

THE IMPACT OF HURRICANES KATRINA, RITA, AND WILMA ON THE GULF COAST HOUSING STOCK

In an 8-week period between August 29 and October 24, 2005, three powerful hurricanes changed how we think about housing in hurricane-prone areas. Hurricanes Katrina, Rita, and Wilma unleashed terrible destruction across Alabama, Florida, Louisiana, Mississippi, and Texas. All told, more than 1.2 million housing units received some damage and more than 309,000 units sustained major or severe damage from one or more of these hurricanes. This article provides a detailed look at the overall extent of housing damage resulting from the three hurricanes and the degree of intense housing damage in specific communities.

Data

The data used for this analysis are based on inspections conducted by the Federal Emergency Management Agency (FEMA) of owner- and renter-occupied housing as of February 2006. These inspections were done to determine the eligibility of registrants for FEMA Individual Assistance (IA) grants. The inspections were generally quick and assessed three basic categories of damage: minor—it would cost less than \$5,200 to make the home livable, not necessarily fully repaired; major—the extent of damage is somewhere between minor and severe; and severe—the home is half destroyed.¹ Because it is highly likely that even owners and renters with insurance will have expenses that are not covered by that insurance, nearly everyone who registers for FEMA assistance and has damage has an inspection

conducted, which permits an assessment of the number of damaged housing units and the extent of that damage.

Although the FEMA data has near universal coverage, it can provide only general information about the cost of rebuilding from one jurisdiction to the next. Therefore, to supplement the FEMA data, this analysis also uses data from the Small Business Administration (SBA) disaster loan program. Data from the SBA disaster loan program is not as universal in coverage as the FEMA data, but it tends to be much more detailed. SBA conducts inspections only on housing units of individuals who have applied for an SBA disaster loan and been determined to have adequate income and credit to initially qualify for the low-interest loans.

This analysis uses SBA data to determine, at the county level, what it means to have major or severe damage. It links FEMA inspection data for addresses with major and severe damage to the detailed SBA inspection for “verified loss.” For those cases that match, it is possible to calculate the median SBA verified loss for the FEMA major and severe categories. In sum, FEMA provides a rough damage categorization for nearly every home with damage caused by the disaster and SBA provides a detailed dollar estimate of damage for a subset of those homes that are extrapolated to represent the average per unit amount of damage for the universe of damaged units within each damage category.

FEMA registrant data also provide information on unit location, resident tenure, age of householder, size of household, resident income, type of insurance (if any), and type of damage (flood and wind for these disasters). Some FEMA data, however, are subject to data integrity issues of multiple registrants for the same property and incorrect addresses. To undertake this analysis, HUD staff implemented a number of routines to identify and consolidate the data from duplicate registrants for the same housing unit.

HUD also adopted a routine using U.S. Postal Service delivery point bar codes to determine if the housing units were “single-family” or “multifamily.” Although these definitions do not conform to traditional definitions of single-family or multifamily structures, they do operate as a rough approximation.² For units that flooded, HUD also geocoded each address to determine if it was in a FEMA-designated 100-year flood plain or if it was not using the FEMA Q3 digitized flood maps.³



Big Picture

For each housing unit in the HUD analysis, this information provides a relatively informative picture of the extent of damage, the occupants' characteristics, and an estimated cost for repairing the housing. Exhibit 1 shows that nearly 1.2 million housing units had some damage; the FEMA data categorized 892,390 of these housing units as having minor damage. If an owner occupant lacks adequate insurance, his or her unit with minor damage is eligible for a FEMA grant up to \$5,200 for the necessary repairs to make the unit livable. At the time of this report, it has been more than 220 days since Hurricane Katrina made landfall and units with minor damage are likely to have now been reoccupied while owners make, or prepare to make, final repairs.

Wind alone was responsible for 96 percent of the units categorized as having minor damage. In contrast, flooding (including storm surge) was the cause of damage for 71 percent of the 305,109 housing units with major or severe damage. Unlike the units with minor damage, most units with major or severe damage are likely to remain vacant as their owners determine if they have the desire and ability to repair the property and, if so, make the effort to make those repairs.

One of the most striking things about this disaster was that one-third of the flooded units were outside of a FEMA-designated 100-year flood plain.⁴ By law, if a home has a mortgage in a 100-year flood plain, it must have flood insurance. In this disaster, however, more than 80,000 flooded units were outside of the 100-year flood plain.

