379	717,124	2,298,503
Wilcox	10,600	1,543,762	835,372	2,379,134
Winston	23,540	2,535,855	2,330,905	4,866,760
Total	**5,024,279**	**557,473,113**	**373,790,246**	**931,263,359**
Study Region Total	**5,024,279**	**557,473,113**	**373,790,246**	**931,263,359**