The areas impacted by the hurricanes had high numbers of single-family rental properties that were damaged. Exhibit 2 shows that of the 30 percent of the damaged housing units occupied by renters, 67 percent were single-family properties. Single-family rental units before the disaster, particularly very affordable nonsubsidized units in New Orleans and other communities in the region with high vacancy rates and very low rents, are probably the least likely to have had insurance.⁵

The FEMA data do not provide insurance status of the rental properties, but they do include substantial information about the insurance status of the owner-occupied dwellings. The insurance status of the units sustaining major or severe damage is most important for long-term recovery. As noted earlier, units with minor damage are at least made habitable through a FEMA grant or their owners' insurance. Most units with major or severe damage, however, have substantially greater needs than can be covered by the FEMA home repair grants (\$5,200 for major damage and \$10,500 for severe damage).

Exhibit 1. Damage by Severity and Type of Damage

	Extent of Damage by FEMA IA Category			
	Minor	Major	Severe	Total
Homes with flood damage	33,308	102,169	114,909	250,386
Homes outside 100-year flood plain ^a	40%	38%	24%	32%
Homes with no flood damage (generally wind damage)	859,082	77,209	10,822	947,113
Total	892,390	179,378	125,731	1,197,499

^a A "100-year flood plain" refers to an area where there is greater than a 1 percent chance that the area will flood in a 100-year time period. Under federal law, it is mandatory that property owners obtain flood insurance if they are financing a property in a 100-year flood plain.

Exhibit 2. Damage by Severity and Tenure

	Extent of Damage			
	Minor	Major	Severe	Total
Owner	643,827	117,041	75,779	836,647
Renter	248,563	62,337	49,952	360,852
Single family	69%	57%	71%	67%
Total	892,390	179,378	125,731	1,197,499

Exhibit 3 shows the insurance status of owner-occupied units with major or severe damage. The shaded areas reflect the units without any insurance or without appropriate insurance for the type of damage incurred. In total, 192,820 owner-occupied units had major or severe damage and approximately half, 91,745, were flooded and located in a 100-year flood plain. Nearly 70 percent of such properties carried flood insurance, suggesting that the mandatory policy of having flood insurance to obtain a mortgage appears to be working in these communities. An additional 40,879 owner-occupied units outside the 100-year flood plain had flood damage, however, and only 36 percent carried flood insurance. Of those units, 46 percent carried hazard insurance and no flood insurance, but that hazard insurance will cover little, if any, of the damage due to flooding.

In addition to the large number of flooded homes without the appropriate insurance, 38 percent of the seriously wind-damaged, owner-occupied homes lacked any insurance. Of the 192,820 owner-occupied units with major or severe damage, approximately 78,000, about 41 percent, did not have any insurance or the correct insurance for the damage incurred. It is possible that many of the other 59 percent of owner-occupied units with insurance have damage that significantly exceeds their insurance coverage.

Low rates of insurance coverage overall and likely underinsurance of those with insurance will make rebuilding a challenge. The challenge is more daunting in communities where nearly every unit was damaged and many are without insurance.

Damage Concentration

The hurricanes caused damage impacting remarkably high percentages of all occupied housing units over large areas of land. This concentration of damage is most noticeable in Louisiana, where nearly one-third of the housing stock has some damage and 12 percent sustained major or severe damage, and in Mississippi, where one-fifth of the housing stock was impacted. Exhibit 4 shows the extent of damage by state

The damage in Louisiana and Mississippi is largely concentrated in a few counties with intense damage. These areas include Orleans Parish, where searing images show the damage from the Lower Ninth Ward, and the Mississippi coastline in Hancock County, where many homes were completely destroyed by Hurricane Katrina's storm surge.

Of the more than 136 counties across the five states that had damage to 10 or more housing units, 12 counties had what is categorized in this analysis as "intense" concentrated damage. Of the units with serious damage (either major or severe) across the five states, 80 percent are in these 12 counties. Exhibit 5 shows three categories of concentrated damage—subtle, noticeable, and intense. Counties where 10 percent or more of the total housing stock had major or severe damage are categorized in this analysis as having intense concentrated damage. Counties with 5 to 10 percent of the housing stock having major or severe damage or more than 20 percent of their stock

Exhibit 3. Seriously^a Damaged Owner-Occupied Units by Type of Damage and Insurance

	Owner-Occupied With Major or Severe Damage	Insurance Status			
		Hazard & Flood	Hazard Only	No Insurance	Damage Not Covered
Homes with flood damage					
Homes in 100-year flood plain	91,745	69%	17%	15%	32%
Homes outside 100-year flood plain	40,879	36%	46%	18%	64%
Homes with no flood damage (generally wind damage)	60,196	15%	47%	38%	38%
Total	192,820	45%	32%	23%	41%

^a In this analysis, we use serious damage to reflect units with either major or severe damage.



Exhibit 4. Extent of Damage by State

	Total Occupied Housing Units	Any Damage	Serious Damage	Percent Any Damage	Percent Serious Damage
Alabama	1,737,080	57,371	3,684	3.3	0.2
Florida	6,337,929	264,585	23,199	4.2	0.4
Louisiana	1,656,053	515,249	204,737	31.1	12.4
Mississippi	1,046,434	220,384	61,386	21.1	5.9
Texas	7,393,354	139,910	12,103	1.9	0.2
Total	18,170,850	1,197,499	305,109	6.6	1.7

Exhibit 5. Categories of County/Parish Damage

	Extent of Concentrated Damage			Total
	Subtle	Noticeable	Intense	
Alabama	8	4	0	12
Florida	11	2	1	14
Louisiana	12	19	7	38
Mississippi	22	23	4	49
Texas	11	12	0	23
Total	64	60	12	136

having some damage are categorized as having noticeable concentrated damage. The remaining counties with 10 or more damaged units are categorized as having subtle concentrated damage.

Most of the national attention, appropriately, has been on those counties and parishes with intense concentrated damage. The remainder of this article addresses each of those communities.

In Louisiana, seven parishes incurred intense concentrated damage, listed in order from most damage intensity to least:

■ **St. Bernard Parish**

- Of the 25,123 occupied housing units⁶, 81 percent had some damage and 78 percent had serious damage.
- Among those 19,312 units with serious damage, the SBA median cost to repair is \$142,612.

- Of the 13,376 seriously damaged owner-occupied units, 35 percent did not have any insurance for the damage incurred.

- Of the 5,936 seriously damaged renter-occupied units, 71 percent were single-family units.

■ **Cameron Parish**

- Of the 3,592 occupied housing units, 90 percent had some damage and 72 percent had serious damage.
- Among those 2,576 units with serious damage, the SBA median cost to repair is \$126,657.
- Of the 2,025 seriously damaged owner-occupied units, 63 percent did not have any insurance for the damage incurred.
- Of the 551 seriously damaged renter-occupied units, 84 percent were single-family units.

■ Plaquemines Parish

- Of the 9,021 occupied housing units, 80 percent had some damage and 58 percent had serious damage.
- Among those 5,179 units with serious damage, the SBA median cost to repair is \$96,176.
- Of the 3,722 seriously damaged owner-occupied units, 63 percent did not have any insurance for the damage incurred.
- Of the 1,457 seriously damaged renter-occupied units, 94 percent were single-family units.

■ Orleans Parish

- Of the 188,251 occupied housing units, 72 percent had some damage and 56 percent had serious damage.
- Among those 105,155 units with serious damage, the SBA median cost to repair is \$103,955.
- Of the 53,474 seriously damaged owner-occupied units, 34 percent did not have any insurance for the damage incurred.
- Of the 51,681 seriously damaged renter-occupied units, 69 percent were single-family units.

■ St. Tammany Parish

- Of the 69,253 occupied housing units, 71 percent had some damage and 26 percent had serious damage.
- Among those 17,620 units with serious damage, the SBA median cost to repair is \$87,521.
- Of the 13,689 seriously damaged owner-occupied units, 31 percent did not have any insurance for the damage incurred.
- Of the 3,931 seriously damaged renter-occupied units, 66 percent were single-family units.

■ Jefferson Parish

- Of the 176,234 occupied housing units, 52 percent had some damage and 20 percent had serious damage.
- Among those 34,311 units with serious damage, the SBA median cost to repair is \$67,248.
- Of the 20,339 seriously damaged owner-occupied units, 18 percent did not have any insurance for the damage incurred.
- Of the 13,972 seriously damaged renter-occupied units, 36 percent were single-family units.

■ Vermilion Parish

- Of the 19,832 occupied housing units, 39 percent had some damage and 12 percent had serious damage.
- Among those 2,576 units with serious damage, the SBA median cost to repair is \$55,809.
- Of the 2,108 seriously damaged owner-occupied units, 61 percent did not have any insurance for the damage incurred.
- Of the 468 seriously damaged renter-occupied units, 91 percent were single-family units.

More than 315,000 housing units were damaged in these seven Louisiana parishes, 187,000 of them seriously. Five of these parishes—St. Bernard, Plaquemines, Orleans, St. Tammany, and Jefferson—represent most of the population of the New Orleans metropolitan area.

In Mississippi, four counties had intense damage:

■ Hancock County

- Of the 16,897 occupied housing units, 90 percent had some damage and 70 percent had serious damage.
- Among those 11,786 units with serious damage, the SBA median cost to repair is \$115,091.



- Of the 8,273 seriously damaged owner-occupied units, 61 percent did not have any insurance for the damage incurred.
- Of the 3,513 seriously damaged renter-occupied units, 76 percent were single-family units.

■ Harrison County

- Of the 71,538 occupied housing units, 68 percent had some damage and 34 percent had serious damage.
- Among those 24,430 units with serious damage, the SBA median cost to repair is \$102,755.
- Of the 13,032 seriously damaged owner-occupied units, 52 percent did not have any insurance for the damage incurred.
- Of the 11,398 seriously damaged renter-occupied units, 48 percent were single-family units.

■ Jackson County

- Of the 47,676 occupied housing units, 64 percent had some damage and 34 percent had serious damage.
- Among those 16,296 units with serious damage, the SBA median cost to repair is \$79,479.
- Of the 11,994 seriously damaged owner-occupied units, 66 percent did not have any insurance for the damage incurred.
- Of the 4,302 seriously damaged renter-occupied units, 66 percent were single-family units.

■ Stone County

- Of the 4,747 occupied housing units, 68 percent had some damage and 11 percent had serious damage.
- Among those 533 units with serious damage, the SBA median cost to repair is \$46,787.

- Of the 445 seriously damaged owner-occupied units, 56 percent did not have any insurance for the damage incurred.
- Of the 88 seriously damaged renter-occupied units, 90 percent were single-family units.

In these four Mississippi counties, more than 97,000 housing units were damaged, 53,000 of them seriously.

Although it was paid little attention given the intensity of the damage elsewhere, Monroe County, Florida, also suffered in the storms.

- Of the total housing stock, 11 percent received major or severe damage and 22 percent of its 35,000 housing units were damaged.
- Among those 3,978 units with serious damage, the SBA median cost to repair is \$47,443.
- Of the 2,501 seriously damaged owner-occupied units, 42 percent did not have any insurance for the damage incurred.
- Of the 1,477 seriously damaged renter-occupied units, 67 percent were single-family units.

Given the high concentration of damage in these 12 counties across three states, it is likely to be years before their housing markets recover. Recovery will come in phases. The current phase is one of federal and local decisions. Where will owners be allowed to rebuild? Those decisions are beginning to be made. FEMA issued its "Advisory Base Flood Elevations" to guide the impacted areas in building requirements needed to get flood insurance for rebuilt homes. In April 2006, six of the seven impacted parishes in Louisiana (all except Plaquemines Parish), had published advisory flood maps to indicate at what elevation a rebuilt home would have to be built, once adopted by local authorities, to qualify for insurance under the National Flood Insurance Program. Federal funds have been approved and more have been requested to strengthen the levees in New Orleans that protect most of the housing units in the metropolitan area. These important steps toward housing market recovery give assurance that flood insurance will be provided. With that assurance, lenders and government rebuilding programs can

begin to make commitments. Through the U.S. Department of Housing and Urban Development's Community Development Block Grant Program, \$11.5 billion has been made available to the governments of the five affected states, mostly for Louisiana (\$6.21 billion) and Mississippi (\$5.06 billion). State and local government officials and property owners now must make decisions about rebuilding.

More information about housing damage caused by Hurricanes Katrina, Rita, and Wilma is available at http://www.huduser.org/publications/destech/GulfCoast_HsngDmgEst.html.

Notes

1. Units with minor damage are eligible for a FEMA repair grant of up to \$5,200, units with major damage are eligible for a FEMA repair grant of \$5,200, and units with severe damage are eligible for a FEMA repair grant of \$10,500.

2. A single-family residence is one in which the two-digit delivery point bar code equals the last two digits of a residential address. If the last two digits of the residential address do not match the delivery point bar code, the structure is categorized as a multifamily unit.

3. The Q3 Flood Data product is a digital representation of certain features of FEMA's Flood Insurance Rate Map (FIRM) product, intended for use with desktop mapping and Geographic Information Systems technology. Digital Q3 Flood Data has been developed by scanning the existing FIRM hard copy, vectorizing a thematic overlay of flood risks (http://www.fema.gov/plan/prevent/fhm/fq_q3.shtm#q346).

4. This assessment was made by overlaying the FEMA damage assessment data on the National Flood Insurance Program Q3 Flood Data product.

5. This assessment is speculative. At the time of this analysis, data were not available on the insurance status of the rental properties.

6. Occupied housing unit counts are based on 2000 Census data.



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